

**THE INFLUENCE OF STAKEHOLDERS' ENGAGEMENT ON THE  
SUSTAINABILITY OF GREEN ENERGY PROJECTS IN KENYA: A CASE OF  
SOLAR ENERGY PROJECTS IN BUSIA COUNTY, KENYA**

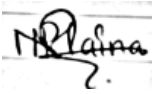
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**A Research Project Report Submitted in Partial Fulfilment of the Requirements for  
the Award of the Degree of Master of Arts in Project Planning and Management,  
University of Nairobi**

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## DECLARATION

This is my original work and has not been presented for an award of a degree in any other university.

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## **DEDICATION**

The report is dedicated to my parents Peter Maina and Lenny Wangare, spouse Nicholas Kiganya, and our sons: Nate, Myles and Benji. You have had collective contribution in my academic journey.

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

<b>CDF</b>	Constituency Development Fund
<b>CI</b>	Confidence Interval
<b>IFAD</b>	International Fund for Agricultural Development
<b>JICA</b>	Japan International Agency
<b>M &amp; E</b>	Monitoring and Evaluation
<b>MW</b>	Mega Watts
<b>NACOSTI</b>	National Commission for Science, Technology, and Innovation
<b>NGOs</b>	Non-Governmental Organizations
<b>PV</b>	Photo-Voltaic
<b>SD</b>	Standard Deviation
<b>SDC</b>	Swiss Development Cooperation
<b>SPSS</b>	Statistical Packages for Social Science
<b>VAT</b>	Value Added Tax
<b>VIF</b>	Variance Inflation Factor

## ABSTRACT

Access to clean and affordable electricity may stimulate rural development. Unfortunately, there are some parts of the Country in Kenya yet to be connected to the national grid. Furthermore, there is a demand for considerations of alternative sources of energy, such as solar energy, which are not only environmentally friendly but also have lower levels of carbon emission. As a result, solar energy power projects are being considered, even though their long-term viability face numerous challenges. Consequently, this research aimed at examining the influence of stakeholder engagement on the sustainability of solar energy projects. Specifically, the research sought to; (i) determine how stakeholders' engagement in the governance structure influence solar energy project sustainability in Busia County, Kenya, (ii) Examine how stakeholders' engagement in capacity building effect sustainability of solar energy projects in Busia County, Kenya, (iii) Determine whether stakeholders' engagement in resources mobilization has impact on sustainability of solar energy projects in Busia County, Kenya, (iv) Establish whether stakeholders' engagement in monitoring and evaluation influence sustainability of solar energy projects in Busia County, Kenya. The literature review is organized according to the research themes. The research was based on stakeholders theory, agency theory, and resource mobilization theory.

The study design that was utilized was one that was descriptive, and it incorporated both qualitative and quantitative data. The target population was 1,849 customers drawn from households and institutions in Busia County, Kenya, that are connected to 10 solar energy projects. By using the Krejcie and Morgan Table to calculate sample size, a sample of 319 respondents was taken into consideration. Primary data was collected using questionnaires. Descriptive and inferential statistics analyzed quantitative data with use of Statistical Package for the Social Sciences (SPSS version 24) software. The findings are reported with corresponding tables and figures. The findings demonstrated a favorable and statistically significant correlation between the four independent variables of the stakeholders' engagement and project sustainability. Specifically, stakeholders' engagement in governance structure influenced project sustainability by 34%, this included government policies such as subsidies and taxes, sourcing of quality products and the decision making during the budgeting processes. The study also demonstrated that well defined roles and proper feedback on the recommendations were crucial for the solar energy project's sustainability. Similarly, stakeholders' engagement influence on the M&E frameworks was the least. As such, the study recommends additional capacity building of stakeholders on the M&E aspects of the project. Further research is recommended in other counties in order to understand the contextual variances of stakeholders' engagement in green energy projects across the country and the whole of the area.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background to the Study**

Since the industrial revolution the dominant source of energy have been fossil fuels. This have had major human health and global climatic conditions. Due to the burning of fuel, there have been excessive emission of carbon dioxide that has caused air pollution and deaths. In response to carbon dioxide emission, a response has been shifted towards nuclear and renewable sources of energy. European Union have an ambitious plan of achieving sustainable green energy transition (European Green Deal, 2019).

Renewable energy adoption has been hailed as a green energy house emission reducer, as well as a reduction in reliance on fusel fuel. Furthermore, it may promote employment by recruiting workers in new technologies. According to 2020 statistics, 22.1% of energy in the European Union was derived from renewable sources. Positive growth from 9.6% in 2004 has been attributed to legally binding targets that supports reliance in non-fossils sources of energy. Renewable sources of energy consumption were 60% in Sweden, 44% in Finland and 42% in Latvia while it was least in Malta (11%), Luxembourg (12%) and Belgium (13%) (Euro Energy, 2022). Growth in electricity energy generated from renewable sources from 2009 to 2019 depicts solar energy to be the fastest growing option.

Since 2013, Africa's total installed renewable energy capacity has increased by more than 24 gigawatts (GW). Solar and wind capacity increased by 13% and 11%, respectively, from 2019 to 2020, while hydropower increased by 25% (Statista, 2020). Growth in the near future is predicted to be led by solar and wind projects in Egypt, Algeria, Tunisia, Morocco, and Ethiopia among others. The United Nations Environment Programme (2021) estimates that Africa has more than 40% of the world's solar potential. On the continent, off-grid solar sales totalled 7.4 million units. Kenya led the way in sales, selling 1.7 million units.

In Africa, there is an increase in use of renewable energy for instance in South Africa at least 65% have installed solar energy, 13% in Algeria and 9% in Egypt while Uganda, Kenya and Namibia have 1% each (International Renewable Energy Agency, 2016). Energy situation in Kenya has a capacity of 2.3MG that is sourced from hydro-power (57%), thermal (32%) and solar power (2%). Heterogeneous sources of power have led to 75% of population been connected to the grid. Reliance with solar as source of energy have higher odds of success due to high insolation of an average of at least seven hours of peak sunshine. Though only at most 14% of 6kWh/m<sup>2</sup> is converted to electricity energy contingent to conversion efficiency. To enhance penetration of solar energy in Kenya, there was a cessation of VAT on solar products (Alternative Energy Africa, 2014).

Project sustainability is a challenge for local and international development organizations. Globally, resources have been allocated to improve people's standard of living, but the effectiveness of these projects in achieving their goals is not optimal. According to

Adhiambo (2012), even though projects funded by various entities are agents for social temporary changes, it is not guaranteed that they will last. In some cases, these projects are subject to short-term funding cycles, conflict among stakeholders, and project consumers' resistance to change. The concept of sustainability is based on a trinity approach that considers social, economic, and political aspects. Oino, Towett, Kirui, and Luvega (2015) assert that sustainability may be defined as a society's propensity to adopt and live with new changes associated with a project. Although project sustainability is critical in the project development life cycle, a project that is currently sustainable may not be in the future. Furthermore, the typical life cycle of a community project is short, lasting only a few months from inception to completion. Insufficient documentation on the antecedents of community project sustainability has drawn attention, as evidenced by a plethora of studies whose findings are inconclusive.

The need for community-based projects is a result of poverty levels in developing economies. According to Kaimenyi and Wanyonyi (2019), at the very least 42% of the people who reside in Sub-Saharan Africa are considered to be living in hardship, while 53.9 percent and 49.3 percent of Kenya's rural and urban populations are impoverished, respectively. In response, development partners such as the Japan International Agency (JICA) have been drilling water boreholes in Kisii. Swiss Development Cooperation (SDC) has built four water dams in Garissa County. Although these projects have been handed over to the community, little is known about their long-term viability. Hence, the need for documentation of sustainability of green energy projects in Busia County.

The level of community involvement and resource mobilization determines a project's success. Globally, international organizations are rallying behind the need for capacity building, structural development, and active participation of project stakeholders (World Bank, 2019). Regionally, Africa has limited resources and capacity that could be useful during the project development life cycle. As a result, participation is dwindling, with little chance of project sustainability (Kaimenyi & Wanyonyi, 2019). Furthermore, the World Health Organization [WHO, 2010] contends that the effectiveness of development aid is dependent on management skills, compliance with project lifecycle standards and financial resources management and allocation. Despite the fact that the Kenyan Constitution requires public participation in issues affecting her citizens, there is still a lot of work to be done in terms of stakeholder sensitization and education. Failure by the government to foster a culture of public participation may result in project stakeholders being unaware of their rights throughout the project's life cycle.

For a solar energy project to be sustainable, it must continuously provide desired energy with minimal disruptions throughout its lifespan. Upon project completion community takes up ownership and management responsibilities. Examining the sustainability of previous community-based projects reveals a higher failure rate, and those that remain face a slew of challenges. As a result, there is a need for empirical research into the causes of low sustainability in community-based solar energy projects.

## **1.2 Statement of the Problem**

Community-based projects aim to improve the social and economic standing of project beneficiaries. However, there is no guarantee that they will remain sustainable once they are completed and management and ownership are transferred. This causes some consternation among project stakeholders because project failure results in a gap between desired and achieved objectives. This has been linked to the projects being non-self-sufficient, lacking proper management, having low levels of community participation, and project beneficiaries being resistant to change. Furthermore, those tasked with carrying out these projects may have perpetuated unethical practices, as evidenced by stalled projects. This is a concerning trend among target green energy project beneficiaries, as there is an increase in poverty and unemployment, as well as limited access to alternative energy sources. This could play a role in the current state of skewed development. A project's ability to be sustained depends on effective stakeholder engagement, which can boost community support, foster cooperation among various interest groups, and enhance communication within the community.

In Kenya, likelihood of community-based projects success is contingent to design, tools and techniques of its life cycle. These challenges are anchored to intrinsic and extrinsic factors such as quality of project design, cost estimation model, environmental dynamics during the project implementation and unpredictability of social and technological aspects. Ouma and Kiarie (2017) found that stakeholder's involvement in project implementation did not affect constituency-based projects in Nakuru East Constituency. Ochunga and Awiti (2017) found



inverse effect of passive involvement on the long-term viability of community-based programs run by Plan International. Wamuyu and Chelangat (2019) It was found out that the participation of many partners has a positive effect on the viability of the project at Nyeri Referral Hospital over the long run. Irfan and Hassan (2019) found that the presence of a governance structure has a favourable and substantial influence on the lengthy feasibility of the project. Asiachi, Miroga and Otinga (2022) found that project governance and resources mobilization have positive and significant effect on sustainability of water projects in Kakamega County. The studies presented contextual gaps due to heterogeneity of water and solar energy projects. Adam and Omer (2015) indicated that institutional capacity building, human capacity building, productive capacity building, environmental capacity building and women participation had effect on sustainability of community-based projects.

These studies have methodological, conceptual and contextual gaps. Methodologically, some have relied on parametric statistical analysis without reporting on supporting diagnostic tests. Additionally, studies have theorized that a project's sustainability is dependent on a variety of factors, though the current study restricts itself to the involvement of stakeholders in the governance structure, capacity building, resource mobilization, in addition to monitoring and analysis. As a result, the purpose of the study was to investigate the impact that the participation of various stakeholders has on the viability of solar energy projects in Busia County, Kenya.

### **1.3 Purpose of the Study**

The primary objective of the study was to investigate the impact that the involvement of various stakeholders has on the long-term sustainability of green energy projects, using the scenario of solar energy projects in Busia County, Kenya.

### **1.4 Objectives of the Study**

Specific objectives are:

- i. To determine how stakeholders' engagement in the governance structure influence sustainability of the solar energy projects in Busia County, Kenya.
- ii. To examine how stakeholders' engagement in capacity building influence sustainability of solar energy projects in Busia County, Kenya.
- iii. To determine whether stakeholders' engagement in resources mobilization has influence on sustainability of solar energy projects in Busia County, Kenya.
- iv. To establish whether stakeholders' engagement in monitoring and evaluation influence sustainability of solar energy projects in Busia County, Kenya.

### **1.5 Hypotheses of the Study**

The null hypotheses are:

- i. **H<sub>0</sub>**: Stakeholders' engagement in governance structure has no significant influence on sustainability on solar energy projects in Busia County, Kenya.

- ii. **H<sub>0</sub>:** Stakeholders' engagement in capacity building has no significant influence on sustainability on solar energy projects in Busia County, Kenya.
- iii. **H<sub>0</sub>:** Stakeholders' engagement in resources mobilization has no significant influence on sustainability on solar energy projects in Busia County, Kenya.
- iv. **H<sub>0</sub>:** Stakeholders' engagement in monitoring and evaluation has no significant influence on sustainability on solar energy projects in Busia County, Kenya.

### **1.6 Significance of the Study**

The study compiled evidence to demonstrate the significance of stakeholder participation in the long-term success of solar energy projects in Kenya. In doing so, it will make a contribution to the pool of previously acquired information, making it easier for project managers to evaluate the value contribution of stakeholder's engagement in governance structure, capacity building, resources mobilization as well as tracking and evaluation of the long-term effectiveness of solar energy projects.

The findings may be useful in development of requisite regulations by policymakers in the Energy and Petroleum Regulatory Authority of Kenya, the Ministry of Energy and the Kenya National and County Governments because they will document relevant information on how stakeholders' engagement in capacity building, governance structure, monitoring and evaluation and resources mobilization influence the sustainability of solar energy projects, in line with the Kenya's Vision 2030 recognition of renewable energy as a key element of Kenya's sustained economic growth and transformation. Furthermore, the findings could aid

in the development of policies that further encourage adoption of solar energy. Additionally, the research may provide a tool for evaluation and justification on consideration of the use of solar energy.

The research will be of value to academics since it has documented empirical literature for future studies. The research has further examined congruence with existing both theoretical and empirical research on the subject of stakeholders' participation and the endurance of related initiatives.

### **1.7 Delimitation of the Study**

The folks in Busia County, Kenya, who have participated in or profited from any of the ten solar energy initiatives served as the unit of analysis for this study. The research analyzed these four aspects; stakeholders' engagement in capacity building, stakeholders' engagement in the governance structure, stakeholders' engagement in the monitoring and evaluation, stakeholders' engagement in resource mobilization and how they impact sustainability of solar energy projects in Busia County, Kenya, despite that there are heterogeneous attributes that may affect project sustainability. The primary data were collected via the use of questionnaires, which were sent to the recipients of the solar energy project as well as the other stakeholder-groups.

## **1.8 Limitations of the Study**

The scientific inquiry was aware that it would have certain restrictions. To start, there is the fact that language barrier issues would arise because not all stakeholders in the solar energy project are literate. This was mitigated by the hiring of research assistants who spoke the local language fluently. Furthermore, due to the heterogeneity of expected value contribution, the study's consideration of diverse stakeholders was limited. As a result, the study supplemented quantitative data gathered through collecting data with qualitative questions. Inaccessibility due to difficult terrain, geographic dispersion, and harsh weather conditions also presented a challenge to the researcher. The mitigation strategy included good route planning prior to beginning the data collection exercise.

## **1.9 Assumptions of the Study**

The author operated on the hypothesis that the participants are interested to engage in the research, and offer details on sustainability of the solar energy project in Busia County, Kenya. Further, it assumed that the research would benefit researchers, government and heterogeneous stakeholders involved in solar energy projects.

The study further assumed that solar energy project beneficiaries had capacity to read and interpret questions in the questionnaire. This would amplify the credibility of research information. Moreover, it was assumed that respondents would respond to all questions.

## **1.10 Definition of Significant Terms**

**Project sustainability:** This metric measures how well solar energy projects are meeting current and future community needs. Project sustainability was assessed in this research as the project's economic life span, cost efficiency, and functionality.

**Solar energy project:** Refers to a project that involves conversion of sunlight into energy using a system containing one or more solar panels and its associated equipment.

**Stakeholder's engagement:** This is the capacity of beneficiaries of solar energy projects to participate in project life cycle. They involve participation in the identifying, organizing, and carrying out of projects, as well as tracking and evaluating the results of such endeavors.

**Stakeholders' engagement in capacity building:** This involves the integration of the project beneficiaries in development of skills that are used throughout the project life cycle. It was evaluated based on the statistics of trainings provided, nature of training, benchmarking with other communities that have been involved in sustainable projects among others.

**Stakeholders' engagement in governance structure:** A project management approach that includes the responsibility and accountability framework during project implementation. It includes participation of local committee members in project management and election of community leaders in project implementation team, diversity of the composition of the project management as well as performance evaluation of such leaders.

**Stakeholders' engagement in monitoring and evaluation:** Refers to the involvement of the project beneficiaries in identification of roles and responsibilities in project review, frequency of the project review visits, as well as proper communication of the findings and recommendations from such reviews.

**Stakeholders' engagement in resources mobilization:** Refers to inclusion of the community in solar energy projects budgeting and fundraising process, identification of development partners as well as sourcing of quality and innovative technologies.

### **1.11 Organization of the Study**

The first chapter serves as an introduction and is not limited to a description of the issue, goals, and definitions of relevant words. The discussion of literature may be found in chapter two. There is also an emphasis placed on the conceptual framework and knowledge gaps. Research methodologies are defined and addressed in chapter three of this project. The results and the discussions are reported in the fourth chapter. In the fifth chapter, conclusions as well as suggestions are provided..

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

Previous empirical studies were used to gather the literature, and knowledge gaps were identified. The chapter main concepts: stakeholder participation, project sustainability, and the value of stakeholder participation in various stages of community-based projects. Furthermore, theories and conceptual framework are presented.

#### **2.2 Stakeholders' Engagement and Project Sustainability**

Project sustainability examines its capacity to provide desired benefits and objectives upon the departure of its founders (Mulwa, 2010). The likelihood of a project achieving its objectives is determined by its strategic implementation approach. Donor-funded projects are said to be sustainable if they continue to be beneficial after the donor aid has been withdrawn. Projects are unsustainable because, by definition, they have a clearly defined start and end date (Sekou et al., 2019). To maximize the continuous flow of benefits, sustainable projects should adopt a new governance structure, community ownership, and support from local resources.

The traditional project management model was limited to construction projects, but it has evolved and been incorporated into a variety of industries (Ouma & Kiarie, 2017). Theoretical consensus is yet to be achieved. Those in favor argue that projected population



growth will put a strain on finite population resources, while those opposed argue that advances in human knowledge and capacity have been mirrored by resource changes (Ofuku, 2011).

The main threat to sustainability is overpopulation, consumption, and bad policies. Within the context of the International Fund for Agricultural Development's (IFAD) strategic framework, "project sustainability" is regarded as the foundation that ensures that institutions that implemented respective projects provide the necessary support to ensure that projects are continuously achieved after project completion (IFAD, 2007). Furthermore, IFAD states that project evaluation is aimed at determining whether project results are sustained over the medium or long term in the absence of project assistance.

A project is sustainable if it can meet community needs without exposing if it can meet community needs without exposing its current and future beneficiaries to any threat. Further, it can be perceived as its capacity to maintain healthy financial records upon exit of its financiers. Sustainable projects have highly positive short-term outcomes among its stakeholders. Hence, the need for stakeholders to extend project undertaking to promote longterm benefits (Odenyo & James, 2018). Moreover, project sustainability would ensure that accrued benefits ought to be felt for a long period to promote social and economic benefits expected (Nyatichi, 2017).

Magero and Muchelule (2019) allude that project sustainability would be achieved if a management system would raise sufficient resources. Project resources include technology,

raw materials, information and manpower. Thus, the need for project actors to evaluate technological, project process, organization structure and culture in heterogeneous process of project implementation life cycle (Kadurira & Nyagah, 2021). Furthermore, achievement of project sustainability is contingent to achievement of project-desired objectives among its stakeholders.

### **2.3 Stakeholders' Engagement in Governance Structure**

Through use of descriptive research design Kyalo (2021) examined the impact that project governance had on the youth empowerment initiative in Makueni County and its potential for long-term success. They came to the conclusion that diversity in project team members, stakeholder approach, and project leadership all positively impacted sustainable projects. Since, the study applied multiple regression analysis it would have been appropriate to report on diagnostic tests that may have supported use of parametric statistics.

Through descriptive research design Kariuki (2018) found that project management leadership style positive affect of performance of water projects in Kenya. Since the study was limited to water projects, it presents population and contextual research gaps. Asiachi, Miroga and Otinga (2022) indicated that project governance and resources mobilization positively affect water project odds of sustainability. Since the study considered water-based projects there are contextual gaps since sustainability of water based is not homogenous to solar energy community projects.

## **2.4 Stakeholders' Engagement in Capacity Building**

Adam and Omer (2015) indicated that institutional capacity building, human capacity building, productive capacity building, environmental capacity building and women participation had effect on project sustainability. Since the study was carried out in Sudan there is need for a localized study to address contextual gap.

Palian, Farah and Udo (2020) studied the effect on human capital on organization performance in a case of sustainable issues in E-commerce firm. There is need for development of human capital so as to achieve desired objectives. Data was drawn from profitable organization which profit is making hence the call for localized study that would examine the value contribution of human capital on sustainability of community-based project.

Wawira and Were (2017) studied the effect of project management practices on community development in Nairobi County. The study indicated a positive effect of risk management, quality management, stakeholder participation and cost management on community development in Nairobi County. Localization of empirical enquiry may enrich empirical evidence.

## **2.5 Stakeholders' Engagement in Resources Mobilization**

Odenyo and Rosemary (2018) indicated that resources mobilization affected sustainability of women-based projects in Vihiga. It was recommended that women groups ought to be trained

on diverse methods of raising community-based project resources and required project human capital should be developed internally to minimize odds of sourcing externally. Medza, Siringi and Wambua (2019) shown that the involvement of interested parties had a beneficial impact on the long-term viability of christian programs. There are conceptual gaps since currently direct effect of resources mobilization were studied.

Through descriptive research design Riziki, Atera and Juma (2019) indicated positive and significant effect of resources mobilization on sustainability of water projects in Kakamega County. There are population gaps since the unit of analysis differs from the current study. Exploration of the value contribution of resources may bridge existing knowledge gaps attributed to drawing of data from several units of analysis.

### **2.3 Stakeholders' Engagement in Monitoring and Evaluation**

Monitoring is systematic collection of projects and programs information so as to evaluate past short comings and failure to meet expectations, creation of internal and external evaluation guidelines, creation of informed decision on future economic and social empowerment policies and promotion of beneficiary's empowerment (Pfeiffer, 2011). Evaluation is comprehensive assessment of program of or project that have been accomplished (Ramothamo, 2013). Through data analysis and examination, informed policies and decisions are adopted with the sole purpose of improving future (African Monitoring and Evaluation Systems, 2012).

Monitoring is the process of doing regular checks on information relating to progress for the purpose of ensuring that advancement is taking place in accordance with the goals that have been established. It often entails reporting on outputs, activities, and resource use once every month to once every three months (e.g. people, time, money, and materials). It should be used to guarantee that what has been planned is carried out as intended and within the constraints of the resources that have been allotted (Kibebe & Mwirigi, 2014). Evaluation is done to confirm that the selected path is the right one, and that the appropriate combination of tactics and resources was used in order to arrive at the desired destination. It may often take either a formative or summative approach, with the former serving to foster learning and comprehension among stakeholders (i.e. indicating the degree of achievement). In most cases, it places an emphasis on results and how those results relate to outputs (Yusuf, et al., 2017). In this study monitoring and evaluation was operationalized as quality of outcome, quantity of outcome and timely achievement.

The authors of the Sulemana et al. (2018) study evaluated the participative method to monitoring and evaluating projects in Ghana. The case study method was selected, and 196 people who filled out questionnaires were chosen using a basic random sample technique. Qualitative and quantitative data was collected. Thematic and content analysis analyzed qualitative data. Descriptive and inferential statistics analyzed quantitative data. It was founded that stakeholder's participation had significant impact of monitoring and evaluation. Negative transparency had negative effect on monitoring and evaluation. It was found that there were low levels of stakeholder's participation since there were no grass root structures

for participation. Also, there were cases of negative attitude reported among locals. Further, it was noted that those who were experts in project management there were continuously involved in project implementation.

Musomba, Kerongo, Mutua and Kilika (2013) investigated factors affecting tracking and evaluation of initiatives based on constituents' needs within the Changanwe constituency. The purpose of the research was to evaluate the impact that politics, citizen participation, organization setting, and training have on evaluation and monitoring. Causal sampling was utilized to choose the 31 respondents who were engaged in the administration of CDF-based initiatives, and narrative research methodology was employed to conduct the study. In order to examine the data, descriptive statistics were used. It was found that there were low levels of training and no clear institutional framework for monitoring and evaluation. There was limited involvement of stakeholders and high level of political influence. There was need to analyze the data using inferential statistics such as regression analysis to examine the influence training, budgetary allocation, stakeholder's participation, politics and institutional framework on monitoring and evaluation.

Ouma and Kiarie (2017) evaluated the engagement of stakeholders and the viability of a National Government Constituency fund development project in the Nakuru East constituency using a correlation research approach and the use of primary data. Stakeholder's involvement in project implementation had no significant effect on project sustainability. The study poses contextual gaps since NG-CDF projects are funded by the national government

unlike the current project which is donor funded. Ochungu and Awiti (2017) revealed that passive participation negatively affected project sustainability in Homa bay County. Further, interactive and functional participation had positive and significant effect on project sustainability. Moreover, optimum participation positively affected project sustainability. Since there were heterogeneous projects that were supported by plan international the results may not be generalized in the case of solar energy projects.

Through descriptive research design and primary data Jean and Tarus (2021) examined the effect of stakeholders' participation in sustainability of community-based projects in Rwanda. Positive significant effect of interactive and passive participation on sustainability of community-based projects in Rwanda was found. A localized study is paramount to bridge contextual gaps linked with differences in economic and political aspects that may implications on adoption of renewable energy. Moreover, diagnostic tests may have eroded odds of drawing biased conclusions.

Magero and Muchelule (2019) found that stakeholder' participation affected sustainability of women funded project. Mixed methods may have been adopted. Further, since the study was limited to a single project it was appropriate to incorporate project beneficiaries as respondents. Wamuyu and Cheluget (2019) found positive influence of the participation of stakeholders on the long-term viability of projects in Nyeri teaching and referral hospital. Furthermore, health facilities are devolved units whose model of operations differs from solar energy project implemented by non-governmental organization.

## **2.7 Theoretical Framework**

### **2.7.1 Stakeholders Theory**

Stakeholders' theory was developed by Freeman (1984). The theory argues that whenever an organization is making strategic decision it ought to be concerned about stakeholder's interest. The theory aids in management of interface between competing demands among heterogeneous organization stakeholders who may accrue direct or indirect benefits from a project. Ackermann and Eden (2018) asserts that in all circumstances strategic management aims at actual stakeholders determination, exploration of dynamic groups influence on a certain project and adoption of most optimal project implantation model. Friedman and Miles (2019) argue that stakeholder's engagement is paramount for project sustainability since every action cascade reaction among heterogeneous stakeholders.

Inclusiveness approach during project life cycle minimizes odds of project rejection among different stakeholders. Sternberg (1997) allude that stakeholder's engagement aids in ease of distribution of critical project resources and eradication of disappointments linked to pursue of conflicting projects that resources spillage due to lack of focus. Blackburn (2019) calls for caution during stakeholders' engagement since there is a wide representation of different groups whose interest inclusivity and coherence is rarely achievable. Harrison, Freeman and Abreu (2019) argue that through stakeholders' engagement project value can be amplified. This is only possible through improvement of stakeholders' quality of discussion, working environment, consumer base, local development and reputation. The theory is appropriate in



the study since there is need for stakeholders' engagement in governance structure, capacity building, resources mobilization and monitoring and evaluation to enhance odds of project success.

### **2.7.2 Agency Theory**

Jensen and Meckling (1976) argue that management of any corporate entity is delegated to agents. Power separation yields agency costs that must be incurred as a result of this relationship. Though locals are the end beneficiaries of project implementation, they are odds of other stakeholders such as elected leadership to have influence on community projects. Separating ownership and control leads to conflicts. If community projects are undertaken in conflicting environment there will be minimal chances of sustainability and acceptance.

Agency theory precipitates creation of agency conflicts as stipulated in risk sharing by different project entities (Arrow, 1971). Different stakeholders involved in project life cycle have different risk tolerance. For instance, project implementers may be prepared to be exposed to higher risks for superior economic gains as compared to those interested for short term goals. Moreover, Mitnik (1975) argues that they are agency conflicts those hails from institutional framework. These frameworks are associated with creation and segregation of decision making. In some instances, decision made by project stakeholders may not be a true reflection of community needs. The theory fits the study since there is need for provision of appropriate leadership, formation of local committees and election of project leadership by

locals. Moreover, there is need for consideration of engagement in capital building so as to optimize sustainability of community-based projects.

#### **2.7.4 Resources Mobilization Theory**

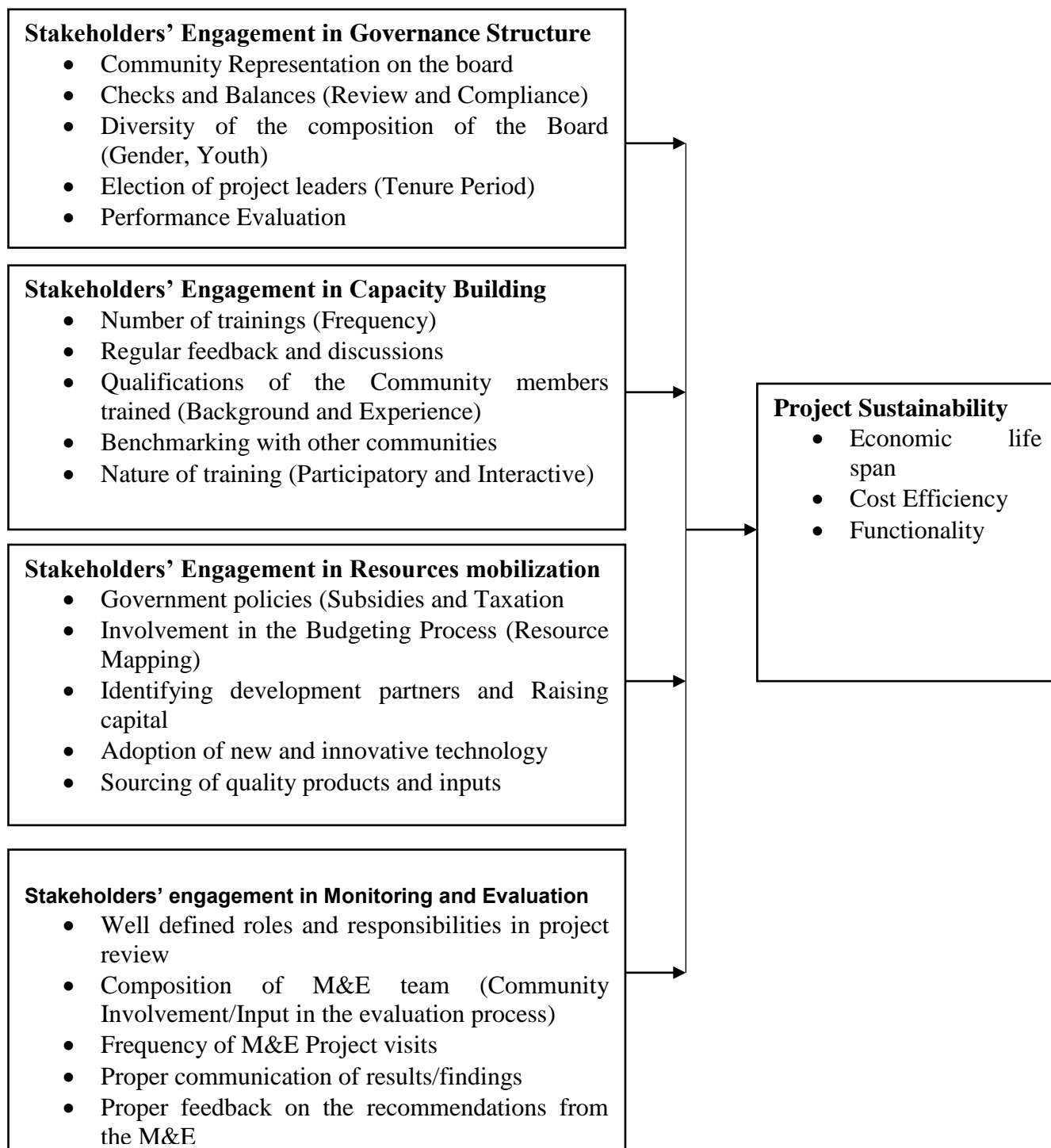
Resources mobilization theory was developed by McCarthy and Zald (1987). The theory aims at challenging social breakdown and erosion of theoretical arguments that purports those collective actions are stimulated by individual actions (Heitzman, 1990). Though, grievances are necessary they are not sufficient to amplify rise of conflicts which are common in societies. In addition, to formation of society movements organizations ought to mobilize resources which are not limited to money and labour (Kelly, 2011). The theory focuses in identification of membership network structure that hastens resources whose flow stimulates pursuance of survival goals. Resources can be sourced from formal and informal social networks upon creation of social infrastructures (McCarthy, 1987).

The theory assumes that there is a collection of social movement organization that works towards mobilizing financial, media and alliances that supports though their success is contingent to current and past leadership support. Grievances and dissents may not solely achieve anticipated change then resources ought to be adequately raised. Those involved in resources mobilization are rational and only considers actions whose benefits exceed costs (Kelly, 2011).

Implementers of solar energy projects in Busia County ought to ensure that they have mobilized adequate resources from its inception. The theory considers that there are benefits to be accrued by different project stakeholders in heterogeneous phases of project implementation life cycle. Thus, there is need for examination of project compliance of its beneficiary needs. The theory supports the study through elucidation on value contribution of resources mobilization (resources acquisition, resources mapping and resources management) on project sustainability.

## **2.8 Conceptual Framework**

A framework that depicts the link of variables under consideration. This research hypothesizes a link between project sustainability and stakeholders' engagement in the governance structure, stakeholders' engagement in capacity building, stakeholders' engagement in resources mobilization and stakeholders' engagement in monitoring and evaluation.



**Independent variables**

**Dependent variable**

**Figure 1:** Conceptual Framework

## **2.9 Summary of Literature Review**

This chapter has literature review that demonstrate stakeholder involvement and the sustainability of community-based projects. Several research gaps, including methodological, conceptual, contextual, and population gaps, have been identified through empirical examination. Methodological gaps are associated with data selection, research design, and data analysis approaches. Despite the fact that several studies used parametric statistical approaches, they did not disclose on their respective diagnostic tests, which increased the likelihood of drawing biased conclusions. Furthermore, while quantitative data has limitations, there was a need to consider supplementing it with qualitative data. Contextually, the studies have leaned toward NG-CDF projects. Since these projects are rarely undertaken in the energy sector, there is a need to examine sustainability in the energy sector. Conceptually, stakeholders' participation has been operationalized differently, necessitating the need for, elucidation of antecedents of green energy project sustainability. Research gaps and focus of the study is as summarized in Table 1 below.

**Table 1: Summary of Research Gaps**

<b>Author (s)</b>	<b>Study Focus</b>	<b>Findings</b>	<b>Knowledge Gaps</b>	<b>Focus of the current study</b>
Ouma and Kiarie (2017)	Examined role of stakeholders' involvement on sustainability of NG-CDF project in Nakuru East Constituency.	There is no substantial impact on the project's viability from the execution of the project. The sustainability of the project was favorably impacted by participation in the project's planning, monitoring and control, and identification processes.	The study has contextual gaps since its unit of analysis was government funded project.	The study focused on project funded by NGOs that exists upon implementation of solar energy projects.
Irfan and Hassan (2019)	Evaluated effect of project governance on project success in public sector organization.	Positive effect of governance structure on project sustainability was reported.	The study was limited to a single project hence has limitations association with unit of observation and analysis.	The study focused on project funded by NGOs that exists upon implementation of solar energy projects.
Kariuki (2018)	Studied effect of project leadership style on performance of water projects in Kenya.	Leadership style did not significantly affect performance of water projects in Kenya.	Due to the fact that the research was conducted in the water industry and investigated the influence that leadership style has on performance, there are conceptual and contextual gaps in the study.	The research concentrated on non-governmental organization (NGO) financed programs that already exist following the deployment of solar energy projects.

<b>Author (s)</b>	<b>Study Focus</b>	<b>Findings</b>	<b>Knowledge Gaps</b>	<b>Focus of the current study</b>
Adam and Omer (2015)	Examined antecedents of project sustainability in South Sudan after the exit of founder member.	There was significant effect of institutional, human, productive and environmental capability in regard to the long-term viability of community-based programs.	The research presents population gap since the study drew respondents from Sudan as compared to Busia County in Kenya.	The study focused on project funded by NGOs that exists upon implementation of solar energy projects.
Palian et al., (2020)	Studied the effect of human capital on organization performance in a case of sustainable issues of E-commerce firm.	Human capital development has significant effect on sustainable of E-commerce firms.	The study poses methodological gaps since it did not disclose diagnostic tests for the choice of parametric statistics.	The study focused on project funded by NGOs that exists upon implementation of solar energy projects.

## **CHAPTER THREE**

### **RESEARCH METHEDODOLOGY**

#### **3.1 Introduction**

This section explains the enquiry approach the study employed. The research design is the process that determines how the study will be carried out from conception to completion. Methodological choices are stated and justified.

#### **3.2 Research Design**

The logical framework that guides how data research should be carried out is known as research design (Saunders, Lewis & Thornhill, 2018). Furthermore, Sekaran and Bougie (2017) state that research design provides a clear roadmap for achieving research objectives. According to Kothari (2016), descriptive research designs are appropriate when the research aims to answer questions about when, what, why, and how in relation to the subject under consideration. The research analyzed both qualitative and quantitative information to come to a conclusion on the role that participation from various stakeholders plays in determining the lengthy survival of a solar energy project in Busia County.

#### **3.3 Target Population**

Study populace is a consolidated list of individuals in a study (Saunders et al., 2014). Moreover, Sekaran and Bougie (2017) assert that target population has a collection of features that are utilized in extrapolation of study results. The unit of analysis is 10 solar



energy project sites with a target population of 1849 customers who have been connected to the solar energy in Busia County. These customers are spread across ten sites: Makhurisi, Mudorikho, Mumbanga, Mufumu, Mukhwayo, Namagumba, Dirakho, Buyende, Akadetewai, and Syamakhanga. The number of beneficiaries in each location is shown in Table 2.

**Table 2: Target Population**

<b>Solar Energy Project Site</b>	<b>Target Population</b>
Makhurisi	98
Mudorikho	221
Mumbanga	231
Mufumu	210
Mukhwayo	205
Namagumba	156
Dirakho	292
Buyende	167
Akadetewai	155
Syamakhanga	114
<b>Total</b>	<b>1849</b>

### **3.4 Sample Size and Sampling Technique**

Participants' selection criterion is known as sampling technique (Sekaran & Bougie, 2017). The sampling technique used is determined by the target population, which can be countable or uncountable (Cooper & Schindler, 2017). The sampling method chosen is either probabilistic or not. Respondents in probabilistic sampling have equal chances of being chosen, in-contrast there is need for definition of inclusion and exclusion procedure.

### 3.4.1 Sample Size Determination

A sample is a representative subset of the people who participated in a research (Gilliland, McKemmish & Lau 2017). Krejcie and Morgan's(1970) method of determining sample sizes was used in the process of determining sample sizes. From Morgan and Krejcie Table, for a target population of 1849, a sample size of 319 was obtained as shown in Table 3 below.

**Table 3: Sample Size**

<b>Solar Energy Project Site</b>	<b>Study Population</b>	<b>Sample Size</b>
Makhurisi	98	17
Mudoriko	221	38
Mumbanga	231	40
Mufumu	210	36
Mukhwayo	205	35
Namagumba	156	27
Dirakho	292	50
Buyende	167	29
Akadetewai	155	27
Syamakhanga	114	20
<b>Total</b>	<b>1849</b>	<b>319</b>

### 3.4.2 Sampling Technique

Using a technique known as stratified sampling, representatives of the study population who benefited from the specific solar project were selected at random for sampling. This yielded a sample of 319 respondents. Saunders et al., (2018) defines stratified sampling as the sampling process that sub divides the target population into small groups whose characteristics are homogeneous. From each stratum a sample size that is proportionate to the target population was obtained. Further, samples from each stratum were consolidated to

yield the study sample. In this study there were 10 strata that constitute beneficiaries of respective solar energy projects in Busia County. Sekaran and Bougie (2017) advocate for the use of stratified sampling so as to enable sample selection with minimal bias. Population stratification is appropriate so as to ensure that each segment is chosen carefully for the research to ensure its success (Kothari, 2016). 319 people participated in the research as part of the sample population and were drawn from 10 solar energy projects in Busia County.

**Table 4: Sampling Technique**

<b>Solar Energy Project Site</b>	<b>Study Population</b>	<b>Sample Size</b>	<b>Sampling Technique</b>
Makhurisi	98	17	Stratified sampling
Mudorikho	221	38	Stratified sampling
Mumbaka	231	40	Stratified sampling
Mufumu	210	36	Stratified sampling
Mukhwayo	205	35	Stratified sampling
Namagumba	156	27	Stratified sampling
Dirakho	292	50	Stratified sampling
Buyende	167	29	Stratified sampling
Akadetewai	155	27	Stratified sampling
Syamakhanga	114	20	Stratified sampling
<b>Total</b>	<b>1849</b>	<b>319</b>	

### 3.5 Data Collection Instruments

During data collection, primary data gathered through structured questionnaires was used in the study. Before the data gathering began, research assistants were hired and given training in preparation to help with the data acquisition. In order to aid in overcoming language obstacles among those who would benefit from the initiative, data collectors were recruited from the local community. Questionnaire parts were: Part A which requested demographic

information from respondents. Part B which sought information on stakeholders' engagement in the governance structure, capacity building, resources mobilization and monitoring and evaluation affecting project sustainability. Part C which sought information on project sustainability. The sample questionnaire is provided in Appendix II.

### **3.6 Reliability and Validity of Research Instruments**

The procedure of administering research tool to actual examination is known as pilot testing. Saunders, et al., (2014), pilot testing is conducted before to assess the clarity of questions, the time required to respond to items, and the ability to comprehend interview questions. Beneficiaries of the solar project were chosen for a sample of ten respondents. According to Kothari (2016), recommended that pretesting be carried out on a sample that constitutes at least 10% of the total sample size of the research. Furthermore, during piloting, the researcher is able to correct errors. The pilot testing was done in a similar community solar energy project Siaya County. This was selected due to its closeness and similarity in characteristics with Busia County.

#### **3.6.1 Reliability of Research Instrument**

The chances that a research instrument will produce results that are identical when administered to different groups are referred to as its reliability (Cooper & Schindler, 2018). There are various approaches to examining reliability, including but not limited to split half, test rest, and the use of the Cronbach Alpha coefficient was used in this study. Sekaran and

Bougie (2017) asserts that reliability coefficient ranges from 0 to 1. Furthermore, Bryman and Bell (2020) allude that a minimum of 0.7 score of Cronbach Alpha coefficient is acceptable in social sciences. In the current study Cronbach Alpha coefficient of 0.7 would be deemed acceptable in this research.

### **3.6.2 Validity of Research Instrument**

This is an evaluation of the investigation material's capability to measure the constructs for which it was designed (Saunders et al., 2018). The researcher relied on the supervisor's expatriate opinion, and the panel to whom the presentation was given to examine the content validity. Furthermore, the development of the research tool was guided by an empirical literature review.

### **3.7 Data Collection Procedure**

Before data collection an introduction letter was sought from the University of Nairobi, Faculty of Business and Management. A copy of the letter of introduction is provided in Appendix I. Further, research permit was applied from National Commission for Science Technology and Innovation (NACOSTI). In addition, the researcher wrote a letter detailing value of the study and purpose of data collection. Drop and pick procedure was applied during the data collection. Regular follow ups were done regularly to confirm completion of the study. Data collection process took one and a half weeks.

### 3.8 Data Analysis

Before importing the data into SPSS version 24, the encoding and cleansing of the data was undertaken. Methods of inferential and descriptive statistics were used in the process of quantitative data analysis. In addition to statistical procedures, descriptive techniques such as mean, frequency, percentage, and standard deviation were utilized. Multiple regression constituted inferential statistics. Study model used was of the form:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where

Y is Project sustainability

$\beta_0$  is a Y intercept

$\beta_1$  to  $\beta_4$  are slope coefficients.

$X_1$  is Stakeholders' engagement in governance structure

$X_2$  is Stakeholders' engagement in capacity building

$X_3$  is Stakeholders engagement in resources mobilization

$X_4$  is Stakeholders engagement in monitoring and evaluation

E is the error term

Table and figures were used to present findings. A 95% confidence level was used.

Qualitative data was analysed using thematic analysis.

### **3.9 Ethical Consideration**

Prior to the actual research, a letter of introduction to the study was requested from the University of Nairobi and then utilized in the application for a research permission submitted to NACOSTI. Further, this study did not engage in any sort of information falsification, and every material that was mentioned was appropriately referenced and cited. A copy of the Introduction Letter and the Permit are provided in Appendix I and II respectively.

To enhance confidentiality, the researcher ensured participants' information was not disclosed and anonymous identification procedure was applied for education purposes. Collected data was stored in secured area with restricted access. All study protocols were adhered with for each individual participant in the study. All participants were requested not to include their personal information in data collection instruments. A copy of the questionnaire is provided in Appendix III.

### **3.10 Operationalization of the Variables**

The operational definition of the parameters that were utilized in the research may be viewed in Table 5. The matrix elucidates independent and dependent variables, measurement scale, data collection tool and data analysis procedure.

**Table 5: Operationalization of Variables**

<b>Objective</b>	<b>Variable</b>	<b>Indicators</b>	<b>Measurement scale</b>	<b>Data Analysis</b>	<b>Tools for data techniques</b>
To determine the how stakeholders' engagement in governance structure has influence solar energy project sustainability in Busia County.	Governance structure	Community Representation on the board	Ordinal	Mean and Standard Deviation	Questionnaire
		Checks and Balances (Review and Compliance)			
		Diversity of the composition of the Board (Gender, Youth)			
		Election of project leaders (Tenure Period)			
		Performance Evaluation			
To examine how stakeholders' engagement in capacity building influence sustainability of solar energy projects in Busia County.	Capacity building	Number of trainings (Frequency)	Ordinal	Mean and Standard Deviation	Questionnaire
		Regular feedback and discussions			
		Qualifications of the Community members trained (Background and Experience)			
		Benchmarking with other communities			
		Nature of training (Participatory and			



<b>Objective</b>	<b>Variable</b>	<b>Indicators</b>	<b>Measurement scale</b>	<b>Data Analysis</b>	<b>Tools for data techniques</b>
		Interactive)			
To determine whether stakeholders' engagement in resources mobilization has influence on sustainability of solar energy projects in Busia County.	Resources mobilization	Government policies (Subsidies and Taxation	Ordinal	Mean and Standard Deviation	Questionnaire
		Involvement in the Budgeting Process (Resource Mapping)			
		Identifying development partners and Raising capital			
		Adoption of new and innovative technology			
		Sourcing of quality products and inputs			
To establish whether stakeholders' engagement in monitoring and evaluation has influence on sustainability of solar projects in Busia County.	Monitoring and evaluation	Well defined roles and responsibilities in project review	Ordinal	Mean and Standard Deviation	Questionnaire
		Composition of M&E team (Community Involvement/Input in the evaluation process)			
		Frequency of M&E Project visits			
		Proper communication of results/findings			

Objective	Variable	Indicators	Measurement scale	Data Analysis	Tools for data techniques
		Proper feedback on the recommendations from the M&E			
	Project sustainability	Economic life span	Ordinal	Mean and Standard Deviation	Questionnaire
Cost efficiency					
Functionality					

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

#### 4.1 Introduction

The section provides an analysis, interpretation, demonstration, and discussion of the study's findings, with a focus on the following thematic areas: stakeholders' engagement in governance structure; capacity building; resources mobilization; and monitoring and evaluation with the goal of maintaining the targeted solar projects. The data collected was analyzed using descriptive statistics and presented in form of tables and charts.

#### 4.2 Response Rate

This study sampled 319 respondents. The questionnaires were given to the entire sample, but only 303 were returned. This gives a response rate of 94.98% as shown in table 6, which was appropriate for the study.

**Table 6: Response Rate**

<b>Targeted</b>	<b>Actual</b>	<b>Response Rate (%)</b>
<b>319</b>	303	94.98

#### 4.3 Reliability Test

The reliability score was calculated to determine the reliability of the study variables as shown below.

**Table 7: Tests of Reliability**

<b>Cronbach's Alpha</b>	<b>No. of Items</b>
<b>0.942</b>	<b>64</b>

The reliability values were above 0.6 as recommended by Hair et al. (2014), and thus the results depicts that the variables used to establish the influence of stakeholders' engagement on the sustainability of solar energy projects in Busia County, Kenya were reliable to make valid conclusions.

### **4.3 Demographic Information**

The demographic information provides an overview of the participants regarding the distribution of gender, occupation and other statistics, They are essential in establishing whether or not the participants in the research are representative of society being sampled and the community being targeted. The demographic information of the participants in this research, including their gender, age, marital status, position within the family, degree of education, and power of connections, was analyzed.

#### **4.3.1 Gender**

This study assessed the gender distribution of the study responses sampled from the various solar project sites in Busia County. The results are presented in the table 8 below.

**Table 8: Distribution of responses by Gender**

<b>Response Categories</b>	<b>n</b>	<b>%</b>
Male	138	46%
Female	165	54%
<b>Total</b>	<b>303</b>	<b>100%</b>

The study results indicate that out of 303 respondents, 165 (54%) were female while the 138 (46%) were male. These results indicate that women respondents provided more information, which may be explained by the men's absence from their homes during the time of the study.

#### **4.3.2 Age Distribution**

The study aimed to determine the respondents' ages, and table 9 below lists the respondents' age categories.

**Table 9: Age Group**

<b>Response Categories</b>	<b>n</b>	<b>%</b>
18-35	67	22%
36-50	98	32%
51 and Over	138	46%
<b>Total</b>	<b>303</b>	<b>100%</b>

The results showed that 67 (22%) were aged between 18 and 35 years old while the majority of 138 (46%) were aged above 50 years. The findings show that solar power projects were more common in older age groups than in younger populations.

### 4.3.3 Marital Status

Marital status of respondents influences the uptake levels among large families. The table 10 presents the responses on marital status.

**Table 10: Marital Status**

<b>Response Categories</b>	<b>n</b>	<b>%</b>
Single	55	18%
Married	128	42%
Widowed	88	29%
Separated	32	11%
<b>Total</b>	<b>303</b>	<b>100%</b>

The results showed that 55 (18%) indicated to be single while 128 (42%) were married. The results indicated that larger households with many solar energy users accounted for roughly half of the population.

### 4.3.4 Position in the Household

Households' head make important decisions regarding the adoption of solar energy projects. The results on the responses position in the family structure is demonstrated in table 11.

**Table 11: Respondent Position in the Household**

<b>Response Categories</b>	<b>n</b>	<b>%</b>
Household head	124	41%
Spouse of household head	131	43%
Child of household head	48	16%
<b>Total</b>	<b>303</b>	<b>100%</b>

The results indicate that 124 respondents were household heads while 131 (43%) were spouses to the heads. This indicated that many of the solar project beneficiaries were heads of their homes and thus interacted with the project sponsors.

#### **4.3.5 Level of Education**

The analysis of respondents' level of education aids in understanding the level of knowledge with regard to providing information on the variation of solar energy projects and stakeholder engagement in Busia County, Kenya.

**Table 12: Level of Education**

<b>Response Categories</b>	<b>n</b>	<b>%</b>
Degree	16	5%
Diploma/Certificate	103	34%
Secondary	118	39%
Primary	66	22%

<b>Response Categories</b>	<b>n</b>	<b>%</b>
<b>Total</b>	<b>303</b>	<b>100%</b>

Table 12 above shows that of the 303 responses, 16 (5%) had bachelor’s degree,103 (34%) attained diplomas and certificates while 66 (22%) had primary level education. The majority of the responses indicated they had secondary education. Therefore, it seems from the statistics that the majority of responses could comprehend the basics of solar energy projects including the role of stakeholders in its sustainability.

#### **4.3.6 Power Connection Status**

Solar energy projects aim to provide reliable lighting energy source to households that are mostly not connected to the national grid. In this regard, the results are presented in table 13.

**Table 13: Power Connection Status**

<b>Response Categories</b>	<b>n</b>	<b>%</b>
Yes	288	95%
No	15	5%
<b>Total</b>	<b>303</b>	<b>100%</b>

The results indicate that 288 (95%) of the respondents were connected to the power and were actively using it while 5% did not.



#### 4.4 Stakeholders' Engagement in Governance Structure

In this study, the dimensions of stakeholders' engagement and governance measured the aspects of community representation in the project implementation management, checks and balances (review and compliance), diversity of the composition of the board (gender, youth), election of project leaders (tenure period) and performance evaluation. Each aspect was operationalized in terms of five perception statements, against which respondents were requested to indicate their views on a five-point Likert scale, calibrated as 'strongly agree', 'agree', 'neutral', 'disagree' and 'strongly disagree'. The views expressed by the respondents are presented in subsequent sections.

**Table 14: Analysis of Stakeholder Engagement in Project Governance**

N=303		1	2	3	4	5	Mean	SD
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
Involvement of the community through representation on the project implementation team positively influences the sustainability of the project	n	10	56	85	89	63	3.46	1.110
	%	3.3%	18.5%	28.1%	29.4%	20.8%		
Board diversity with the inclusion of women and youth enhances acceptance by the community and sustainability	n	31	74	87	65	46	3.07	1.213
	%	10.2%	24.4%	28.7%	21.5%	15.2%		
Having a well-defined period of tenure of the project implementation team enhances the performance of the project	n	11	56	65	91	80	3.57	1.166
	%	3.6%	18.5%	21.5%	30.0%	26.4%		
The performance of the project as a whole is improved, and the lifespan of the project is helped by periodic evaluations of the members of the project team.	n	10	33	73	97	90	3.74	1.097
	%	3.3%	10.9%	24.1%	32.0%	29.7%		

N=303		1	2	3	4	5	Mean	SD
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
Having proper checks and balances through regular review of the governance processes improves project sustainability	n	16	49	69	82	87	3.58	1.208
	%	5.3%	16.2%	22.8%	27.1%	28.7%		

The results showed that majority of responses (89, 29.4%) agreed that involvement of the Community through representation in the project implementation team positively influenced the sustainability of the project, as compared to 56 (18.5%) who disagreed with the assertion. On the same note, 30% admitted that having a well-defined period of tenure of the project implementation team enhances the performance of the project, as compared to 4% who strongly disagreed. About 87 (28.7%) disagreed that board diversity with the inclusion of women and youth enhances acceptance by the community and sustainability, whereas 15% strongly agreed. The results thus demonstrate that even though gender balance in project management was a core concern among many organizations, the solar energy project beneficiaries were yet to adopt that fact. In addition, many responses (97, 32%) agreed that periodic evaluation of the members of the project team enhanced the performance of the project and helps secure its longevity while 29% strongly agreed that having proper checks and balances through regular review of the governance processes improves project sustainability. The adoption of internal controls such as monitoring and evaluation frameworks that assessed performance and expectations of the projects were therefore crucial for the overall project health and sustenance.

The results demonstrated that community representation (mean=3.46, SD=1.1), checks, balances (mean=3.57, SD=1.1) and tenure period of the project implementation team (mean=3.75; SD=1.), were crucial for the sustainability of solar energy projects in Busia County, while gender balance in the board composition had marginal influence (mean=3, SD=1.2).

The results further evidenced the belief that stakeholder involvement in governance of the solar projects was crucial for sustainability given the overall mean of 3.58 (SD=1.2), indicating that over 70% consistently believed that the mentioned aspects were crucial for sustainability of the solar energy projects.

#### 4.5 Stakeholders' Engagement in Capacity Building

The study requested the participants to indicate their views regarding the capacity building points as indicated below.

**Table 15: Analysis of Stakeholder Engagement in Capacity Building**

N=303	1	2	3	4	5	Mean	SD
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
Having frequent trainings helps improve the overall project performance in the long run	21 % 6.9%	57 18.8%	73 24.1%	95 31.4%	57 18.8%	3.36	1.183
Carrying out benchmarking with other communities who have carried out similar projects helps ensure the success of the project	35 % 11.6%	79 26.1%	86 28.4%	57 18.8%	46 15.2%	3.00	1.232
The nature of trainings whether practical and participatory on non-Interactive has a bearing	17 % 5.6%	52 17.2%	81 26.7%	90 29.7%	63 20.8%	3.43	1.158

on project sustainability							
The qualifications of the community members trained, both in their background and experience greatly affects project outcomes	23 % 7.6%	35 11.6%	63 20.8%	95 31.4%	87 28.7%	3.62	1.223
Having regular feedback and discussions with the project beneficiaries reduces project misconceptions improves participation and sustainability of community projects	14 % 4.6%	41 13.5%	56 18.5%	98 32.3%	94 31.0%	3.72	1.171

According to the analysis, the majority of the respondents (95, or 31.4%) agreed that having frequent trainings helps improve the overall project performance in the long run, whereas 21 strongly disagreed. As for carrying out benchmarking with other communities who have carried out similar projects helps ensure the success of the project, 28% are neutral against 35 (11%) who strongly disagree with the statement. Similarly, compared to 5.6% who strongly disagreed, 20.8% strongly agreed that the nature of trainings whether practical and participatory on non-Interactive had a bearing on project sustainability. While 95 (31.4%) agreed, about 63 (20.8%) remained neutral that the qualifications of the community members trained, both in their background and experience greatly affects project outcomes. In addition, the majority of replies (94, 31%) strongly agreed that having regular feedback and discussions with the project beneficiaries helps eliminate common project misunderstandings greatly enhances involvement in community initiatives and ensures their continued success.

According to the data, almost 70 percent of those who participated regularly rated feedback and qualifications as vital elements for project sustainability (mean > 3.5). The findings also show benchmarking initiatives were less influential in building capacity as compared to

regular trainings. Many project beneficiaries thus saw capacity building as important management and sustainable aspect for programming solar energy projects in Busia County.

#### 4.6 Stakeholders' Engagement in Resources Mobilization

The results in Table 16 presents the respondents perceptions regarding the resource items.

**Table 16: Analysis of Stakeholder Engagement in Resource Mobilization**

		1	2	3	4	5		
		<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>	<b>Mean</b>	<b>SD</b>
Involvement of the community in the budget making process and mapping of project resources enhances the overall project performance	n	14	47	62	97	83	3.62	1.171
	%	4.6%	15.5%	20.5%	32.0%	27.4%		
The involvement of the community in mobilizing for funding and identifying project partners improves the acceptance and overall sustainability	n	27	42	93	94	47	3.30	1.155
	%	8.9%	13.9%	30.7%	31.0%	15.5%		
The adoption of new and innovative technologies and suggestions from the community improves efficiency of the projects	n	57	80	59	71	36	2.83	1.303
	%	18.8%	26.4%	19.5%	23.4%	11.9%		
Involvement in the sourcing of quality products and inputs, particularly in the community of installation enhances acceptance of the project	n	18	33	62	97	93	3.71	1.181
	%	5.9%	10.9%	20.5%	32.0%	30.7%		
Local government policies and the advocacy of policies like local permits and subsidies has a bearing on the overall project sustainability	n	14	30	81	80	88	3.68	1.145
	%	4.8%	10.2%	27.6%	27.3%	30.0%		

The findings found that the vast majority of responses (97, or 32%) felt that including members of the community in the process of developing the budget and mapping the

resources available for the project increased the overall project performance, whereas 14 strongly disagreed with the assertion. Similarly, 47 (15%) strongly agreed that the involvement of the community in mobilizing for funding and identifying project partners improves the acceptance and overall sustainability, as compared to 42 (13.9%) who disagreed with the assertion. On the same note, 107 of the 303 participants admitted that the adoption of new and innovative technologies and suggestions from the community improved efficiency of the projects, as compared to 19.5% who remained neutral. About 93 (30.7%) strongly agreed that the involvement in the sourcing of quality products and inputs, particularly in the community of installation enhances acceptance of the project while 33 (10.9%) disagreed. In addition, many responses (88, 30%) strongly that local government policies and the advocacy of policies like local permits and subsidies has a bearing on the overall project sustainability, whereas 14 (4.8%) has contrary opinions. The results thus demonstrate that the respondents perception regarding the resources were highly positive for government policies (mean=3.68, SD=1.1), sourcing for quality inputs (mean=3.71, SD=1.1) and involvement in budgeting processes (mean=3.62, SD=1.1) by the stakeholders, and moderate for adoption of new technologies (mean=2.83, SD=1.3). The results evidence the resources are crucial parts of a project and determines the sustainability. As such, stakeholders must constantly be engaged to ensure quality, effectiveness and adherence to policies.

## 4.7 Stakeholders' Engagement in Monitoring and Evaluation

The findings on the levels of participation of various players in the project evaluation initiatives is presented in table 17 below.

**Table 17: Analysis of Stakeholders Engagement in M&E**

		1	2	3	4	5	Mean	SD
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
Having clearly defined roles and responsibilities of all parties in the review process helps minimize conflicts and works to guarantee that the initiative will be an accomplishment	n	10	22	90	98	83	3.73	1.043
	%	3.3%	7.3%	29.7%	32.3%	27.4%		
Inclusion of the community in the composition of the M&E team helps ensure project efficiency and its long term success	n	13	28	67	103	92	3.77	1.108
	%	4.3%	9.2%	22.1%	34.0%	30.4%		
The frequency of visits and meetings by the members of the project M&E committee acts as a safeguard to ensure optimal outcomes	n	36	57	85	79	46	3.14	1.230
	%	11.9%	18.8%	28.1%	26.1%	15.2%		
Having proper feedback on the recommendations by the M&E helps improve the expected overall project outcomes and its sustainability	n	7	18	84	106	88	3.83	0.991
	%	2.3%	5.9%	27.7%	35.0%	29.0%		
Having proper communication, and periodic meetings with the project implementation team helps enhance its overall sustainability	n	80	92	66	43	22	2.46	1.223
	%	26.4%	30.4%	21.8%	14.2%	7.3%		

The findings revealed that the vast majority of interviewees (98, or 32.3%) concurred that having clearly defined roles and responsibilities of all parties in the review process helps

minimize conflicts and works to ensure the success of the project. Similarly, 30.4% strongly agreed that inclusion of the community in the composition of the M&E team helps ensure project efficiency and its long term success. On the same note, 28.1% were neutral that the frequency of visits and meetings by the members of the project M&E committee acts as a safeguard to ensure optimal outcomes, as compared to 15% who strongly agreed. About 88 (29%) strongly agreed that having proper feedback on the recommendations by the M&E helps improve the expected overall project outcomes and its sustainability. In addition, many responses (92, 30%) disagreed that having proper communication, and periodic meetings with the project implementation team helps enhance its overall sustainability. The results thus demonstrate that whereas the aspects of clearly defined roles (mean=3.74; SD=1), team composition (mean=3.77, SD=1.1) and proper feedback on recommendations (mean=3.83; SD=0.9) were perceived to be crucial for sustainability, communication of the result findings (mean=2.46, SD=1.2) was not.

The results further evidence the belief that monitoring and evaluation frameworks are crucial for the solar energy projects as they enhance efficiency and relevance of the project goals in relation to output, outcome and impact.

#### **4.8 Multivariate Analysis**

Linear regression model assumes that the data follows a normal distribution. The subsections below present the tests performed to ascertain the suitability of datasets for linear regression.



#### 4.8.1 Normality Test

Normality tests are used to determine if a data set is well modelled by a normal distribution and to compute how likely it is for a random variable underlying the data set to be normally distributed. The study used the Kolmogorov–Smirnov test was applied to test the normality of the dataset, given the sample size was larger than 50.

**Table 18: Kolmogorov-Smirnov Normality Test**

	<b>Statistic</b>	<b>df</b>	<b>Sig.</b>
Project Sustainability	0.128	303	0
Governance structures	0.135	303	0
Capacity building	0.124	303	0
Resource mobilization	0.181	303	0
M&E	0.121	303	0

The results indicate that all the variables under study passed the normality test and therefore fit for regression analysis.

#### 4.8.2 Multi Collinearity Test

Before the variables were included in the regression analysis, the researcher performed collinearity diagnostics to identify possible inter-correlations between independent variables, with significant effects on the accuracy of regression model in explaining stakeholders' engagement in solar energy projects sustainability.

A key goal of regression analysis is to isolate the relationship between each independent variable and the dependent variable and therefore highly correlated variables will likely misrepresent a unit change in the related variables.

The variance inflation factor (VIF) was used to identify correlation between independent variables and the strength of that correlation.

**Table 19: Multi-collinearity Tests**

Variable	Collinearity Statistics	
	Tolerance	VIF
Governance structure	.600	1.665
Capacity building	.274	3.656
Resource mobilization	.511	1.958
Monitoring and Evaluation	.255	3.919

In view of this, the analysis revealed no signs of collinearity among the independent variables as none of the VIF values was greater than 5. Furthermore, the model summary show that the regression explains over 50% of the variations, indicating their relevance in explaining solar energy projects sustainability given the predictor variables under study.

**Table 20: Model Summary**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted Square</b>	<b>R</b>	<b>Std. Error of the Estimate</b>
	.817 <sup>a</sup>	.667	.664		.456

The regression model explained 66.7% of the variations in solar energy projects sustainability.

**Table 21: Linear Regression Models**

<b>Model</b>	<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>t</b>	<b>Sig.</b>
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>		
(Constant)	.484	.127		3.810	.000
Governance structure	.234	.023	.267	9.952	.000
Capacity building	.377	.035	.478	10.821	.000
Resource mobilization	.140	.031	.161	4.481	.000
M&E	.131	.044	.155	3.005	.003

From the regression results in table above, all the predictor variables were significant at 95% Confidence Interval (CI). The variables of stakeholders' engagement in governance structure, capacity building, resource mobilization and M&E, were found to be positively associated with solar energy projects sustainability. Further, these correlations were shown to be statistically meaningful at both the 1% and the 5% levels of significance. The discussion of the conclusions of the research centers on the substantial and non-significant variables. The constant value for the model 2 may be derived from the predicted model as  $B=0.484$  ( $t=3.81$ ,

p=.000) meaning that when the associated predictors are equal to zero, project sustainability rose significantly at 5% CI level by 48%.

Stakeholders' engagement in capacity building had the largest effect (B=.377, t=10.821 & p-value=.000), while M&E had the least influence (B=.131, t=3.005 & p-value=.003). The results demonstrate that the respondents felt the M&E aspects were a bit technical and that the reporting systems were not friendly to the project beneficiaries and stakeholders.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents a summary of the study's findings. After that, conclusions are drawn in light of the established link between the identified factors and solar projects sustainability. To close the gap, later policy ideas and other research fields are provided.

#### **5.2 Summary of the Findings**

The analysis demonstrated that community representation (mean=3.46, SD=1.1), checks, balances (mean=3.57, SD=1.1) and tenure period (mean=3.75; SD=1.), were crucial for the sustainability of solar energy projects in Busia County, while gender balance in the board composition had marginal influence (mean=3, SD=1.2). As such, stakeholder engagements in issue of the project governance of the solar projects was crucial for sustainability given the overall mean of 3.58 (SD=1.2). On average, 70% of the responses believed that community representation on the board and in decision making activities pertaining to checks and balances enhanced the overall project outputs and guaranteed sustainability. The study support the findings of Asiachi, Miroga and Otinga (2022) which indicated that project governance and resources mobilization positively affect water project odds of sustainability. In addition, Kyalo (2021) realised that project governance and project team diversity positively influenced sustainable projects.

With regard to capacity building, the analysis realised that over 70% of the respondents approved the feedback and qualifications mechanisms and over 60% approved of the nature and number of trainings geared towards capacity building. The role of stakeholders in such project initiatives prove to be vital for solar energy projects sustainability. The findings support Adam and Omer (2015) assertion that institutional capacity building, human capacity building, productive capacity building, environmental capacity building and women participation had effect on project sustainability. Palian, Farah and Udo (2020) also corroborate the findings by reiterating that the need for development of human capital is to achieve desired objectives. Wawira and Were (2017) argues that active engagement in performance management has a beneficial impact on both risk and quality administration, and thus crucial for project sustainability.

Similarly, the analysis demonstrated that the respondents perception regarding the resources were highly positive for government policies (mean=3.68, SD=1.1), sourcing for quality inputs (mean=3.71, SD=1.1) and involvement in budgeting processes (mean=3.62, SD=1.1) by the stakeholders, and moderate for adoption of new technologies (mean=2.83, SD=1.3). The results evidence the resources are crucial parts of a project and determines the sustainability. As such, stakeholders must constantly be engaged to ensure quality, effectiveness and adherence to policies. The results support Riziki, Atera and Juma (2019) study that indicated positive and significant effect of resources mobilization on sustainability of water projects in Kakamega County. Resources form the backbone of many green energy projects including solar energy and therefore stakeholders must be involved in related

initiatives to ensure adherence to government policies touching on subsidies and taxation, effectiveness of the budget making process, identification of partners sourcing of quality products and inputs.

With regard to stakeholder involvement in M&E affairs of the solar energy projects in Busia, the results demonstrated that whereas the aspects of clearly defined roles (mean=3.74; SD=1), team composition (mean=3.77, SD=1.1) and proper feedback on recommendations (mean=3.83; SD=0.9) were perceived to be crucial for sustainability, communication of the result findings (mean=2.46, SD=1.2) was not. The results further evidence the belief that M&E frameworks are crucial for the solar energy projects as they enhance efficiency and relevance of the project goals in relation to output, outcome and impact. As a result, the study corroborates the study outcomes of Sulemana, et al., (2018) which realized that stakeholder's participation had significant impact of monitoring and evaluation. In addition, Musomba, Kerongo, Mutua and Kilika (2013) contradict the study findings since they realized there was limited involvement of stakeholders and high level of political influence in the CDF projects. Ochunga and Awiti (2017) also revealed that passive participation negatively affected project sustainability in Homa bay County. As such, optimum participation of the stakeholders should be enhanced given it positively affected project sustainability.

### **5.3 Conclusion**

Several variables favour stakeholder's integration into project's governance, capacity building, resource mobilization and M&E activities. The aspect of Stakeholders' engagement

in governance structures included community representation on the board, checks and balances to review performance and compliance; and election of project leaders were deemed crucial for project sustainability. In addition, the aspects of capacity building that had major effects included the frequency of trainings, regular feedbacks and discussions, nature of trainings and qualifications of the members trained on project management.

Further, the aspects that had major impacts on the projects sustainability included government policies such as subsidies and taxes, sourcing of quality products and the decision-making during the budgeting processes. The study also demonstrated that well-defined roles and proper feedback on the recommendations were crucial for the solar energy project's sustainability.

#### **5.4 Recommendations**

Both the demand for green energy projects especially solar energy innovations among the energy deficient communities are rising. The concept of stakeholder engagement in many of the related uptake projects is crucial for their sustainability. As such, the study suggest the following things in light of its findings;

Encourage diversity in the project boards to enhance uptake and healthy processes for the overall sustainable practices. This will enable the solar energy projects to take advantage of different youthful and diverse business models that serve the communities.

In addition, engage in targeted benchmarking initiatives to increase relevance and effectiveness in sustaining solar energy projects. As a result, the stakeholders and the management will be more focused on attaining the goals of green energy projects in the same contexts.



Further, the study recommends adoption of newer technologies, which are efficient and reliable. This would ensure that the beneficiary communities adopt sustainable technologies that are responsive to the community needs and enhance scale ups.

Further, the study recommends new strategies of communicating results as the traditional methods of documentation and presentation are not comprehensive to the common man. The project teams need to communicate results in local languages to enhance deeper understanding by the beneficiary communities. Moreover, the stakeholders should also be trained on the new strategies of communication to improve on understanding of the solar energy technologies and expected impacts.

### **5.5 Areas of Further Research**

Within the framework of stakeholder interactions in Busia County, Kenya, the primary objective of this research has been to identify key influencers of the long-term viability of solar energy projects. The scope of the research was restricted to solar energy projects exclusively; other forms of green energy did not get any attention. As a result, there is a pressing need in Kenya for an investigation that focuses on the solar energy projects in the various peri-urban towns and counties. More research has to be done utilizing several criteria, including sociocultural influences and the development of infrastructure, among other issues.

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## APPENDICES

### Appendix I: Letter of Introduction



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Our Ref: **L50/10301/2018**

November 03, 2022

National Commission for Science, Technology and Innovation  
NACOSTI Headquarters  
Upper Kabete, Off Waiyaki Way  
P. O. Box 30623- 00100  
**NAIROBI**

**RE: INTRODUCTION LETTER: MAINA MERCY PHYLLIS WAMBUI**

The above named is a registered Masters of Arts in Project Planning and Management candidate at the University of Nairobi, Faculty of Business and Management Sciences. She is conducting research on ***"Influence of Stakeholders' Engagement on the Sustainability of Green Energy Projects in Kenya: A Case of Solar Energy Projects in Busia County, Kenya."***

The purpose of this letter is to kindly request you to assist and facilitate the student with necessary data which forms an integral part of the Project.

The information and data required is needed for academic purposes only and will be treated in **Strict-Confidence**.

Your co-operation will be highly appreciated.

  
**Dean's Office**  
University of Nairobi  
Faculty of Business  
and Management Science  
P. O. Box 30197-00100, Nairobi

**PROF. JAMES NJIHIA**  
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JNjkm

## Appendix II: NACOSTI PERMIT

 <b>REPUBLIC OF KENYA</b>	 <b>NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY &amp; INNOVATION</b>
<b>RefNo: 278173</b>	<b>Date of Issue: 16/November/2022</b>
<b>RESEARCH LICENSE</b>	
	
<b>This is to Certify that Ms. Mercy Phyllis of University of Nairobi, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Busia on the topic: Influence of Stakeholders' Engagement on the Sustainability of Green Energy Projects in Kenya: A Case of Solar Energy Projects in Busia County, Kenya for the period ending : 16/November/2023.</b>	
<b>License No: NACOSTI/P/22/21906</b>	
<b>Applicant Identification Number</b> 278173	 <b>Director General</b> <b>NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY &amp; INNOVATION</b>
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**THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)**  
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

**The National Commission for Science, Technology and Innovation**, hereafter referred to as the Commission, was established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

**CONDITIONS OF THE RESEARCH LICENSE**

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
  - i. Endanger national security
  - ii. Adversely affect the lives of Kenyans
  - iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
  - iv. Result in exploitation of intellectual property rights of communities in Kenya
  - v. Adversely affect the environment
  - vi. Adversely affect the rights of communities
  - vii. Endanger public safety and national cohesion
  - viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. The license any rights thereunder are non-transferable
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
9. The Commission may monitor and evaluate the licensed research project for the purpose of assessing and evaluating compliance with the conditions of the License.
10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

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**Appendix III: Questionnaire**

**Section A: Socio Demographic Characteristics**

1. Gender    Male ( )      Female ( )
2. Age 18-35 years ( )    36-50 years ( )    51 years and over ( )
3. What is your marital status?  
       Single ( )    Married ( )    Widow/widower ( )    Separated/Divorced ( ).
4. Position in the Household  
       Household head ( )      Spouse of household head ( )    Child of household head ( )
5. What is your current educational position?  
       Degree ( )    Diploma/Certificate ( )    Secondary ( )    Primary ( )
5. Is the household connected to power?    Yes ( )      No ( )

**Section B: Stakeholders’ engagement in Governance Structure and Project Sustainability**

On a five-point likert scale indicate your level of agreement on the influence of stakeholders’ engagement in governance structure on project sustainability.

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
Involvement of the Community through representation on the project implementation team positively influences the sustainability of the project.					
Board diversity with the inclusion of women and youth enhances acceptance by the					

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
community and sustainability.					
Having a well-defined period of tenure of the project implementation team enhances the performance of the project.					
Periodic evaluation of the members of the project team enhances the performance of the project and helps secure its longevity.					
Having proper checks and balances through regular review of the governance processes improves project sustainability.					

**Section C: Stakeholders’ engagement in capacity building and Project Sustainability**

On a five-point likert scale indicate your level of agreement on the effect of stakeholders’ engagement in capacity building on project sustainability.

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
Having frequent trainings helps improve the overall project performance in the long run.					
Carrying out benchmarking with other communities who have carried out similar projects helps ensure the success of the project.					
The nature of trainings whether practical and participatory on non-interactive has an important role in the long economic feasibility.					
The qualifications of the community members trained both in their background and experience greatly affects project outcomes.					
Having regular feedback and discussions with the project beneficiaries reduces project misconceptions improves participation and sustainability of community projects.					

**Section D: Stakeholders’ Engagement in Resource Mobilization and Project Sustainability**

Please indicate your level of agreement with the following statement using a Likert scale with five points: the influence of stakeholders' participation in resource mobilization on project sustainability.

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
Involvement of the community in the budget making process and mapping of project resources enhances the overall project performance.					
The involvement of the community in mobilizing for funding and identifying project partners improves the acceptance and overall sustainability.					
The adoption of new and innovative technologies and suggestions from the community improves efficiency of the projects.					
Involvement in the sourcing of quality products and inputs, particularly in the community of installation enhances acceptance of the project.					
Local government policies and the advocacy of policies like local permits and subsidies has a bearing on the overall project sustainability.					

**Section E: Stakeholders’ Engagement in Monitoring and Evaluation and Project Sustainability**

On a scale from one to five, please indicate the degree to which you agree with the statement that stakeholder participation in M&E has a positive impact on the long-term viability.

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
Having clearly defined roles and responsibilities of all parties in the review process helps minimize conflicts and works in order to guarantee the accomplishment of the project.					
Inclusion of the community in the composition of the M&E team helps ensure project efficiency and its long term success					
The frequency of visits and meetings by the members of the project M&E committee acts as a safeguard to ensure optimal outcomes.					
Having proper feedback on the recommendations by the M&E helps improve the expected overall project outcomes and its sustainability.					
Having proper communication, and periodic meetings with the project implementation team helps enhance its overall sustainability.					

**Section F: Project Sustainability**

On a five-point likert scale indicate your level of agreement on project sustainability.

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
The project achieves its desired economic value					
Community can derive value from the project over an extended period					
There project maintenance is cost efficient					

| and affordable | | | | | | |

