

## APPLY NATURAL RESOURCE ECONOMICS

ISCED UNIT CODE: 0521 441 07A

TVET CDACC UNIT CODE: ENV/OS/ENT/CC/05/5/MA

### UNIT DESCRIPTION

This unit covers the competencies required to apply natural resource economics, it involves applying economics principles of natural resource, determining commodity prices, interpreting production function curves, applying tragedy of the commons, applying sustainable development goals.

### ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace functions	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements <i>(Bold and italicized terms are elaborated in the range)</i>
1 Apply economics principles of natural resource	1.1 Resources are categorized based on types of natural resources identified as per the State of Environment Report 2019-2021. 1.2 Data collection tools are assembled as per work procedures 1.3 Natural economic resource data is managed as per work procedures 1.4 <b>Economic criteria</b> for natural resource utilization is monitored as per work procedures 1.5 <b>Command and control standards</b> are implemented as per standards of economics
2. Determine commodity prices	2.1 Natural resource <b>prices are obtained</b> from the market as per Kenya National Bureau of Statistics (KNBS) 2.2 <b>Allocate resource</b> prices are implemented as per work procedure 2.3 Property right approaches are implemented based on National land policy 2.4 <b>Market failure</b> is monitored based on market demand
3. interpret production function curves	3.1 Demand and supply is analyzed based on law of supply and demand 3.2 Natural resource 3.3 <b>Production decisions</b> are made based on market demand 3.4 <b>Production relationship</b> is identified based on input and output performance in an agricultural enterprise 3.5 <b>Principles of production function</b> are applied based on nature of agricultural enterprise
4. Apply tragedy of the commons	Environmental common resources are identified as per work procedures Environmental common resources' utilization are assessed as per the work procedures. Environmental common resources utilization threats are determined as per work procedures.

	Environmental common resource's utilization model is applied as per work procedures.
5. Apply sustainable development goals	<p>5.1 Environmental resources are identified as per work procedures Environmental resource's utilization are assessed as per the work procedures.</p> <p>5.2 Environmental resources utilization threats are determined as per work procedures.</p> <p>5.3 Sustainable Development Goals (SDGs) models are identified as per Agenda 21.</p> <p>5.4 SDG models are applied as per the agenda 21</p>

## RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range
1. Economic criteria includes but not limited to:	<ul style="list-style-type: none"> <li>● Cost-Benefit Analysis</li> <li>● Return on Investment</li> <li>● Net Present Value</li> <li>● Internal Rate of Return</li> <li>● Cost-Effectiveness Analysis</li> <li>● Economic Impact Analysis</li> </ul>
2. Command and control standards includes but not limited to:	<ul style="list-style-type: none"> <li>● Emission Standards</li> <li>● Effluent Standards</li> <li>● Waste Management Standards</li> <li>● Compliance and Enforcement</li> <li>● Land Use Planning and Zoning</li> </ul>
3. prices are obtained includes but not limited to:	<ul style="list-style-type: none"> <li>● Commodity Exchanges Spot Prices</li> <li>● Futures and Options Markets</li> <li>● Government Agencies and Publications</li> <li>● Industry Reports and Market Analysis</li> <li>● Global Economic Conditions and Geopolitical Events</li> </ul>

4. Allocate resource, includes but not limited to:	<ul style="list-style-type: none"> <li>• Market-Based Allocation</li> <li>• Regulatory Allocation</li> <li>• Public Ownership and Management</li> <li>• Private Ownership and Property Rights</li> <li>• Community-Based Resource Management</li> <li>• International Cooperation and Agreements</li> </ul>
5. Market failure includes but not limited to	<ul style="list-style-type: none"> <li>• Externalities</li> <li>• Public Goods</li> <li>• Market Power and Monopoly</li> <li>• Asymmetric Information</li> <li>• Natural Monopolies</li> </ul>
6. Production decisions includes but not limited to	<ul style="list-style-type: none"> <li>• Production Planning</li> <li>• Resource Allocation</li> <li>• Production Methods and Techniques</li> <li>• Cost Considerations</li> <li>• Market Demand and Customer Preferences</li> </ul>
7. Production relationship includes but not limited to	<ul style="list-style-type: none"> <li>• Production Function</li> <li>• Marginal Product of Labor</li> <li>• Economies of Scale and Diseconomies of Scale</li> <li>• Isoquants and Isocost Lines</li> <li>• Law of Diminishing Marginal Return</li> </ul>
8 Principles of production function include but not limited to	<ul style="list-style-type: none"> <li>• Input-Output Relationship</li> <li>• Marginal Productivity</li> <li>• Law of Diminishing Marginal Returns</li> <li>• Isoquants and Isocost Lines</li> </ul>
9 Sustainable Development Goals (SDGs) models includes but not limited to	<ul style="list-style-type: none"> <li>• Integrated SDG Frameworks</li> <li>• Mapping and Alignment Tools</li> <li>• Systems Thinking and Complexity Approaches</li> <li>• Multi-Stakeholder Collaboration</li> </ul>

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

### Required Skills

The individual needs to demonstrate the following skills:

- Negotiation skills
- Quantitative skills
- Analytical skills
- Math and economic skills
- ICT skills
- Research skills
- Analysis skills

### Required knowledge

The individual needs to demonstrate knowledge of:

- Mathematics
- Policies and regulations
- Externalities
- Profit and loss
- Cost benefit analysis
- Elasticity demand and supply
- Taxes
- Market failure
- Market and non-market goods and services
- Public goods

### EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

11. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <ol style="list-style-type: none"> <li>1.1 Categorized resources based on types of natural resources identified as per the State of Environment Report 2019-2021.</li> <li>1.2 Monitored <b><i>economic criteria</i></b> for natural resource utilization as per work procedures</li> <li>1.3 Monitored <b><i>economic criteria</i></b> for natural resource utilization as per work procedures</li> <li>1.4 <b><i>Command and control standards</i></b> are implemented as per standards of economics</li> <li>1.5 <b><i>Obtained</i></b> Natural resource <b><i>prices</i></b> from the market as per Kenya National Bureau of Statistics (KNBS)</li> <li>1.6 Analysed demand and supply are based on law of supply and demand of natural resources</li> </ol>
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12.	Resource Implications		<p>The following resources should be provided:</p> <p>2.1 appropriately simulated environment where assessment can take place</p> <p>2.2 Access to relevant workplace</p> <p>2.3 Materials relevant to the proposed activity or tasks</p>
13.	Methods Assessment	of	<p>Competency in this unit may be assessed through:</p> <p>3.1 Observation</p> <p>3.2 Demonstration</p> <p>3.3 Written test</p> <p>3.4 Portfolio of Evidence</p> <p>3.5 Interview</p> <p>3.6 Third party report</p>
14.	Context Assessment	of	<p>Competency may be assessed:</p> <p>4.1 Workplace</p> <p>4.2 Simulated work environment</p>
15.	Guidance information assessment	for	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>

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