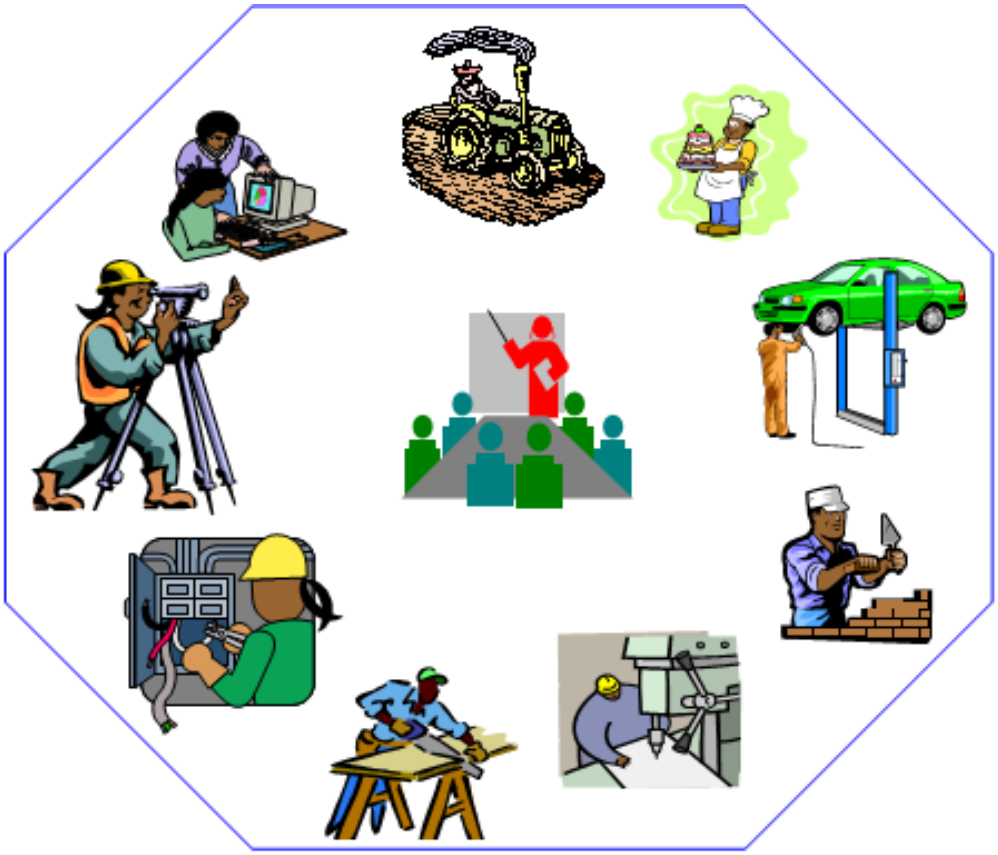
Animal Production
Level-IV

Based on March 2018, Version 3 OS and June2021, V1 Curriculum



Module Title: Implementing and Monitoring Environmental Policies and Procedures

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East Africa Skills for Transformation and Regional Integration (EASTRIP) Project

Table of content

LG #47	LO #1- Provide information to the work team

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Explaining information provided to the work team
- Conveying organization's performance in regard to environmental management and business sustainability
- Explaining links between environmental, financial, safety and other risk areas
- Providing information on environmental systems and procedures

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Explain information provided to the work team
- Convey organization's performance in regard to environmental management and business sustainability
- Explain links between environmental, financial, safety and other risk areas
- Provide information on environmental systems and procedures

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
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Information Sheet 1- Explaining information provided to the work team

1.1. Definitions of terms

Audit: The process through which how well compliance with policy objectives and regulatory requirements is met and the fidelity of the implementation of conditions attached to an approved environmental impact assessment report is examined

Environment: The physical, biological, social, economic, cultural, historical and political factors that surround human beings. It includes both the natural and built environments. It also includes human health and welfare**.**

Environmental management plan*:* An action plan that addresses the how, when, who, where and what of the environmental mitigation measure aimed at optimizing benefits and avoiding or mitigating adverse potential impacts of proposed operation or activity. It encompasses mitigation, monitoring, rehabilitation and contingency plans.

Environmental management system: Is the means of ensuring effective implementation of an environmental management plan or procedures and compliance with environmental policy objectives and targets.

Environmental policy: is a document prepared by a company or an organization which clearly sets out its overall aims and intentions with respect to the environment.

Environmental management (EM): is a subject that combines science, policy, and socioeconomic applications.

Impact: Any change to the environment or its component that may affect human health or safety, biophysical conditions, or cultural heritage, other physical structure with positive or negative consequences.

Monitoring: Is the repetitive and continuing observations, measurements and evaluation of changes that relate to the proposed activity. It can help to follow changes over a period of time to assess the efficiency of control measures.

Proponent/ Developer: Any organ of government, if in the public sector or any person if in the private sector that initiate a project or a public instrument.

Public instrument: Means a policy, a plan, a strategy, a program, a law or an international agreement.

1.2 Environmental impact assessment

In order to ensure sustainable development, it is essential to integrate environmental concerns into development activities, programs, policies, etc. Environmental impact assessment as one of environmental management tools facilitates the inclusion of principles of sustainable development aspiration well in advance.

The environmental assessment (EA) procedural guideline series aim at in particular towards:

- ensuring the implementation of the EPE and compliance of EA related legal and technical requirements,
- providing a consistent and good practice approach to EA administration in Ethiopia,
- assisting proponents and consultants in carrying out their environmental assessment related tasks,
- assisting interested and affected parties, especially communities in realizing their environmental rights and roles,
- assisting environmental protection organs, Competent and Licensing agencies in discharging their roles and responsibilities, and
- establishing partnership and networking among and between key stakeholders in EA administration.

1.3. Legal and policy context

The concept of sustainable development and environmental rights are enshrined in article 43, 44 and 92 of the Constitution of FDRE.

In Article 43: The right to development, where peoples' right to:

- improved living standards and to sustainable development,
- participate in national development and, in particular, to be consulted with respect to policies and projects affecting their community, and

- the enhancement of their capacities for development and to meet their basic needs, are boldly recognized.

Similarly, in article 44: environmental rights, all persons are entitled to:

- live in a clean and healthy environment,
- Compensation, including relocation with adequate state assistance

Moreover, in article 92: environmental objectives it is declared that,

- government shall ensure that all Ethiopians live in a clean and healthy environment,
- programs and projects design shall not damage or destroy the environment,
- peoples have the right to full consultation and expression of views, and
- government and citizens have the duty to protect the environment.

"Environmental protection organs establishment proclamation (proc.no.295/2002)" has stipulated the need to establish a system that enables to foster coordinated but differentiated responsibilities among environmental protection agencies at federal and regional levels. The proclamation has also required the establishment of sectoral and regional environmental, units and agencies, respectively. This shows that institutionalizing and mainstreaming environmental concerns has a legal foundation.

The environmental impact assessment proclamation (Proc. no. 299/2002) has made EA to be a mandatory legal prerequisite for the implementation of major development projects, programs and plans. This proclamation is a proactive tool and a backbone to harmonizing and integrating environmental, economic, cultural, and social considerations into a decision making process in a manner that promotes sustainable development.

The "environmental pollution control proclamation (Proc. no. 300/2002)" is promulgated with a view to eliminate or, when not possible to mitigate pollution as an undesirable consequence of social and economic development activities. This proclamation is one of the basic legal documents, which need to be observed as corresponding to effective EA administration.

The environmental policy of Ethiopia (EPE, 1997), provides a number of guiding principles that indicate and require a strong adherence to sustainable development. In particular EA policies of EPE includes, among other things, the need to ensure that EA:

- considers impacts on human and natural environments,
- provides for an early consideration of environmental impacts in projects and programs design,
- recognizes public consultation,
- includes mitigation plans and contingency plans,
- provides for auditing and monitoring,
- is a legally binding requirement,
- is institutionalize, etc

1.4. Operating principles

EA is undertaken to:

- modify and improve design,
- ensure efficient resource use,
- enhance social aspects,
- identify measures for monitoring and managing impacts,
- promote sustainable productivity within the natural and social system capacity,
- meet environmental requirements and make continuing improvement in environmental performance,
- provide accurate and appropriate information for sound decision,

Self-check 1	Written test

Directions: Answer all the questions listed below.

1. What are the aims of EA procedural guideline? (6 points))

2. List the operating principles of EA (7 points)

3. List the EA policies of the environmental policy of Ethiopia, 1997. (7 points)

4._____ is the physical, biological, social, economic, cultural, historical and political factors that surround human beings. (2 points)

A. Public instrument B. Environmental policy

B. Environment D. Environmental management system

5._____ is the means of ensuring effective implementation of an environmental management plan or procedures and compliance with environmental policy objectives and targets. (2 points)

A. Environmental management system B. Environmental monitoring

B. Environment D. Environmental management plan

6.____ is a document prepared by a company or an organization which clearly sets out its overall aims and intentions with respect to the environment. (2 points)

A. Public instrument B. Environmental policy

B. Audit D. Environment

Note: Satisfactory rating - 22 points Unsatisfactory - below 22 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 2- Conveying organization's performance in regard to environmental management and business sustainability

2.1. Definitions of phrases

Environmental performance can be defined as, 'the results of an organization's management of its environmental aspects'.

An environmental aspect refers to, 'an element of an organization's activities, products or services that can interact with the environment'.

2.2. Environmental indicators

Environmental indicators express useful and relevant information about a firm's environmental performance and its efforts to influence its performance.

Examples of indicators include:

- Tonnes of SO2 released per year
- Tonnes of CO2 released per unit of production
- Litres of water used per year
- Kilogrammes of hazardous waste produced per year
- Number of legislative breaches per year
- savings achieved through energy efficiency measures
- number of environmental improvement suggestions from employees and number taken up by management
- number of complaints received about environmentally related matters
- number of employees trained versus number needing training

ISO 14031 sets out 3 environmental performance indicator (EPI) areas:

- the operational
- management areas of a firm and
- the environment.

These areas and their associated indicators are described below.

The operational area

The operational area consists of the operations of the firm's physical facilities and equipment i.e. those activities that have an environmental aspect.

Examples of operational activities include manufacturing processes, the heating and lighting of buildings, transport activities, the operation of office equipment

The indicators used to measure the environmental aspects of operational activities are known as *operational performance indicators* (OPIs). Examples of OPIs include:

- Total energy use per year
- Waste production per year
- Emissions of NOx per unit of production
- Water use per unit of production

The management area

The management area consists of the various planning, administrative and decision-making processes that make up management. Management decisions relating to the environment include:

- deciding how much money to spend on environmental management activities
- deciding how much training to provide to employees
- deciding whether to develop an environmental management system
- Obviously management activities can have a considerable influence on the actual
- environmental performance of the firm. The indicators used to measure the environmental
- aspect of management activities is called management performance indicators (MPIs).
- Examples of management performance indicators include:
- number of environmental objectives and targets achieved
- number of employees trained
- number of suppliers and contractors questioned about their environmental management practices
- frequency of review of operating procedures

2.3. Environmental performance evaluation

Environmental performance evaluation (EPE) is the process that organizations can use to measure, analyze and assess their environmental performance against a set of criteria. EPE helps to understand what their environmental aspects are, and determines what their significant environmental aspects may be. This lets the organization form a baseline from which objectives and targets for improvements can be derived. Therefore EPE is central to improvements of environmental performance and to compare an organization's performance against another similar organization (benchmarking). An organization that is committed to improving its environmental performance needs to be able to measure its performance level. By means of environmental performance Indicators (EPIs) a company will be able to do so. An EPI must reflect changes over a period of time, be reliable and reproducible, and be calibrated in the same terms as the policy goals or targets they are linked to.

Self-check 2	**Written test**

Directions: Answer all the questions listed below.

1. Define environmental performance (2 points)
2. Define environmental performance indicator (2 points)
3. Mention at least four examples environmental performance indicators (4 points)
4. What are the indicators set by ISO 15031(3 points)
5. Define environmental performance evaluation (2 points)
6. _____refers to an element of an organization's activities, products or services that can interact with the environment (2 points)

A. Environmental performance B. Environmental aspect

C. EPE D. Environmental performance indicator

Note: Satisfactory rating - 15 points Unsatisfactory - below 15 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 3- Explaining links between environmental, financial, safety and other risk areas

3.1. Introduction

Environmental and social (E&S) risks are the potential negative consequences to a business that result from its impacts (or perceived impacts) on the natural environment (i.e. air, water, soil) or communities of people (e.g. employees, customers, local residents).

The global financial community is increasingly becoming aware that environmental and social (E&S) issues associated with customers' business activities can create risks to financial institutions themselves. E&S impacts caused, or perceived to have been caused, by a business can result in consequences such as production delays, negative publicity, threats to operating licences and unforeseen expenditures. These impacts can, in turn, result in risks for financial intermediaries (FIs) that invest in, or lend to, these businesses.

3.2. The potential consequences of E&S risks

Failure to effectively manage E&S issues in a business can lead to a range of financial, legal and reputational consequences for the company, examples of which can be found below:

Financial impacts

- Costs associated with remedying contaminated land to enable sale, meet legal requirements or avoid damage to employees' health
- Write-downs of asset value due to irremediable contamination or obsolescence of equipment
- Low productivity due to lost time caused by a high rate of workplace accidents
- Unexpected costs associated with meeting regulatory compliance requirements or payment of fines

Legal impacts

- Fines for non-compliance with environmental, sanitary, health, safety and labour laws

- Legal obligations to restore land used for waste disposal (landfill) or resource extraction at the end of the project's economic life. There may also be unexpected costs associated with such requirements
- Damages arising from legal liability for damage to the environment, human health or property (e.g. compensation claims)
- Suspension of operations by regulators or due to an accident or fire

Reputational impacts

- Loss of sales due to a poor public perception of the company or its products (e.g. food hygiene scares, labour violations)
- Increased recruitment/induction costs and lower productivity due to poor reputation or E&S incidents, e.g. chemical spills

Although FIs have their own direct E&S impacts, e.g. energy use, their principal exposure to E&S risk arises – indirectly through lending or investing – from their corporate customers' business activities. As outlined above, a company's management of environmental or social issues can impact its business. This can, in turn, impact FIs. For instance, a customer may be unable to service a loan due to E&S-related cash-flow problems, or the FI may face reputational damage through association with a client's E&S impacts.

3.3. The key drivers of E&S risk

The key drivers of E&S risk for FIs are related to the characteristics of their corporate customers and investments. The three key drivers are:

Geography: Different kinds of E&S risk are more or less prevalent in different parts of the world. For example, in some regions, issues such as child labour may be common. In another example, climate change is expected to have varying impacts around the world, e.g. an increase in the risk of drought in some regions and an increase in flood risk in others.

How the business understands and manages E&S risk: A number of factors can affect a business's understanding of, and ability to manage, its E&S risks. For example, a business might face significant inherent E&S risks but also be sufficiently financially

robust and competent to manage them. A company that has historically paid close attention to E&S issues may have fewer risks and liabilities than a company that has ignored them.

Indirect risks: Indirect risks are risks arising from a business's value chain, i.e. its suppliers and customers. In some sectors, indirect risks can be more material than direct risk and can have major consequences for the business.

Self-check 3	**Written test**

Directions: Answer all the questions listed below.

1. What are E&S risks? (2 points)
2. What are the potential consequences of E & S risks for FIs? (6 points)

3. Mention the financial impacts arise due to failure to effectively manage E & S issues in the business. (4 points)

4. List the legal impacts arise due to failure to effectively manage E & S issues in the business (4 points)

5. List the reputational impacts arise due to failure to effectively manage E & S issues in the business (2 points)

6. What are the key drivers of E&S risk for FIs? (6 points)

Note: Satisfactory rating - 24 points Unsatisfactory - below 24 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 4- Providing information on environmental systems and procedures

4.1. Introduction

Improving your operation is an ongoing process. New technologies offer ways to be more efficient. Changes in farm policies and markets influence management decisions and

profitability. Changing environmental regulations can require management adjustments. Making decisions in response to all of these changes is a challenge that an Environmental Management System (EMS) can address.

An EMS assists producers operating in a world full of change. It is a business management process that helps you develop your own strategy for integrating environmental considerations into production decisions. It is a voluntary, flexible process that evolves from your knowledge and sense of how to best manage your operation. Whether you run a small or a large operation, produce animals or crops, the EMS process has something to offer. An EMS efficiently integrates environmental considerations and requirements into day-to-day and long-term planning.

This management approach helps you examine your production system from start to finish. It provides a framework for making continual improvements, meeting regulatory requirements, and demonstrating good environmental stewardship. For producers who currently incorporate environmental considerations into management decisions, an EMS is a way to document positive practices.

You probably incorporate many elements of the EMS process into your existing daily activities. Do you have plans for managing manure, pests, and nutrients? Do you have records on soil testing, chemical applications, feeding requirements, or worker training? The EMS provides a way to better organize these efforts and ensures that you have a concrete, useful plan for addressing environmental concerns while improving your overall management.

Recently, however, a common model for an environmental management system has been formulated by the International Organization for Standardization (ISO) which standardizes the elements that an environmental management system should contain. The model has been designed to be applicable worldwide and to organizations of all types and sizes and is set out in the standard.

4.2. Benefits of environmental management system

- Improve environmental performance

- Facilitate regulatory compliance
- Protect property value
- Protect health and well being of family and employees
- Improve neighbor and community relations
- Reduce animal health risks
- Document your stewardship efforts
- Enhance management
- Capitalize on public and private environmental programs

4.3. ISO 14001 environmental management systems

ISO 14001 is an internationally agreed standard that sets out the requirements for an environmental management system

The environmental management system model set out in ISO 14001 is described below. The section then goes on to look at a second environmental management system scheme - EMAS- the EC Eco-management and audit scheme.

The elements of ISO 14001 are organized around 5 steps, each of which is briefly described below.

Step 1 - Environmental policy

A firm drafts a policy setting out its intentions in relation to the environment. The policy must contain commitments to:

- continual improvement
- prevention of pollution
- Compliance with relevant environmental legislation and other legal requirements.

ISO 14001 defines “continual improvement” as the process of enhancing the environmental management system in order to achieve improvements in environmental performance in line with the organization’s environmental policy

Step 2 – Planning

The firm must then set itself objectives and targets relating to its policy commitments and devise a plan to meet these objectives and targets.

Step 3 - Implementation and operation

Having devised its plan, the firm must then put in place the various elements necessary for its successful implementation and operation.

Step 4- Checking and corrective action

Having implemented its plan, the firm must then check to see it has been successful in meeting its objectives and targets. If any have not been met, then corrective action must be taken. The entire management system must be periodically audited to see that it meets the requirements of the standard.

Step 5 - Management review

Management must periodically review the system to ensure its continuing effectiveness and suitability. Changes are made to the system as and when necessary.

Self-check 4	**Written test**

Directions: Answer all the questions listed below.

1. What are the firm draft policies contains (3 points)
2. List the ISO 14001 steps (5 points)

3. .It is a business management process that helps you develop your own strategy for integrating environmental considerations into production decisions. (2points)

A. EIA B. EMS C. Policy D. Planning

4. One of the following is not the benefit of environmental management system (2points)

A. Protect property value B. Enhance management

C. Facilitate regulatory compliance D. Increase animal health risks

5. It is an internationally agreed standard that sets out the requirements for an environmental management system (2points)

A. ISO 14001 B. ISO 14002 C. ISO 14003 D. ISO 14004

Note: Satisfactory rating - 14 points Unsatisfactory - below 14 points

You can ask you teacher for the copy of the correct answers.

Operation Sheet – Developing environmental management system(EMS) for dairy production

Objectives: to develop environmental management system (EMS) for dairy production

Procedure:

Step 1 – Developing environmental policy

Step 2 –Carrying out planning

Step 3 – Setting Implementation and operation

Step 4- Checking and taking corrective action

Step 5 – Conducting management review

LAP TEST	Performance Test

Name……. ID…… Date……

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **5** hours. The project is expected from each student to do it.

Task: Develop environmental management system (EMS) for dairy production

LG #48	LO #2- Implement and monitor operational procedures

Instruction sheet
This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying and assessing existing and potential environmental risks
- Seeking expert advice
- Carrying out prioritized recommendations from the assessments
- Implementing organizational environmental policies and procedures
- Allocating tasks and monitoring outcomes
- Implementing contingency plan

This guide will also assist you to attain the learning outcomes stated in the cover page.

Specifically, upon completion of this learning guide, you will be able to:

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- Seek expert advice
- Carry out prioritized recommendations from the assessments
- Implement organizational environmental policies and procedures
- Allocate tasks and monitor outcomes
- Implement contingency plan

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Information Sheet 1- Identifying and assessing existing and potential environmental risks

1.1. Introduction

Pollution, natural resource depletion and human health are closely linked, and particularly so in Ethiopia, where the environmental degradation poses a major risk to human health. Indoor and outdoor air pollution, unhygienic or unsafe food, improper waste disposal, absent or unsafe vector control and exposure to chemicals are major environmental health hazard and adequate water and access to sanitation and hygiene is of outmost importance for people's health.

1.2. Environmental Implications of Livestock

Figure 1 depicts the environmental impacts of livestock in Ethiopia.

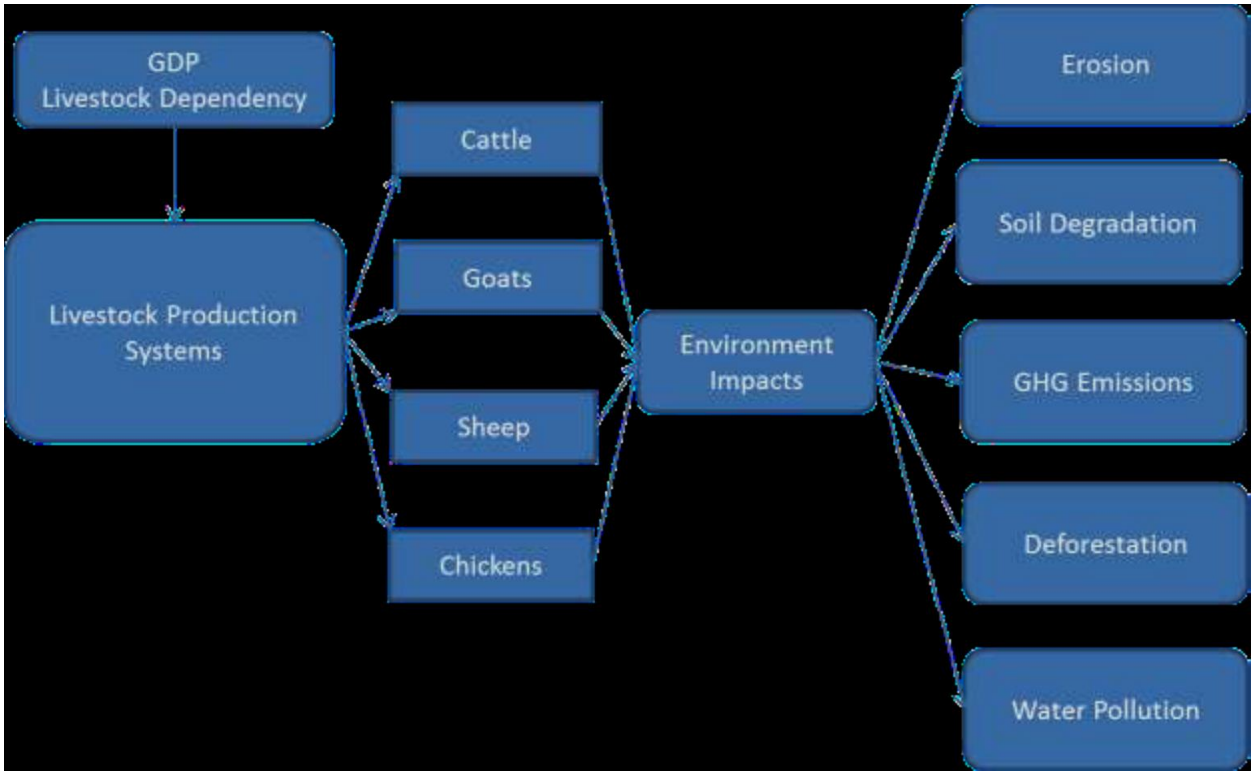

Figure 1 Diagram of livestock production systems and their environmental impacts

The major livestock production systems in Ethiopia which include cattle, goats, sheep, chicken, and other livestock systems, cause multiple environmental impacts including erosion, soil degradation (reduction in soil quality and supported vegetation), greenhouse gas (GHG) emissions, deforestation, and water pollution (and in the longer term, flow reduction).

Furthermore, such environmental impacts can have a large amount of feedback loops, an example of which is depicted in Figure 2. In this case, livestock production systems initiate the loop by causing deforestation due to cropland expansion. Deforestation then leaves the soil vulnerable to water and wind erosion, which removes surface materials and nutrients. Erosion then leads to further soil degradation, as tree and crop residues contain valuable nutrients that are lost to the soils once they are removed. And finally, the eroding soils and nutrients are lost into the water table and into the streams, rivers and ponds that the entire production system and surrounding ecosystems depend on.

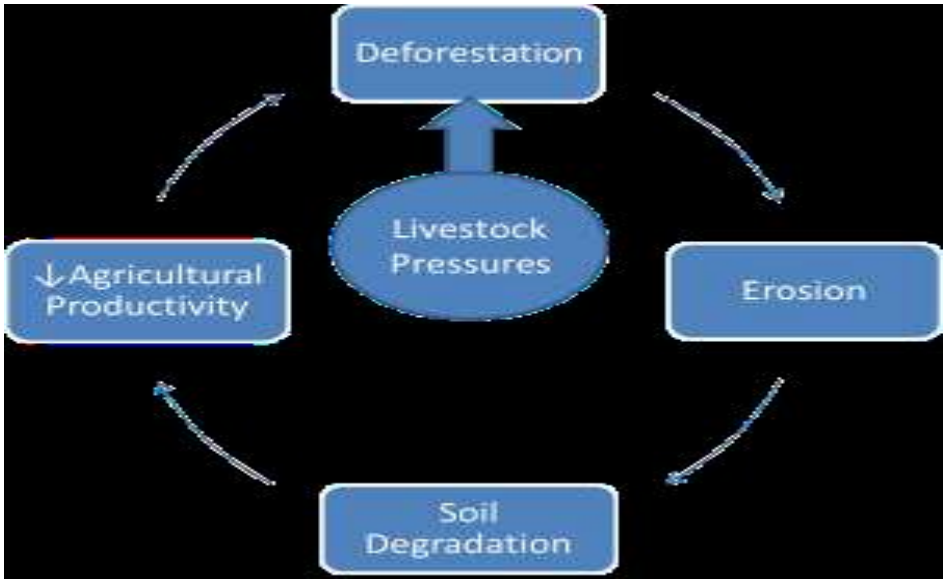

Figure 2. Feedback loop of deforestation due to livestock pressures.

Specific environmental implications of livestock are summarized below.

GHG impacts

The greenhouse gas output for livestock in developing countries are laid out in Table .1. Methane is a potent greenhouse gas with a global warming potency of more than 20 times that of carbon dioxide. Nitrous oxide emissions, whose primary source is manure management, have more than 300 times the global warming potential of carbon dioxide. Ruminants, including cattle, goats and sheep, emit greater amounts of methane during their digestive process than do monogastrics (chickens). Chickens are the most efficient

livestock in Ethiopia in terms of producing the most meat and protein per amount of greenhouse gases emitted.

Table 1 Environmental implications of livestock in developing countries,

	Methane Emissions (per head, annually)	Nitrogen	% of Nitrogen volatized	Other
Cattle	Dairy: 46-58kg Other: 27-31kg Manure: 6-5kg	27-31 kg	22-50%	Ammonia, nitrogen oxides and nitrogen gas. GHG emissions, land/water pollutants
Chickens	0.02 kg	0.6-1.1 kg	50-55%	Chickens most efficient, meat and protein/GHGs
Goats	5 kg Manure: 0.11-0.22 kg	1.37 kg	15-35%	Vitalization leads to ozone and aerosols

Vegetation impacts

The main vegetation impacts derived from environmental implications of livestock production include:

- Livestock grazing and trampling have marked effects on vegetative cover, soil quality and nutrient loss due to erosion. Evidence of this impact is found in the 10-20% of grasslands worldwide that are degraded due to overgrazing.
- Overgrazing of pastureland causes soil erosion and releases carbon from decaying organic matter, compacting wet soils and disrupting dry soils. The effects of trampling depend on soil type.
- Desertification due to overgrazing causes a loss of 8-12 tons of carbon per hectare from soils and 10-16 tons of carbon in above-ground vegetation. In mixed farm

systems, land tillage and crop production further compound the loss of native vegetative cover and leads to soil erosion, while soil compaction and soil disruption result in increased runoff and erosion.

- Livestock grazing and trampling have marked effects on vegetative cover, soil quality and nutrient loss due to erosion.

Self-check 1	**Written test**

Directions: Answer all the questions listed below.

1. List the environmental impacts of livestock in Ethiopia (5 points)
2. List the main vegetation impacts derived from environmental implications of livestock production (8 points)

3. Monogastrics (chickens) emit greater amounts of methane during their digestive process than do ruminants (2 points) A. True B. False
4. Ruminants are the most efficient livestock in Ethiopia in terms of producing the most meat and protein per amount of greenhouse gases emitted (2 points)
   A. True B. False
5. _____ emissions, whose primary source is manure management, have more than 300 times the global warming potential of carbon dioxide (2 points)
   A. Methane B. Ammonia C. Nitrogen gas D. Nitrous oxide

Note: Satisfactory rating - 19 points Unsatisfactory - below 19 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 2- Seeking expert advice

2.1. Pre-screening consultation

Pre-screening is not normally taken as a part of a stage in the environmental assessment (EA) process. However, its application is recommended in recognition of its importance to enhance the overall effectiveness of the EA System.

Pre-screening is a stage where the proponent and the respective environmental or sectoral agencies establish contact and hold consultation on how best to proceed with the EA.

The undertaking of a pre-screening consultation is advisable for it saves time and fosters a mutual understanding about the requirement.

A Consulting firm

A consulting firm is an institution that can command the required qualified professional working group that has demonstrated the ability to undertake the EA, and meets the requirements specified under the relevant law.

The firm that will be appointed to work on behalf of a proponent is expected to:

- have the expertise in environmental impact assessment and management commensurate with the nature of the proposed activity and legal requirements,
- make available an interdisciplinary team, having solid technical skills and legal know-how, and local knowledge,
- manage the participation of interested and affected parties in acceptable manner,
- have the facility to produce readable reports that are through and informative,
- declare and ensure at all times that has no vested interest in the proposed activity and observe all ethical values of the calling,
- familiar itself with legal and technical requirements of all the concerned bodies, and be able to include :
    - ✓ statements from the regional environmental agencies,
    - ✓ certificates and recommendations from the sectoral agencies,
    - ✓ statements of local administration approval as the case maybe, and
    - ✓ an endorsed minutes of public consultation process by appropriate local authority, as the verification of the truthfulness of all information contained in the environmental impact assessment (EIA)-report as well as fairness of the process,
- provide additional detailed information related to the environmental impact study report as may be requested,

- ensure that Interested and Affected Parties are provided with all means and facilities (e.g. notice, assembly holes, reasonable time, understandable language, fair representation, etc.) enabling them to adequately air their views and concerns,
- fulfill that they are legally registered and licensed to conduct the task,
- capable of presenting an authentic complete curriculum vitae (CV) of experts to be employed for the task,
- present a true, pragmatic, analytical, understandable, and impartial account of the proposed activity, etc.

Self-check 2	**Written test**

Directions: Answer all the questions listed below.

1. Pre-screening is normally taken as a part of a stage in the environmental assessment (EA) process. (2 points) A. True B. False

2. What is pre screening? (2 points)

3. What mean a consulting firm? (2 points)

4. What are expected from a firm that will be appointed to work on behalf of a proponent (11 points?)

5. What are the legal and technical requirements should be included by consulting firm? (4 points)

Note: Satisfactory rating - 21 points Unsatisfactory - below 21 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 3- Carrying out prioritized recommendations from the assessments

Mitigation strategies for decreasing land degradation as a result of livestock in Ethiopia include:

- Engage in nutrient management strategies that encompass:
  - ✓ effective nutrient cycling between plants, soil and animals,
  - ✓ improved plant and animal nutrient retention and efficiency,

- ✓ alternative uses of grazing land and
- ✓ multi-use buffers on grazing or cropland periphery.

- Decrease animal morbidity and mortality: Dairy cow mortality across the production cycle in developing countries is estimated at four percent. Unproductive or unusable livestock represent an investment of feed with low or no output, and producing feed (or grazing of land) is inextricably linked with some degree of land degradation.
- Remove grazing from marginal areas and concentrate it in productive areas where ecosystem resilience and degradation resistance is greatest.
- Better feed and grazing strategies would allow for more cattle on less land and for that land to be degraded to a lesser extent. Though livestock is only part of the agricultural expansion that causes deforestation, it is a fundamental component inherently linked with crop production.

Carbon sequestration efforts help to reduce the impact of greenhouse gas emissions generated from livestock production. This is an especially appealing policy option of the livestock enterprise.

In order to effectively enact and monitor any potential livestock policy, there must be a prerequisite of full participation of relevant stakeholders to promote sustainable land and livestock management practices. For livestock policy in Ethiopia, that requires the participation of the following stakeholders:

- Government agencies: ministries (i.e. MoARD), the regional and zonal bureaus, and *woreda* offices and community level development agents;
- research institutes
- regulatory agencies including the Environmental Protection Authority (EPA);
- NGOs and international development partners; and
- local land users and managers.

Successful livestock policy will require all be involved and invested in some degree with the policy making process and support the proposed measures to improve livestock productivity and reduce the negative externalities associated with livestock production in Ethiopia.

Self-check 3	Written test

Directions: Answer all the questions listed below.

1. List the mitigation strategies for decreasing land degradation as a result of livestock in Ethiopia (8 points)
2. List the nutrient management strategies (4 points)
3. Better feed and grazing strategies would allow for more cattle on less land and for that land to be degraded to a lesser extent. (2points) A. True B. False

4. In order to effectively enact and monitor any potential livestock policy, there must be a prerequisite of full participation of relevant stakeholders to promote sustainable land and livestock management practices. (2points) A. True B. False

5. Mention the stakeholders those participate in livestock policy in Ethiopia? (5 points)

Note: Satisfactory rating - 21 points Unsatisfactory - below 21 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 4- Implementing organizational environmental policies and procedures

4.1. Introduction

The effect of livestock company's' activities on the environment is of significant importance. As an integral part of its commitment to ensure the health and wellbeing of the community, it will undertake to contain the environmental effect of its activities to a

practicable minimum consistent with maintaining its responsibilities in providing high quality services.

The company should recognizes that the minimum acceptable level of environmental performance is laid down by statutory legislation, but it is committed to improve upon those minimum standards to make a contribution to reduce pollution, global climate change and biodiversity loss.

The company should be committed to implementing, monitoring and reviewing its overall environmental performance.

The company should ensure a proper balance between the need to improve services and a responsible approach to the environment.

Purpose

The purpose of livestock enterprise policy is to minimise the company's impact on the environment and thereby minimise the effects to the population. These impacts include:

- consuming energy,
- purchasing goods,
- producing waste,
- effluent,
- emissions to the atmosphere and traffic to and from company premises.

4.2. Policy statements

The company recognizes and readily accepts that environmental protection is the responsibility of us all. Therefore, it will seek to integrate all aspects of risk management to ensure the wellbeing of people and the environment.

The company should seek to:

- Reduce, where practicable, pollution to air, land and water;

- Promote waste minimization and reduce the environmental impact of waste through beneficial use, where practicable, or safe disposal where not;
- Communicate openly the organization's environmental performance to staff, patients, government authorities and other interested parties on request.
- Enhance the aesthetics of the company premises by maintaining the grounds in an environmentally sound manner through the design, location and finishes of buildings and structures;

4.3. Procedures

- Environmental objectives
- Comply with all legislative and regulatory requirements
- Take steps to minimise waste production and ensure that waste is disposed of responsibly and where possible ecologically used.
- Select as far as possible environmentally acceptable products and promote re-use or recycling of goods and materials
- Encourage suppliers and contractors to adopt good environmental standards.

Waste management

This applies to waste disposed of other than drainage. This procedure sets out the environmental principles to be adhered to in the management of waste.

Handling and storage

The manager responsible for the collection of waste for disposal shall also be responsible for:

- It's safe handling in transit and storage.
- Ensuring that it remains properly contained and secure.
- 9Using only authorized equipment and facilities.
- Reporting any defects in collection facilities, equipment or procedure.

Waste procedure

- Waste will be segregated into appropriate categories.
- The environmental impact of all waste produced will be addressed.

- Waste will be transported by licensed carriers.
- Waste disposal contractors will be reviewed to optimize collection arrangements to ensure that hazardous wastes are stored on site for the minimum practicable time period.
- Waste minimization ideas will be developed. An approach to reduce, recycle and reuse in reducing consumption of resources will be adopted and a strategy of sustainable development will be considered where possible.

Self-check 4	**Written test**

Directions: Answer all the questions listed below.

1. The effect of livestock company's' activities on the environment is of significant importance. (2 points) A. True B. False
2. Explain policy statement. (2 points)

3. The livestock company should be committed to implementing, monitoring and reviewing its overall environmental performance. (2 points)
   A. True B. False
4. The purpose of livestock enterprise policy is to minimise the company's impact on the environment and thereby minimise the effects to the population. (2 points)
   A. True B. False
5. The manager is not responsible for the collection of waste. (2 points)
   A. True B. False
6. List waste procedures (5 points)

Note: Satisfactory rating - 15 points Unsatisfactory - below 15 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 5- Allocating tasks and monitoring outcomes

5.1. Introduction

Proper allocation of tasks between humans and machines is an important component of user centered design. First identify which tasks can only be allocated to either the

machine or human (mandatory allocation), and then provisionally allocate tasks on either a permanent and dynamic basis. This provisional allocation should then be evaluated and revised if necessary.

Tasks should be allocated to humans and machines in a way that best combines human skills with automation to achieve task goals, while supporting human needs.

5.2. Methods of task allocation

Prior information

Context analysis and task analysis should be used to identify the task structure and demands, the knowledge needed to perform the tasks, environmental constraints, functional and safety requirements and other relevant issues.

Mandatory allocation

Mandatory allocation can be identified from the task model, e.g.

- to humans due to technical infeasibility or ethical or safety considerations
- to machines due to demands exceeding human capabilities or a hostile environment

Provisional allocation

Permanently allocate tasks based on factors such as task criticality, cost, training or knowledge requirements, or task unpredictability.

Dynamically allocate tasks based on factors such as human workload, the need for cognitive support, individual differences in users, changing capacity of the user, or organizational learning.

Jobs must be designed from the tasks based on factors such as responsibility, task variety, interference between and within tasks, communication between users, and individual capability.

Evaluation

The provisional allocations and jobs should be evaluated based on factors such as:

- safety,

- system performance,
- usability,
- cost,
- job satisfaction and
- human well-being,
- acceptance by users,
- management and
- society and social impact. The evaluation findings should be used to review and revise the provisional allocations which should then be re-evaluated.

It is crucial that a leader picks people for positions based on their skills and experience. Before a leader can put the right people in the best positions, they will first need to understand the battle that they are engaged in, and they must know what skills will be necessary to win it. If a leader doesn't understand the battle that they are in, it will be impossible for them to know which person to choose for a specific task. In addition to this, a good leader will want to learn as much as they can about their opponents. It will be impossible to win a battle when you don't know who you're up against. Once you understand the game and the opposition, you will next need to begin putting your subordinates in positions that allow them to maximize their natural gifts. While this may sound like common sense, it is a common mistake which is made by many leaders, and it almost always leads to failure. You will first want to start by creating a goal for your team, and you will then want to begin giving tasks to team members who are able to help you achieve this goal. You will want to write down all the necessary tasks before you begin assigning them to your team members. Each task should be listed based on its level of importance.

After you have written down and ranked each task, you will next want to write down the skills that are necessary to fulfill each task. After you have this information written down, you will next want to begin listing the skills of each member of your team. Compare the skills of the members to the skills that are necessary to complete a specific task. Team members who have skills which match up to a particular task should be placed in that

position. This is the basic method for task allocation, and it may have a few missing pieces if it is being used in a real world situation.

To deal with these missing pieces, you have one of two options. You can either choose to place qualified people in places where they can perform important tasks, or you can give a task to someone who is at a lower level. Both approaches can be good for specific situations. The person that is qualified is reliable and is likely to do an excellent job, while the person who is lower will can do it quickly for a much lower cost. If you find large gaps in the skill level of your group, you will need to either hire new members or train your existing members. The path that you choose can have a number of advantages and disadvantages.

Training your existing members is cheaper and faster. Hiring a new member involves a bit of risk, because you don't know if they can be trusted, and they may not have the practical experience to succeed. You will also have to deal with payment and other issues. You will often find that it is best to simply train existing members that you are familiar with. They will often have natural skills that you will want to harness. Once they've gained the necessary skills, they can be placed in a position which allows them to work at a higher level. Hiring new people takes a long time, and they may use deception to make it appear they have skills which they lack, and you may not figure this out until you have hired them.

Self-check 5	**Written test**

Directions: Answer all the questions listed below.

1. Tasks should be allocated to humans and machines in a way that best combines human skills with automation to achieve task goals, while supporting human needs. (2 points) A. True B. False

2**.** Dynamically allocate tasks based on factors such as task criticality, cost, training or knowledge requirements, or task unpredictability. (2 points) A. True B. False

3**.** Permanently allocate tasks based on factors such as human workload, the need for cognitive support, individual differences in users, changing capacity of the user, or organizational learning. (2 points) A. True B. False

4. Discuss the methods of task allocation? (6 points)

5. What are the factors for evaluation of provisional allocations and jobs (9 points?)

Note: Satisfactory rating - 21 points Unsatisfactory - below 21 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 6- Implementing contingency plan

6.1. Introduction

Contingency planning is a systematic approach to identifying what can go wrong in a situation. Rather than hoping that everything will turn out OK or that "fate will be on your

side", a planner should try to identify contingency events and be prepared with plans, strategies and approaches for avoiding, coping or even exploiting them.

Maintain contingency plans for preventing, mitigating, and controlling serious environmental and health damage from their operations, including accidents and emergencies; and mechanisms for immediate reporting to the competent authorities.

6.2. Contingency plan

A **contingency plan** is a plan devised for an outcome other than in the usual (expected) plan. It is often used for risk management when an exceptional risk that, though unlikely, would have catastrophic consequences. Contingency plans are often devised by governments or businesses. For example, suppose many employees of a company are traveling together on an aircraft which crashes, killing all aboard. The company could be severely strained or even ruined by such a loss. Accordingly, many companies have procedures to follow in the event of such a disaster. The plan may also include standing policies to mitigate a disaster's potential impact, such as requiring employees to travel separately or limiting the number of employees on any one aircraft. During times of crisis, contingency plans are often developed to explore and prepare for any eventuality.

The following questions can help develop contingency plans:

1. What events may occur that require a response?
2. What disasters might happen during execution of the plan?
3. What is the worst case scenario of events for the situation?
4. What scenarios are possible for the situation?
5. What event would cause the greatest disruption of current activities and plans?
6. What happens if costs of the plan are excessive? What happens if delays occur?
7. What if key people leave the organization?
8. What are the expected moves of antagonists and competitors?
9. Who or what might impede implementation of the plan?

Self-check 6	Written test

Directions: Answer all the questions listed below.

1. Define contingency planning? (2 points)
2. Define contingency plan? (2 points)

3. Contingency plan is often used for risk management when an exceptional risk that, though unlikely, would have catastrophic consequences. (2 points)

   A. True B. False

4. What is mean contingency plan (2 points?)

5. List the questions used to develop contingency plan (9 points)

Note: Satisfactory rating - 17 points Unsatisfactory - below 17 points

You can ask you teacher for the copy of the correct answers.

Operation Sheet – Managing waste

Objectives: to comply with company's corporate requirement, environmental laws and regulations regarding proper waste management.

Procedure:

Step 1 – Waste minimization

Step 2 – Waste categorization

Step 3 – Labeling

Step 4- Segregation

Step 5 – Storage and handling

Step 6 – Recycling

Step 7 – Treatment

Step 8 – Disposal

LAP TEST	**Performance Test**

Name…… ID…… Date……

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **6** hours. The project is expected from each student to do it.

Task: Managing waste

LG #49	**LO #3- Implement and monitor change and continuous improvement**
Instruction sheet	
This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:	

- Implementing environmental improvement plans
- Identifying, implementing and monitoring best practice approaches
- Seeking suggestions and ideas
- Seeking suggestions from supply chain

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Implement environmental improvement plans
- Identify, implement and monitor best practice approaches
- Seek suggestions and ideas
- Seek suggestions from supply chain

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).

Information Sheet 1- Implementing environmental improvement plans

1.1. Benefits of improving environmental performance

In addition to the environmental improvements that can be achieved in business by introducing good housekeeping measures, potential additional benefits include:

- Economic competitiveness
- Increased awareness
- Capture ‘green business’ customer demand
- Corporate social responsibility
- Enhanced corporate image
- Reduced resource consumption
- Cost reductions through improved efficiency
- Increased capacity amongst staff
- Increased awareness of current and future environmental legislation

1.2. Continuous improvements in environmental performance

Enterprises should continually seek to improve corporate environmental performance, by encouraging, where appropriate, such activities as:

- Adoption of technologies and operating procedures in all parts of the enterprise that reflect standards concerning environmental performance in the best performing part of the enterprise;
- Development and provision of products or services that have no undue environmental impacts; are safe in their intended use; are efficient in their consumption of energy and natural resources; can be reused, recycled, or disposed of safely;
- Promoting higher levels of awareness among customers of the environmental implications of using the products and services of the enterprise; and
- Research on ways of improving the environmental performance of the enterprise over the longer term.

Multinational enterprises are permanently and continually adapting to a changing socio-economic environment. This applies to all corporate activities, including their environmental management tools. For example, in a departure from previous “end-of-pipe” approaches to limiting pollution, companies have implemented more efficient preventive environmental techniques, affecting the different stages of their value chains.

Improved brand and corporate reputation, risk reduction, improved access to finance, and value creation (*i.e.*, development of “green products” for which a price premium can be obtained) are among the key considerations that motivate businesses in their efforts to improve environmental performance.

1.3. Tools and approaches

The four categories of environmental improvements:

- process-related improvements,
- product related improvements;
- consumer awareness; and
- research and development.

1.3.1. Tools for process-related improvements

Environmental management systems are one (possibly the main) tool to achieve process-related improvements.

Environmental metrics is another important approach increasingly used by companies. Companies are unlikely to achieve environmental improvements if they lack data about their performance in the first place. Companies also face expectations from financial and non-financial stakeholders that they quantify their environmental performance and inform the public. Useful tools for measuring environmental performance are:

- indicators,
- benchmarking, and
- environmental management accounting (EMA).

EMA expresses environmental information in terms of financial costs to the company. It is a tool to identify, collect and analyse information about environment-related, internally absorbed costs.

1.3.2. Tools for product and service-related improvements

Environmental life-cycle assessment is a tool for systematic evaluation of the environmental aspects of a product or service through its entire life-cycle. A product's life-cycle starts when raw materials are extracted, followed by manufacturing, transport and use, and ends with waste management including recycling and final disposal. There are emissions and consumption of resources at every stage of the life-cycle. Life-cycle assessment (LCA) starts with lifecycle thinking – an understanding that the environmental impacts of the entire life-cycle of products and services need to be addressed.

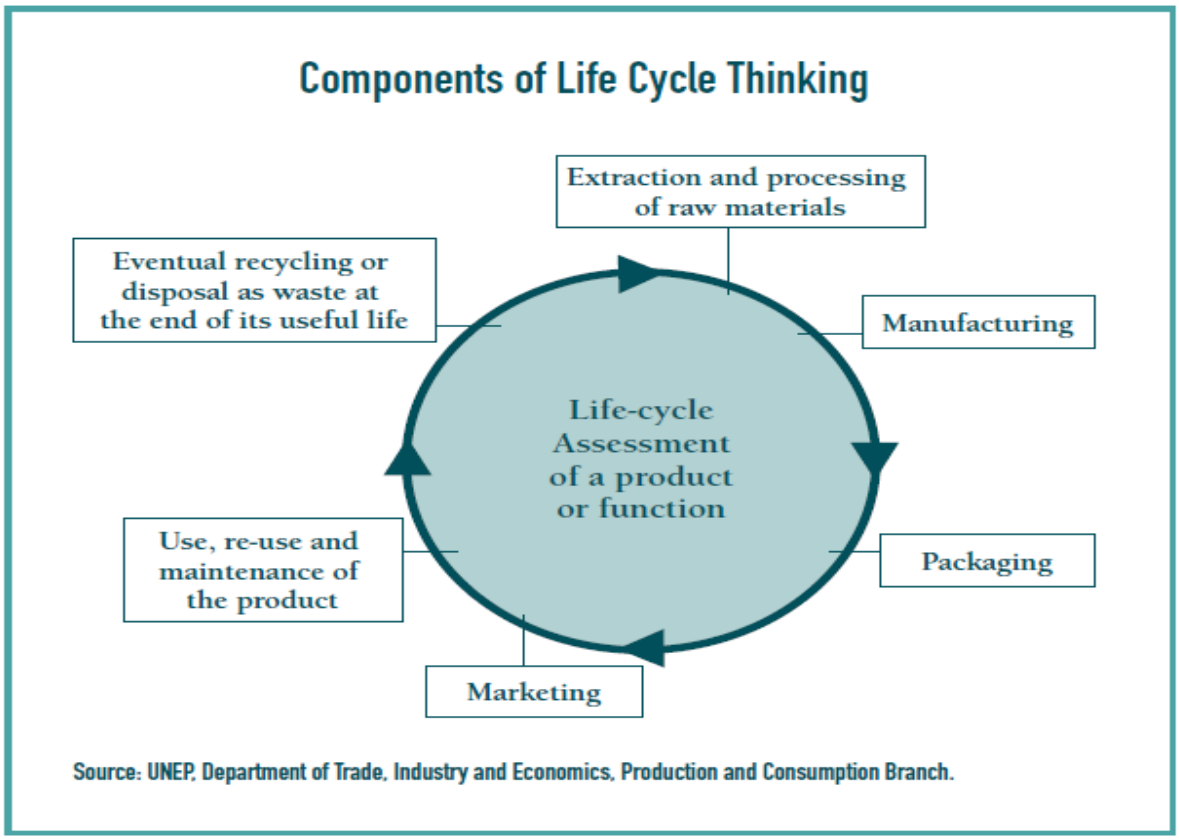

Figure 3. Life cycle assessment of a product and service

Product stewardship calls on those in the product life-cycle – manufacturers, retailers, users, and those who dispose of products – to share responsibility for reducing the environmental impacts of products. Product stewardship usually requires manufacturer centered action, covered under "extended producer responsibility" laws gaining prominence in several European countries, Canada, and Asia. In the US, "extended

product responsibility" is the concept that is taking hold. Take-back schemes are one example of product stewardship.

Collaborative partnerships with other organizations such as environmental groups, the government and other companies can help improving environmental performance, notably of services.

Raising consumer awareness

Product-information tools: Only a minority of consumers seeks information about the environmental performance of products. If companies provide that information, consumers may take this information into account in their purchasing decisions. One tool used by companies to raise consumer awareness is *eco-labeling.*

Company-information tools: Another way to increase awareness among potential consumers is to provide easy to- access and comparable information about the company's environmental conduct, *e.g.* through public databases.

1.3.3. Research and development

Greening facilities and processes is one improvement that requires research and development.

Development of new environmental management tools: Another research activity for improving future environmental performance deals with innovation in environmental management. It addresses issues such as the tools a company will need to have in place in the near future to continually improve its environmental performance.

Self-check 1	**Written test**

Directions: Answer all the questions listed below.

1. List the benefits of improving environmental performance (9 points)

2. List the activities the enterprises should continually seek to improve corporate environmental performance (9 points)
3. Discuss the four categories of environmental improvements (12 points)
4. What are the tools for measuring environmental performance?(3 points)
5. _____is a tool for systematic evaluation of the environmental aspects of a product or service. (2 points)

A. Environmental audit C. Environmental policy

B. Environmental metric D. Environmental life-cycle assessment

6. Greening facilities and processes is one improvement that requires research and development. (2 points)

A. True B. False

Note: Satisfactory rating - 37 points Unsatisfactory - below 37 points

You can ask you teacher for the copy of the correct answers

Information Sheet 2- Identifying, implementing and monitoring best practice approaches

2.1. Introduction

Best management practices (BMPs) are land management strategies that prevent or reduce the movement of sediment, nutrients, pesticides and other pollutants from the land to surface or groundwater.

BMPs are designed to protect water quality from potential adverse effects of land management practices from all locations within a watershed. Best management practices include soil and water conservation practices, other management techniques and social actions developed for a particular region as effective and practical tools for environmental protection. Best management practices can be used by homeowners, municipalities, farmers, industries, county, state and federal governments and agencies or anyone who manages or owns land.

While BMPs are tailored to a particular land management situation and geographical location, they are implemented for the same basic goal of protecting our water resources. The focus of this information sheet is on the use of BMPs on livestock farms.

2.2. Best management practices for livestock farms

Low cost best management practices

Soil testing allows for the nutrient content of pasture areas to be known with certainty. After testing your soil and receiving your free soil test report, you will know how much fertilizer to apply to each pasture. The benefits of precise fertilization based on soil test results can both save you money and protect the environment by preventing an over-application of nutrients and reducing nutrient losses from storm runoff.

Nutrient management plans (NMPs) are effective tools that provide a whole-farm systematic means of identifying water quality concerns and of evaluating the need for BMPs on each individual field. Trained professionals generally develop nutrient management plans. Nutrient management plans have several components that allow farmers to efficiently manage fertilizer applications that save money while also protecting the environment. A typical NMP has a pasture-by-pasture inventory of soil fertility and a corresponding fertilization time, rate and placement for each pasture. A NMP will also

contain a place for fertilizer application records and fertilizer application buffer areas. The use of a NMP will reduce nutrient losses in storm runoff from your pastures.

Proper manure fertilization is considered a BMP

Fertilizer spreader calibration is a good way to ensure that you are delivering your fertilizer at the desired rate per unit area. Knowing that your fertilizer spreading is accurate protects your pocketbook as well as the environment by preventing an over-application of nutrients in your pasture.

Figure 4. A farmer calibrates a fertilizer spreader before fertilizing to ensure delivery of the intended fertilizer rate to the pasture

Utilization of warm- and cool-season forages can reduce sediment and nutrient runoff from pastures, and it can increase the length of the grazing season on your farm.

Legume establishment in pastures allows nitrogen to be fixed in the soil and can reduce your nitrogen fertilization needs. In addition, reducing nitrogen inputs in your pasture legumes also increases the forage quality of your pasture-forage mix.

BMPs that may require cost-share assistance

Litter stacking sheds provide a structure where dry manure can be stored until it is time to be land applied or hauled off the farm. Dry storage prevents loss of manure nutrient content and potentially negative environmental impacts by protecting the fertilizer source from rain and nutrient transport in storm runoff.

Stream fencing is the practice of excluding livestock from accessing a stream. Livestock can often degrade stream bank integrity, which leads to stream bank erosion and loss of pastureland. Stream fencing prevents nutrient and sediment loss from pastures.

Alternative watering is a way of providing water for livestock that are fenced out of streams and ponds. Alternative watering is also designed to deliver water to livestock at multiple places on a farm, which enhances a rotational grazing system. The use of alternative watering enhances pastures' nutrient distribution by grazing animals and prevents stream bank erosion.

Figure 5. Alternative water sources can keep cows out of riparian areas and the stream channel.

Pasture fencing is a cost-share BMP that can greatly enhance the efficiency of your farming operation. As more pasture is divided into smaller paddocks, the utilization of forages by grazing livestock can increase. As utilization of forages is increased and cattle are moved more frequently, the ungrazed paddocks will have fresh forage available for grazing and the previously grazed paddocks will have time to rest. Rest periods from

grazing allow forage regrowth and prevent overgrazing, which can lead to increased storm water runoff and unnecessary sediment and nutrient loss.

Self-check 2	**Written test**

Directions: Answer all the questions listed below.

1. Define BMPs? (2 points)

2. BMPs are designed to protect water quality from potential adverse effects of land management practices from all locations within a watershed. (2 points)

   A. True B. False

3. What are low cost BMPs? (4 points)

4. knowing that your fertilizer spreading is accurate protects your pocketbook as well as the environment by preventing an over-application of nutrients in your pasture. (2 points)

   A. True B. False

5. One of the following is BMPs that may require cost-share assistance (2 points)

   A. Pasture fencing
   B. Nutrient management plans
   C. Legume establishment
   D. Utilization of warm- and cool-season forages

Note: Satisfactory rating - 12 points Unsatisfactory - below 12 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 3- Seeking suggestions and ideas

3.1. Introduction

We are currently facing the most critical environmental issues in human history. Our climate, planet, lives, and future as a civilization are all at risk. While the magnitude of

that thought can be extremely overwhelming, don't allow yourself to feel helpless, not knowing where to begin. Making small steps and adjustments in your daily routine will give you a sense of success and a desire to attempt more.

3.2. Brainstorming ways to solve environmental problems

Here are 5 simple ways you can help the environment and spark others to become more environmentally aware.

Replace disposable items with reusable

Anything you use and throw away can potentially spend centuries in a landfill. See below for simple adjustments you can make to decrease the amount of disposable items in your daily life.

- Carry your own reusable cup or water bottle
- Use airtight, reusable food containers instead of sandwich bags and plastic wrap
- Pack a waste-free lunch: carry your utensils, cloth napkin, and containers in a reusable lunch bag
- Consider buying bulk containers of your preferred beverages and refilling a reusable bottle, instead of buying individually packaged drinks
- Use rechargeable batteries

Pass on paper

We are living in the digital era, but think about all the paper products you use in your daily life. These actions still align with reusing and repurposing, though may take a little more time for transition.

- Join a library instead of buying books or buy a Kindle
- Print as little as possible; and if you must, print on both sides
- Wrap gifts in fabric and tie with ribbon; both are reusable and prettier than paper and sticky-tape
- Stop using paper towels and incorporate washable cloths

Conserve water & electricity

The tips you see below will seem like no-brainers; however, it may take to become more aware of your unconscious habits.

- Turn the sink water off when brushing your teeth
- Water the lawn in the morning or evening; cooler air causes less evaporation
- Switch off anything that uses electricity when not in use (lights, televisions, computers, printers, etc.)
- Unplug devices when possible; even when an appliance is turned off, it may still use power
- Remove chemicals inside of the house; research companies that use plant-derived ingredients for their household cleaning products
- Remove chemicals outside of the house; use eco-friendly pesticides and herbicides that won't contaminate groundwater
- Consider signing up for a renewable energy producer that uses 100% renewable energy to power homes

Support local & environmentally friendly

Here are a few reasons to start buying local:

- Reduces plastic and paper waste
- Boosts cost-efficiency
- Enables bulk purchasing
- Helps support your neighbors
- Retains farmland within the community
- Builds up the local economy
- Uses fewer chemicals for both for growing and transporting

Recycle (& then recycle properly)

Implementing recycling habits into your daily life is one of the most effective ways to help lessen landfill waste, conserve natural resources, save habitats, reduce pollution, cut down on energy consumption, and slow down global warming.

- Confirm you are using the proper separation containers for your household per the local recycling services
- Remember to make sure your trash bags are recycled or biodegradable, and always cut up the plastic rings from packs of beer or soda to prevent wildlife from getting caught
- Learn how to identify and dispose of hazardous waste properly

Taking the time to simply read this information for ways to solve environmental problems is a step forward to becoming more aware of the needs of your environment. *You are now taking action, and every change–big or small–will create an impact*.

Self-check 3	**Written test**

Directions: Answer all the questions listed below.

1. Anything you use and throw away can potentially spend centuries in a landfill. (2 points) A. True B. False

2. List the 5 simple ways you can help the environment and spark others to become more environmentally aware (5 points)

3. Implementing recycling habits into your daily life is one of the most effective ways to help lessen landfill waste, conserve natural resources, save habitats, reduce pollution, cut down on energy consumption, and slow down global warming. (2 points)

A. True B. False

4. Remove chemicals outside of the house; use eco-friendly pesticides and herbicides that won't contaminate groundwater help to solve environmental problem (2 points)

A. True B. False

5. Mention reasons to start buying local (7points)

Note: Satisfactory rating - 18 points Unsatisfactory - below 18 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 4- Seeking suggestions from supply chain

5.1. Implementation of green supply chain management (GSCM)

At present, livestock enterprises cannot ignore environmental issues any more. In face of the government's decrees and the growing public pressure, the environmental issues

must be incorporated into the corporate planning agenda. At the same time, livestock companies are adjusting their supply chain processes to

- lower costs and
- better meet customer needs.

These two trends are mutually linked. Enterprises must include their supplier and sales targets into the scope of management to meet or even surpass the requirements of the government and the public. As a matter of fact, how to establish green supply chain is the key to achieve this goal. Some well-known multinational companies successfully take the green supply chain management as the enterprise culture and penetrate it into all processing aspects, all departments and all staff. In this information sheet, we try to discusses to bring the supplier into the process of environmental management and three aspects of the implementation of environmental friendly-practically practices, namely,

- product design process,
- material selection and
- supply process optimization enterprise.

Figure 6. Green supply chain management

5.1.1. Product design process

One of the approaches to improve the material specifications is to strengthen the mutual understanding between suppliers and designers. Numerous enterprises have committed to re planning the design process and implemented the “design for the sake of environment”. Some enterprises setup a “product design group” to discuss environmental issues in the design of new products. The design group mainly analyzes through the life cycle, in order to research all inputs and outputs materials and the processing of byproducts and the potential possibilities and methods once at end of the life cycle.

The vast majority of well-known multinational companies regard the law as a challenge, as well as an opportunity. They think that if you can effectively make the use of the law and under the circumstance of maintaining the company’s basic foothold, you are able to create a considerable environmental benefit in accordance with the law. Some domestic run-well businesses attach great importance to environmental problems in the product design process.

The basic purpose of the product design engineering department is to meet the requirements of environmental protection firstly, while the economic benefit is secondary. The new products are required to outside the current international regulatory requirements. It is because of the sufficient attention of environmental issues in design process, the enterprise has established a good image and reputation, and ultimately achieved good economic benefits.

Considering the environmental problems in product design, we have to discuss all material’s life cycle, strengthen the communication between designers and materials experts, and use some scientific methods, such as life cycle analysis, quality foundation development and design for the environment (DFE), etc.

5.1.2. Selection of product materials

The product design and development process are required to include the purchase behavior of enterprises and the supplier’s behavior for the sake of the DFE (Design for

the Environment). In addition, the environmental design of supplier is closed related to the environmental management of purchaser, because both sides belongs a part of the supply chain management.

It is also an important part to minimize the materials types in the supply chain management. In the past, many companies used a variety of materials in one kind of product, which has brought difficulties in the recycling that has received widely concern. In addition, it is increasingly important to use alternatives to reduce waste generation and reduce the consumption of raw materials. At present, there is a good example to replace the logs with plywood in the construction industry. This innovation not only makes full use of the raw materials and in line with environmental protection requirements, but also improves the fineness of product, as well as become very popular among consumers.

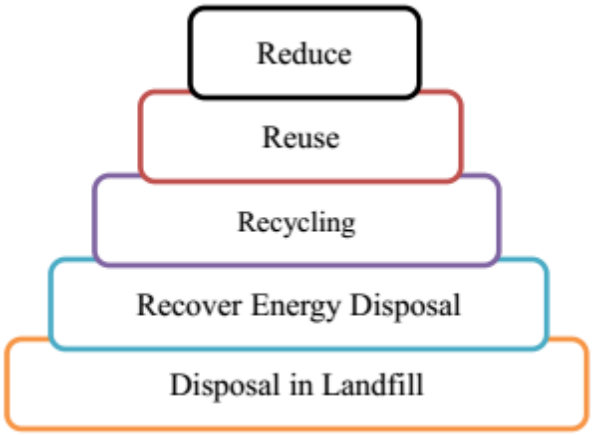

Figure. 7. Hierarchy of reverse logistics

5.2. Optimization of the supply chain process

Most companies have realized the impact of procurement on environmental friendly practices. Active suppliers focus on the improvement in environmental friendly practices, which has a significant impact on the supply chain.

The purpose is to reduce the waste and the use of materials through the communication with the supplier and making requirements of their products. For instance, many companies have demands on the length of a product, so as to reduce the amount of residue after consumption. Their products are not only reliable and efficient in quality, more importantly, the company focuses on customer's requirements in the product development, in the hope of reducing the by-product after consumption, concerning about the product's efficiency and environmental benefits, and reducing the damage on the environment to the most extent. It is because of the positive attitude of the company, "win-win" among the demand party, the customer and the whole environment.

The two most critical aspects in the supply process:

- the supplier assessment and
- company's internal logistics management

Self-check 4	**Written test**

Directions: Answer all the questions listed below.

1. Why companies are adjusting their supply chain processes (4 points)
2. List the three aspects of the implementation of environmental friendly-practically practices (9 points)
3. The basic purpose of the product design engineering department is to meet the requirements of environmental protection firstly, while the economic benefit is secondary. (2 points)

A. True B. False

4. Discuss green supply chain management (8 points)
5. List the two most critical aspects in the supply process (9 points)

Note: Satisfactory rating - 32 points Unsatisfactory - below 32 points

You can ask you teacher for the copy of the correct answers.

LG #50	LO #4- Implement and monitor recording procedures

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying and implementing internal and external reporting procedures
- Maintaining and storing environmental records
- Monitoring information and records

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify and implement internal and external reporting procedures
- Maintain and storing environmental records
- Monitor information and records

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.

3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).

Information Sheet 1- Identifying and implementing internal and external reporting procedures

1.1. Introduction

Having undertaken various environmental management initiatives to improve its environmental performance, a company or an organization may wish to communicate the results of these initiatives to the outside world. One way of doing this is by publishing an environmental report. Issuing an environmental report can improve a firm’s public image and lead to improved relationships with stakeholders. To date, it is mainly large companies that have issued such reports but small and medium scale companies may also find environmental reporting a useful tool.

1.2. Audit reports and records

- **Audit report preparation**

The audit report is prepared under the direction of the lead auditor, who is responsible for its accuracy and completeness. The topics to be addressed in the report should be those

determined in the audit plan. Any changes to these topics which are desired at the time of preparation of the report should be agreed by all the parties concerned.

The audit report should contain the audit findings (or a summary of these findings) with reference to supporting evidence. Subject to agreement between the lead auditor and the managing director (MD), the audit report may also include the following:

- ✓ the identification of the organization audited and of the client
- ✓ the agreed objectives, scope and plan of the audit
- ✓ the agreed audit criteria including a list of reference documents against which the audit was conducted
- ✓ the period covered by the audit and the date(s) the audit was conducted
- ✓ the identification of the audit team members
- ✓ a statement of the confidential nature of the report contents
- ✓ the distribution list for the audit report
- ✓ a summary of the audit process including any obstacles encountered
- ✓ audit conclusion i.e. EMS fully conforms/does not fully conform with audit criteria and has/has not been properly implemented and maintained.

The audit report should be dated and signed by the lead auditor.

- **Report distribution**

The audit report should be sent to the management directorate (MD) by the lead auditor. Distribution of the audit report should be determined by the MD in accordance with the audit plan. Audit reports are the sole property of the company and confidentiality should be respected and appropriately safeguarded by the auditors and all recipients of the report.

The audit report should be issued within the agreed time period in accordance with the audit plan. If this is not possible, the reasons for the delay should be formally communicated to the MD and a revised issue date established.

All working documents, and draft and final reports pertaining to the audit should be retained by agreement between the MD, the lead auditor and in accordance with any applicable requirements.

Self-check 1	Written test

Directions: Answer all the questions listed below.

1. Issuing an environmental report can improve a firm's public image and lead to improved relationships with stakeholders. (2 points) A. True B. False
2. The audit report is prepared under the direction of the managing director, who is responsible for its accuracy and completeness. (2 points) A. True B. False
3. What are included in the audit report? (9 points)
4. Distribution of the audit report should be determined by the lead auditor in accordance with the audit plan. (2 points) A. True B. False
5. The audit report should be issued within the agreed time period in accordance with the audit plan. (2 points) A. True B. False

Note: Satisfactory rating - 17 points Unsatisfactory - below 17 points

You can ask you teacher for the copy of the correct answers

Information Sheet 2- Maintaining and storing environmental records

2.1. Introduction

Environmental records will include:

- Site diary
- Site inspection reports
- Site visit records (by others)
- Induction and toolbox talks records (including attendance registers)
- Monthly project reviews
- Internal and external audit reports
- Waste management records
- Minutes of meetings (progress, task force)
- Correspondence
- Incident and investigation reports

The records will be stored on site with the project documentation.

A company eco-balance records:

- the various raw materials,
- energy,
- resources,
- products and
- wastes entering, held within and leaving a company over a specified period of time. In other words, it provides a record of a company's physical inputs, stock and outputs.

Once a company knows exactly what is coming in and going out, it can begin to assess the particular environmental impacts of those inputs and outputs.

An eco-balance therefore enables a firm to undertake the comprehensive environmental review of its activities required by ISO 14001 and EMAS and to go on and set targets for improving its environmental performance.

2.2. Environmental management system documentation

The firm must establish and maintain information - in paper or electronic form to;

- describe the elements of the management system and their interaction
- provide direction to related documentation

Document control

The firm must establish procedures for controlling all the documents required by ISO 14001 to ensure, for instance, that they can be located and that they are periodically reviewed, revised as necessary and approved by authorized personnel.

Operational control

The firm is required to identify those of its activities that are associated with the significant environmental aspects covered in its objectives and targets. The firm then needs to produce documented operating procedures for these activities to cover situations where, if no procedures existed, the objectives and targets might not be met.

The firm must also establish procedures relating to the significant aspects of goods and services used by the organization. All relevant procedures must be communicated to suppliers and contractors.

Emergency preparedness and response

The firm must establish and maintain procedures to;

- to identify potential accident and emergency situations
- to respond to these situations should they arise, and
- for preventing and mitigating the environmental impacts that may be associated with them

The firm must periodically test these procedures where practicable and review and revise them where necessary particularly after the occurrence of accidents or emergency situations.

Self-check 2	**Written test**

Directions: Answer all the questions listed below.

1. List a company eco-balance records. (5 points)
2. An eco-balance enables a firm to undertake the comprehensive environmental review of its activities required by ISO 14001 and EMAS and to go on and set targets for improving its environmental performance. (2 points)
   A. True B. False
3. What are forms the firm used to establish and maintain information? (4 points)
4. The records will be stored on site with the project documentation. (2 points)
   A. True B. False

5. The firm must establish procedures for controlling all the documents required by ISO 14001. (2 points) A. True B. False

Note: Satisfactory rating - 15 points Unsatisfactory - below 15 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 3- Monitoring information and records

3.1. Monitoring and measurement

The firm must establish and maintain documented procedures to monitor and measure on a regular basis, those areas covered by the objectives and targets in order to see if the objectives and targets have been met. The firm must also establish and maintain a documented procedure for periodically evaluating compliance with relevant environmental legislation and regulations.

3.2. Non-conformance and corrective and preventive action

The firm must establish and maintain procedures for defining responsibility and authority for;

- investigating and handling instances of non-conformance with the targets and objectives it has set for itself
- taking action to mitigate any impacts caused, and
- for initiating and completing corrective and preventive action.

The organization must record any changes it makes to its procedures as a result of any corrective and preventive action that it undertakes.

3.3. Records

The organization must establish and maintain procedures for the identification, maintenance and disposal of its environmental records. These records must include;

- training records,
- the results of audits and
- management reviews.

3.4. Environmental management system audit

The firm is required to establish and maintain a programme and procedures for periodic environmental management system audits to be carried out. The audit seeks to determine whether or not the EMS;

- conforms with the requirements of the ISO 14001
- has been properly implemented and maintained

The audit programme and procedures should cover;

- the activities and areas to be considered in audits
- the frequency of audits
- the responsibilities associated with managing and conducting audits
- the communication of audit results
- auditor competence
- how audits will be conducted

Self-check 3	Written test

Directions: Answer all the questions listed below.

1. The organization must record any changes it makes to its procedures as a result of any corrective and preventive action that it undertakes. (2 points)

A. True B. False

2. What are the firms must establish and maintain procedures for defining responsibility and authority (3 points)

3. The organization must establish and maintain procedures for the identification, maintenance and disposal of its environmental records. (2 points)

A. True B. False

4. List the types of environmental records. (3 points)

5. List the audit programme and procedures should cover (12 points)

Note: Satisfactory rating - 22 points Unsatisfactory - below 22 points

You can ask you teacher for the copy of the correct answers.

LG #51	LO #5- Implement and monitor an environmental Management training program

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying environmental training needs
- Making arrangements for identified training needs

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify environmental training needs
- Make arrangements for identified training needs

Learning Instructions:

1 Read the specific objectives of this Learning Guide.
2 Follow the instructions described below.
3 Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4 Accomplish the “Self-checks” which are placed following all information sheets.
5 Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6 If you earned a satisfactory evaluation proceed to “Operation sheets
7 Perform “the Learning activity performance test” which is placed following “Operation sheets”,
8 If your performance is satisfactory proceed to the next learning guide,
9 If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheet”.

Information Sheet 1- Identifying environmental training needs

1.1. Environmental education and training

Training need = the gap between present capability and desired capability

Enterprises should provide adequate education and training to employees in:

- environmental health and safety matters, including the handling of hazardous materials
- the prevention of environmental accidents,
- environmental impact assessment procedures,
- public relations and
- environmental technologies.

The expectation that enterprises will provide environmentally-related training arises from two general objectives:

- promoting environmental health and safety and
- Implementing environmental management systems.

Under environmental and occupational health and safety (OHS) regulations in most countries, employers must train their staff with the purpose of protecting their health and safety, as well as that of the local community.

1.2. Tools and approaches

Training workers to prevent and handle emergencies is usually mandatory. Regulation in some cases specifies the technical requirements (*e.g.* safety issues) to be addressed in training, but not how to design or develop, let alone deliver or evaluate training. There are also cases where companies decide to provide environmental education and training on a voluntary basis. This is particularly relevant for operations in developing countries, where mandatory requirements may be less stringent.

Several standards aim to assist companies in the implementation of occupational health and safety practices. The most prominent one (and the only one to have been developed in a multi-stakeholder process) is ILO-OSH 2001.

Another international standard, ISO 14004, offers guidance for companies that want to establish an EMS that conforms to the requirements of ISO 14001. It suggests areas of training, such as:

- raising awareness of the strategic importance of environmental management and environmental issues more generally,
- skills enhancement and
- training to achieve compliance with environmental regulation.

1.3. Elements of a training programme

The characteristics of training programmes depend on the characteristics and goals of the EMS of which they are part. They typically have the following elements:

- identification of employee training needs;
- development of a training plan to address defined needs;

- verification of conformance of training programmes to regulatory or
- organizational requirements;
- training of target employee groups;
- documentation of training received; and evaluation of training

Success factors for effective environmental training, the global environmental management initiative (GEMI) proposes three success factors for effective environmental training:

- Training must be designed for a specific audience. In general, the audience should be as homogeneous as possible; hence it is important to identify the needs for each group. Training should be tailored to match the audience's skills and background (*i.e.* education, job assignments, position levels, experience).
- Trainers must establish clear objectives prior to the start of the training which would allow them to have measurable results. Training objectives usually need to be stated in terms of how the trainee's behaviour will be affected, such as "What should the participants be able to accomplish at the end of the training?"

- Training should be tailored according to the corporate culture (which can vary within the same company). Multinational enterprises also need to identify key cultural aspects of the country where the training is conducted.

1.4. Categories of potential trainees

Core categories of potential trainees within a company include:

- Environmental managers and specialists. Employees that have a direct responsibility for on-site environmental management such as recycling, waste management, pollution prevention, compliance with environmental regulation, and EMS more generally.
- *Directors and senior managers*. This group includes managing directors, financial officers and marketing managers. While they do not play a direct role in implementing the EMS, some find that environmental issues impacts play a role in strategy (*e.g.,* harming or enhancing reputation) and liability.

- General staff. This group includes employees that are not in the categories above. They may or may not be aware of the company's environmental goals and programmes. Training activities can also be offered to business partners such as:
  - suppliers,
  - sub-contractors and contractors.

Training can facilitate environmental improvement throughout the supply chain by helping suppliers gain knowledge and skills in the area of environmental management.

1.5. Training, awareness and competence

All staff whose work may create a significant impact on the environment must receive the appropriate training. The firm must make them aware of:

- the importance of conformance with the requirements of the EMS
- the significant environmental impacts of their work activities and the environmental benefits of improved personal performance
- their roles and responsibilities in the successful functioning of the EMS

Staff performing tasks which can cause significant environmental impacts must be deemed competent to do so. (Competence is assessed on the basis of their education, training and/or experience).

Self-check 1	Written test

Directions: Answer all the questions listed below.

1. _____is the gap between present capability and desired capability. (2 points)
2. List enterprises should provide adequate education and training to employees (5 points)
3. What are the general objectives of enterprises to provide environmentally-related training ?(4 points)
4. Staff performing tasks which can cause significant environmental impacts must be deemed competent to do so. (2 points) A. True B. False

5. What are the elements of a training programme? (6 points)

Note: Satisfactory rating - 19 points Unsatisfactory - below 19 points

You can ask you teacher for the copy of the correct answers

Information Sheet 2- Making arrangements for identified training needs

1.1. Responsibility

1.1.1. Environmental Management System Committee / function / departmental manager

The Environmental management system (EMS) committee / function / departmental managers shall ensure that persons working for or on behalf of the company within the scope of EMS are competent on the basis of appropriate education, training or experience. The EMS committee / function / departmental managers shall identify training needs for persons working for or on behalf of the company to ensure individual competence to implement the EMS effectively.

1.1.2. Human Resources Manager

The Human Resources Manager *(*HRM) shall consolidate the training needs and prepare an annual training plan (Table 2). The HRM shall also arrange or coordinate training and keep training records.

Table 2. Training plan format

Training Plan (Year)

Training Type	Target Staff	Length	Date	Responsible Personnel

1.2. Identification of training needs and development of training plans

- The environmental management representative (EMR) shall consult with the Function / Departmental Managers to identify the needs of environmental training where appropriate. The Environmental Management System (EMS) Committee may identify additional training needs in consultation with individual staff members.
- The Human Resources Manager (HRM) shall produce an annual training plan. The HRM shall consider various types of environmental training programmes or other means such as:
  - ✓ ISO 14001 awareness training programmes
  - ✓ EMS implementation Training
  - ✓ EMS auditor training
  - ✓ Other specific on-job training

1.3. Organization of Training

- For each staff of the company, the HRM shall establish, implement and maintain a training record of any type of EMS related training received. Where a training course is undertaken internally, names of the attendants shall be recorded in the training attendance record (Table 3).

- The effectiveness of training may be evaluated by HRM / departmental manager through**:**
  - ✓ questionnaire,
  - ✓ test,
  - ✓ on-job performance review,
  - ✓ internal audit, etc.

The evaluation method shall be defined in the training plan.

Table 3. Training attendance record format

TRAINING ATTENDANCE RECORDS

<Topic>

<Date/Time>
<Venue>
<Trainer>

List of Participants

No.	Name	Signature	Position / Dept.

Self-check 2	Written test

Directions: Answer all the questions listed below.

1. The EMS committee / function / departmental managers shall identify training needs for persons working for or on behalf of the company to ensure individual competence to implement the EMS effectively. (2 points)

A. True B. False

2. What are considered by HRM for various type of environmental training program? (8 points)

3. Who is evaluating the effectiveness of EMS training? (4 points)

4. For each staff of the company, the HRM shall establish, implement and maintain a training record of any type of EMS related training received. (2 points)

A. True B. False

5. What are the evaluation methods for the training effectiveness? (8 points)

Note: Satisfactory rating - 20 points Unsatisfactory - below 20 points

You can ask you teacher for the copy of the correct answers.

Operation Sheet – Organizing environmental management training program

Objectives: to organize environmental management training program

Procedure:

Step1: Identifying organization needs

Step2: Specifying job performance

Step3: Identifying learners' needs

Step 4: Determining training objectives

Step 5: Designing training courses

Step 6: Selecting training strategies

Step 7: Developing training materials

Step 8: Conducting training

Step 9: Evaluating training

LAP TEST	Performance Test

Name…… ID…… Date……

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 5 hours. The project is expected from each student to do it.

Task: Organize environmental management training program

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1. *www.oecd.org/ehs*
2. *www.uneptie.org/pc/sustain/ lcinitiative/home.htm*
3. *www.iso.org*
4. *www.gemi.org*
5. http://pdf.usaid.gov/pdf_docs/PNADJ990.pdf
6. http://www.fao.org/climatechange/en/

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