



**SCHOOL OF COMPUTING AND ENGINEERING SCIENCES
MASTER OF SCIENCE IN SUSTAINABLE ENERGY TRANSITIONS
END OF SEMESTER EXAMINATION**

MSSET 8104: Energy Policy, Laws and Regulations

DATE: 21st August, 2024

Time: 18:00-20:30 Hours

Instructions

1. This examination consists of **FOUR** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

QUESTION ONE

(Total: 20 Marks)

- a. A number of challenges exists in implementation and evaluation of policies. Some of these can be attributed to the gap between researchers/ initiators of the process and policy makers. These gaps include individual differences, institutional roadblocks, poor communication, and practical constraints among others. Suggest three ways of closing this gap and explain.
(3 Marks)
- b. Using energy market policy instruments as a framework, critic the role and impact of these instruments in promoting renewable energy adoption and enhancing market efficiency.
(5 Marks)
- c. What are the potential challenges of implementing tax incentives for renewable energy adoption, and how can they be mitigated?
(4 Marks)
- d. Discuss the potential impacts of implementing a demand-side policy of setting tariffs on electricity consumption patterns and consumer behaviour as a move towards adopting renewable energy.
(4 Marks)
- e. Energy policy failures can manifest in various ways, but one common example is when a government's energy policies fail to achieve their intended goals
 - i. Highlight four reasons why some energy policies fail to achieve their intended goals.
(2 Marks)
 - ii. Propose measures for address the challenges highlighted in question e(i) above
(2 Marks)

QUESTION TWO

(Total: 15 Marks)

Case Study 1

The government of Kenya is committed to increasing the share of renewable energy in its energy mix. As part of this commitment, it has signed a Power Purchase Agreement (PPA) with Green Energy Ltd., a private company specializing in wind energy. The project involves constructing and operating a wind farm with a capacity of 100 MW. The PPA outlines the terms and conditions

under which Green Energy Ltd. will sell electricity to Kenya Power and Lighting Company (KPLC) for a period of 20 years.

Key Elements of this PPA are:

- Contract Duration: 20 years from the commercial operation date.
- Tariff Structure: A fixed tariff of KES 8.80 per kWh for the first 10 years, and KES 6.60 per kWh for the remaining 10 years.
- Capacity Payments: Green Energy Ltd. will receive capacity payments based on the availability of power from the wind farm.
- Dispatch and Grid Connection: Green Energy Ltd. is responsible for connecting the wind farm to the national grid and ensuring that the electricity generated is dispatched according to the agreed schedule.
- Risk Allocation: Various risks, including construction risk, operational risk, and market risk, are allocated between Green Energy Ltd. and KPLC.
- Governing Law: The PPA is governed by Kenyan law, with disputes to be resolved through arbitration in Nairobi.
- Termination Clauses: The PPA outlines conditions under which either party can terminate the agreement, including breach of contract, force majeure, and prolonged underperformance.

Answer the following questions (a to g) in relation to case study no.1

- a. Laws and regulation governing contracts in the energy sector in Kenya include the Energy Act, 2019, the Public Procurement and Asset Disposal Act, 2015, and the Environmental Management and Coordination Act, 1999. Critiquing, discuss how these laws ensure the smooth implementation and enforcement of PPAs? (2 Marks)
- b. Discuss the role of risk allocation in PPAs and how it affects project bankability. (1 Mark)
- c. What are the critical elements to examine when evaluating the Green Energy Project PPA? (1 Marks)
- d. Elaborate 2 possible measures that should be taken to ensure that Green Energy Ltd. meets its grid connection and dispatch obligations? (2 Marks)
- e. Identify and discuss the three primary risks associated with the Green Energy Project PPA. (3 Marks)
- f. Propose risk mitigation strategies for each identified risk in question (f). (3 Marks)
- g. Critique the dispute resolution mechanisms outlined in the Green Energy Project PPA. Are they sufficient to address potential conflicts effectively? If not, suggest alternatives. (3 Marks)

QUESTION THREE

(Total: 15 Marks)

- a. How do the program, process, and political dimensions of energy policy influence the success of the policies aimed at increasing renewable energy capacity in Kenya? Discuss. (3 Marks)
- b. Evaluate **three** challenges that the policymakers might face when conducting regulatory impact assessment (RIA) in the energy sector, and propose ways overcoming them. (4½ Marks)

- c. Discuss any three types of regulation that can be used to regulate energy sector. For each type, highlight two strengths and weaknesses each. *Use the template in table 1.* (6 Marks)

Table 1

No.	Regulation Type	Description	Strengths	Weaknesses

- d. Acquisition or mergers and greenfield investment are two types of foreign direct investment that can be used in the energy sector. Highlight **three** reasons why majority of cross-border investment involves mergers and acquisitions rather than greenfield investments. (1½ Marks)

QUESTION FOUR

(Total: 15 Marks)

Case Study 2

Kenya's 2010 constitution provided for the devolution of power to its 47 County Governments. Kenya's Energy Act (2019) subsequently mandated each county to develop a County Energy Plan (CEP). The CEPs are ten-year blueprints that will feed into the design of an Integrated National Energy Plan (INEP), whose Framework is currently under development by the MoEP. The INEP Framework has been developed in response to a changing national and global context for the energy sector. This includes the adoption of Sustainable Development Goal 7 on universal access to affordable, reliable and sustainable modern energy, the increasing impacts of climate change in Kenya, and the need to secure the country's energy future. INEP's vision is for energy services to be planned as enablers of Kenya's wider development goals, with increased engagement with stakeholders. CEPs should be aligned with both national sectoral plans (in key sectors such as agriculture, health, water etc.) and the County Integrated Development Plans (CIDPs) that are produced every five years.

Answer the following questions

- a. Your County has an ambitious plan of achieving 90% electric power connectivity by the year 2025, to connect the unconnected and improve accessibility of reliable power through, sustainable and affordable supply programme; a programme that require expansion of the existing power generation, transmission and distribution networks. As the County government chief energy planner, your team has identified stakeholders' engagement as the first activity towards realization of the CEP. Identify **three** stakeholders that you will engage in this discussion and for each of these stakeholders, identify **three** possible contributions/benefits from this engagement. *Copy table 2 below for your analysis.*

(6 Marks)

Table 2

	Stakeholder	Benefits
1		
2		

- b. How can data collection and management be improved to support effective energy planning at the county level as per case study no. 2? Discuss three solutions (3 Marks)
- c. Discuss the complex web that the county has to navigate in its energy plan and policy development in relation to the National Government, Energy Act of 2019, and the draft INEP Framework (3 Marks)
- d. How can potential conflicts between local CEPs and national INEP objectives be resolved? (1½ Marks)

- e. Highlight three strategies can be adopted to overcome financial constraints faced by counties in implementing CEPs? (1½ Marks)