APPLY BASIC ENVIRONMENTAL PRINCIPLES

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UNIT DESCRIPTION

This unit covers the competencies required to applying environmental principles, it involves applying basic environmental principles, determining energy flow in an ecosystem, applying environmental ethics and values, applying environmental impact assessment principles, applying environmental legislations, applying environmental research techniques.

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 ***(Bold and italicized terms are elaborated in the range)***
1. Apply basic environmental principles	1.1 Environmental ***components*** are monitored as per centre of biodiversity ISO 2017 1.2 Environmental resources are monitored as per EMCA cap 387 1.3 ***Genetics*** of organisms is carried out as per national biosafety regulation guidelines (mainly genetics principles of plants and animals 1.4 Environmental resource conflict management is implemented as per work requirements 1.5 ***Resource conservation plans*** are implemented as per work requirements
6. Determine energy flow in an ecosystem	2.1 ***Ecosystems*** are identified and monitored as per Centre of Biodiversity ISO 2017 2.2 ***Ecological interactions*** are determined as per Centre of Biodiversity ISO 2017 2.3 ***Bio-geochemical cycles*** are identified as per Centre of Biodiversity ISO 2017
7. Apply environmental ethics and values	3.1 Environmental legislations on conservation are implemented as per international environmental laws 2017 3.2 Multilateral environmental agreements on resources are implemented as per international environmental laws 2017 3.3 Local ordinances on resource use are implemented as per international environmental laws 2017 3.4 environmental ethics on resource consumption is implemented as per international environmental laws 2017

8. Apply environmental impact assessment principles	4.1 Designated project areas are mapped as per EMCA (Environmental Impact Assessment and Audit) Regulations, 2003 (amended 2019) 4.2 ***Baseline data collection tools*** are assembled as per work requirements 4.3 ***Baseline parameters*** are measured as per The Environmental (Impact Assessment and Audit) Regulations, 2003 4.4 Project ***legal and legislative framework*** is identified as per The Environmental (Impact Assessment and Audit) Regulations, 2003 4.5 Potential ***environmental impacts*** are identified as per The Environmental (Impact Assessment and Audit) Regulations, 2003 4.6 Project ***stakeholders*** are identified as per The Environmental (Impact Assessment and Audit) Regulations, 2003 4.7 Public participation data collection is carried out as per The Environmental (Impact Assessment and Audit) Regulations, 2003 4.8 Environmental ***mitigation measures*** are implemented as per The Environmental (Impact Assessment and Audit) Regulations, 2003 4.9 Baseline data collection tools are maintained as per work requirements. 4.10 Environmental outcomes are monitored as per The Environmental (Impact Assessment and Audit) Regulations, 2003
9. Apply environmental legislations	5.1 Environmental ***legal and legislative frameworks*** are identified as per The Environmental (Impact Assessment and Audit) Regulations, 2003 5.2 Project environmental ***legal and legislative frameworks*** are categorized as per The Environmental (Impact Assessment and Audit) Regulations, 2003 5.3 Project environmental legislation's compliance is monitored as per The Environmental (Impact Assessment and Audit) Regulations, 2003
10. Apply environmental research techniques	6.1 Environmental study areas are mapped as per EMCA CAP. 387 6.2 Environmental data collection tools are assembled as per work requirements 6.3 Environmental samples are prepared as per SOP 6.4 Data collection is carried out as per EMCA CAP. 387 6.5 Specimen findings are recorded as per institution SOPs 6.6 Environmental observations are documented as per institution SOPs 6.7 Field and laboratory data collection tools are maintained as per SOPs

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. Environmental components may include but not limited to;	• Atmosphere • Hydrosphere • Lithosphere • Biosphere
2. Environmental resources may include but not limited to;	• Water • Air • Soil • Biodiversity • Forests • Minerals • Wildlife
3. Environmental resource conflict management may include but not limited to;	• Negotiation • Mediation • Collaborative management • Legal frameworks and enforcement • Capacity building
4. Resource conservation plans may include but not limited to;	• Biodiversity conservation • Water resource management • Forestry conservation • Energy conservation and efficiency • Climate change mitigation and adaptation • Waste management • Land use planning
5. Ecosystems may include but not limited to;	• Regulatory • Supportive • Provision • Cultural

6. Ecological interactions may include but not limited to;	• Predation • Competition • Mutualism • Parasitism • Amensalism
7. Bio-geochemical cycles may include but not limited to;	• Water cycle • Carbon cycle • Nitrogen cycle • Oxygen cycle • Phosphorus cycle • Sulfur cycle
9. Environmental legislations may include but not limited to;	• Environmental Management and Co-ordination Act • Environmental (Impact Assessment and Audit) Regulations, 2003 • EMCA (Waste management) Regulations, 2006 • EMC (Waste Management) Regulation 2006 • E-Waste Management in Kenya, 2010 • The Environmental Management And Coordination (Noise And Excessive Vibration Pollution) (Control) Regulations, 2009
10. Multilateral environmental agreements may include but not limited to;	• United Nations Framework Convention on Climate Change • Paris Agreement on climate change • Convention on Biological Diversity • Kyoto Protocol • Montreal Protocol • Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes
11. Local ordinances may include but not limited to;	• Noise ordinances • Land use zoning

	• Waste management • Air quality • Protected species and habitats
12. Environmental ethics may include but not limited to;	• Anthropocentrism • Ecocentrism • Sustainability • Justice • Intrinsic value of nature
13. Baseline data collection tools may include but not limited to;	• Questionnaires • Interviews • Field surveys • Photographic documentation (Cameras) • GPS devices • Sound level meters (noise dosimeters) • Google earth • Portable VOC Monitors • Turbidimeters
14. Baseline parameters may include but not limited to;	• Air quality • Water quality • Soil quality • Biodiversity • Noise levels • Land use and land cover • Cultural and socio-economic factors • Climatic conditions • Hydrology and hydrogeology • Geology • Waste management
15. Legal and legislative framework may include but not limited to;	• National Policy Framework 2014 • Vision 2030 • The Constitution of Kenya, 2010 • EMCA cap 387 • Occupational Health and Safety Act No.15 of 2007 • The Public Health Act CAP 242 • The County Government Act 2012

	• The Physical and Land Use Planning Act, 2019 • Building code • E-Waste Management in Kenya, 2010
16. Environmental impacts may include but not limited to;	• Air pollution • Land pollution • Water pollution • Social degradation • Deforestation • Water consumption • Wastes generation • Health and safety • Economic loss • Biodiversity loss
17. Stakeholders may include but not limited to;	• Proponent • State actors • Community • Non-state actors
18. Mitigation measures may include but not limited to;	• Avoidance • Minimization • Alternatives • Compensatory mitigation
19. Environmental data collection tools may include but not limited to;	• Questionnaires • Interviews • Field surveys • Sampling equipment • pH meters • Temperature probes • Moisture meters • Air quality monitors • Camera traps
20. Environmental observations may include but not limited to;	• Naturalistic observation • Participation observation • Structured observation • Time series observations • Land use and land cover observation
21. Field and laboratory data collection tools may include but not limited to;	• Spectrophotometer • Gas chromatograph • Mass spectrometer • pH meter • GPS devices

	• Soil sampling kits • Quadrats • Transect tapes

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:

- Environmental sustainability
- Basic analytical skills
- Skills in negotiation, mediation, and collaboration
- Communication skills
- Adaptability and resilience
- Flexibility
- Observation skills
- Problem solving
- Surveying skills
- Interviewing skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Sustainable development
- Ecology
- Climate change
- Environmental policies and laws
- Ecosystem services
- Safety protocols
- Waste management
- Environmental ethics
- Interdisciplinary approach
- Compliance and reporting
- Natural resources management
- Ecological interactions
- Environmental pollution control

EVIDENCE GUIDE

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

Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Carried out Genetics of organisms as per national biosafety regulation guidelines (mainly genetics principles of plants and animals) 1.2 Implemented environmental resource conflict management as per work requirements 1.3 Implemented resource conservation plans as per work requirements 1.4 Determined ecological interactions were as per centre of biodiversity ISO 2017 1.5 Implemented environmental legislations on conservation were as per international environmental laws 2017 1.6 Implemented multilateral environmental agreements on resources were as per international environmental laws 2017 1.7 Conducted environmental impact assessment was as per (Environmental Impact Assessment and Audit) Regulations,2003 (amended 2019) 1.8 Carried out environmental research techniques 1.9 as per EMCA CAP. 387
Resource Implications	The following resources should be provided: 2.1 Appropriately simulated environment where assessment can take place 2.2 Access to relevant work environment 2.3 Resources relevant to the proposed activity or tasks
Methods of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration 3.2 Oral questioning 3.3 Written examination 3.4 Interview/Third Party Reports 3.5 Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad) 3.6 Simulations and role-play
Context of Assessment	Competency may be assessed: 4.1 Workplace 4.2 Simulated work environment
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.