ENVIRONMENTAL MANAGEMENT SYSTEMS II

EMS in the context of Environmental Management

EMS as a tool of Environmental Management

- We seek to understand how does EMS fit in within the broader Integrated Environmental Management (IEM);
- The are range of tools that seeks to improve environmental quality and goals of sustainable development at varying levels.
- These processes can be applied at different levels

  (i.e. at a policy, programme or project level) and throughout the activity life-cycle (i.e. during the pre-feasibility, feasibility, design and planning, construction/establishment, operation/implementation, and decommissioning stage of an activity).

  - This refers to any development and operational activity or anthropogenic activities that induces environmental impact at any level.

EMS as a tool of Environmental Management

- At a programme level, a **Strategic Environmental Management Plan** (SEMP) might be prepared. For example, a SEMP might be prepared for an industrial development zone that includes: -

  - *several projects. The SEMP provides the over-arching framework for addressing cumulative impacts of a suite of existing and potential developments.*

- A key manner in which this is achieved is by setting limits of environmental quality (i.e. performance targets) that need to be achieved by the suite of projects. The SEMP usually incorporates the principles of **Strategic Environmental Assessment** (SEA)5, and thereby provides a framework for future project-specific EMPs.

EMS as a tool of Environmental Management

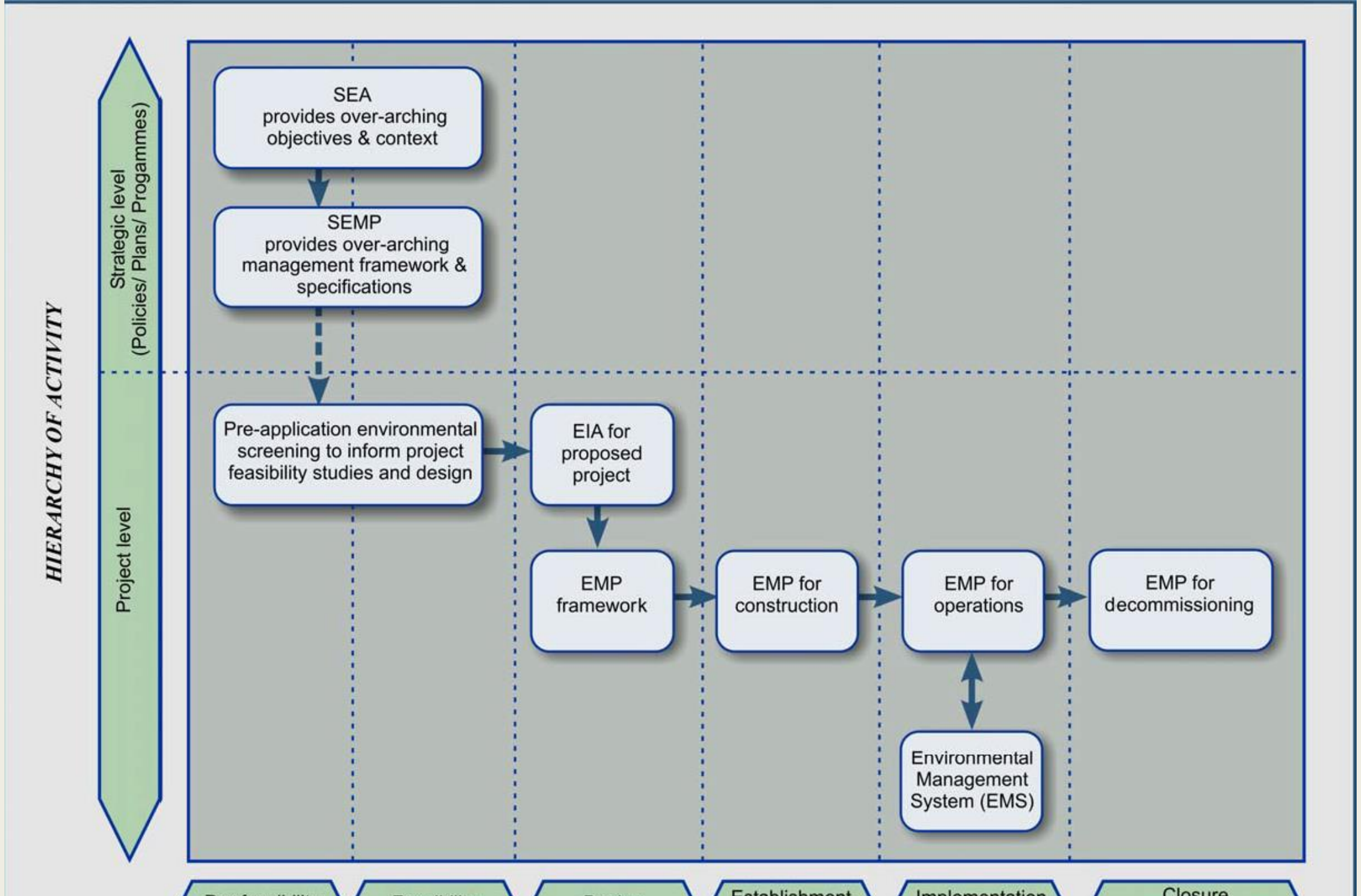
- In situations where a SEMP exists, a subordinate EMP will need to be prepared within the context of this SEMP, incorporating all relevant environmental management specifications.
- The potential inclusion of a SEMP within the wider environmental assessment and management process is shown later in a diagrammatical format.
- At a project level, **Environmental Management Plan** (EMPs) are usually prepared following an EIA and incorporate the proposed management actions (i.e. actions to mitigate negative impacts and enhance positive benefits).
- Separate EMPs can be prepared for the construction, operation and decommissioning phases,
- All of these are project specific projects not programmes particularly for large-scale complex projects.

EMS as a tool of Environmental Management

- **What is an EMP:**
- An EMP is an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction and **operation**, and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced.
- EMPs are usually prepared in the course of applications submitted for the environmental authorization of projects in terms of regulations promulgated under the Environment Conservation Act (Act 73 of 1989) and National Environmental Management Act (NEMA) EIA regulation 2017.
- **What are the triggers for an EMP:**
- **EMP for an area of ecological or social value.** The EMP may be required as the foundation for responsible management of an area (eg. EMP for a nature area or cultural site). For example, it may be used to inform the rehabilitation of an area, to secure funding or land transfer, to satisfy donor requirements, or to obtain or maintain a special designated status for that area (eg. EMP for Robben Island as part of the legislated requirements for a World Heritage Site).

where the negative impacts have already been assessed in analogous EIAs and found to be minimal; and/or projects fully aligned with the land use zoning. Nonetheless, an EMP may be required for authority approval (e.g. application to erect and operate a cellular telephone communications mast within a residential area).

- **EMP following Environmental Impact Report.** Following a full EIA process, culminating in the submission of an Environmental Impact Report, an EMP may be required as a condition of project approval.
- **EMPs covering specific activities assessed through an over-arching EIA and incorporated into a Strategic Environmental Management Plan4 (SEMP).** A tiered system of EIA leading to a SEMP and multiple EMPs may apply to large-scale complex developments with several sub-projects.
- **EMP as part of an Environmental Management System**. An EMP may be prepared as part of an Environmental Management System (EMS), such as the ISO14001 standard. In this case, the EMP is usually focused on an existing operation or activity and does not require authority approval(s).


HIERARCHY OF ACTIVITY
Strategic level
(Policies/ Plans/ Progammes)
Project level
SEA
provides over-arching
objectives & context
SEMP
provides over-arching
management framework &
specifications
Pre-application environmental
screening to inform project
feasibility studies and design
EIA for
proposed
project
EMP
framework
EMP for
construction
EMP for
operations
EMP for
decommissioning
Environmental
Management
System (EMS)

ENVIRONMENTAL MANAGEMENT SYSTEMS

- **An EMS approach**: is usually applied to the **operational phases of projects**, rather than the construction or decommissioning phases, as it is strongly based on a cyclical process of continuous improvement. By contrast, project construction is often a “once-off” activity.
- **Environmental Management System (EMS):** provides a systematic framework and approach to minimize risks and manage environmental aspects (i.e. activities that cause impacts) and impacts (i.e. effect or change to the environment resulting from an activity).
- It is an **iterative process** that requires ongoing commitment from an organisation, in order to achieve continuous improvement and enhanced environmental performance (DEAT, 2004b).

EMS and LEGAL CONTEXT

- Since various **operations** undertaken by organizations are by nature comprised of activities that needs to be subject to policy and legislative **environmental compliance**, organizations are increasingly designing environmental management systems to streamline environmental concerns into their overarching management processes.
- While EMS has often been developed and implemented on voluntary basis, post-apartheird era has seen organizations embarking on it as way of offsetting environmental concerns with economic development imperatives as stipulated in the legislative framework.
- Firstly, the **Environment Conservation Act (ECA), 1989** (Act No. 73 of 1989, which, although promulgated during the apartheid era, is still relevant) and which requires that the environment must be **adequately protected**, **environmental pollution prevention** must also be prioritised and that **waste be properly managed**.43

EMS and LEGAL CONTEXT

- Secondly, the **Constitution of the Republic of South Africa** (Act No. 108 of 1996), particularly **Section 24** of the Bill of Rights, which makes provision for the protection of the environment. In part, this section states, “[E]veryone has the right –

  - to an environment that is not harmful to their health or well-being; and
  - (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
  - (i) prevent pollution and ecological degradation;
  - (ii) promote conservation; and
  - (iii) secure ecologically sustainable development and use of natural resources while promoting justified economic and social development.

EMS and LEGAL CONTEXT

- Thirdly, in the **National Environmental Management Act** (NEMA) (Act No. 107 of 1998), the principles under Section 2 of this Act describe how policies, plans and programmes of any organisation should comply with the NEMA.

- NEMA says that:
  - Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably;
  - Development must be socially, environmentally and economically sustainable.

EMS and LEGAL CONTEXT

- Sustainable development requires the consideration of all relevant factors including the following:
  - That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
  - that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
- that waste is avoided, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise

EMS and LEGAL CONTEXT

- that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;

- (vi) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;

- (vii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and

EMS and LEGAL CONTEXT

- Finally, **National Water Act**, 1998 (NWA) (Act No. 36 of 1998) was promulgated to protect the water resources in the country. Under this Act, **organisations** must have and implement water pollution prevention measures to ensure that this scarce resource is not degraded through various forms of pollution.
- The principles of NEMA together with all the other legislative provisions do not exempt the SA organisations from adequately managing the environmental within their jurisdiction, and no clause(s) in any of these provide such exemption to these organisation.
- These Acts all advocate the protection, pollution prevention and sustainable utilisation of the country's natural resources.
- Ideally, organisations are compelled to comply with all these legislative provisions.

What is Environmental Management Systems (EMS)?

- EMS: is a set of processes and practices that enable an organization to reduce its environmental impacts in order to increase or improve its operating efficiency;

- It is a framework that helps an organization to achieve its environmental goals through consistent review, evaluation, and improvement of its environmental performance;

- EMS thus assist an organization to address environmental issues that are specific to its core business. In particular to address environmental impacts that may hinder the functional efficiency of the organization.

Nature of EMS

- The latter vary between organisations, but typically include:

- waste,
- emissions,
- energy use,
- transport and
- consumption of materials
  - *Water, Soil, Minerals, Forests etc..*

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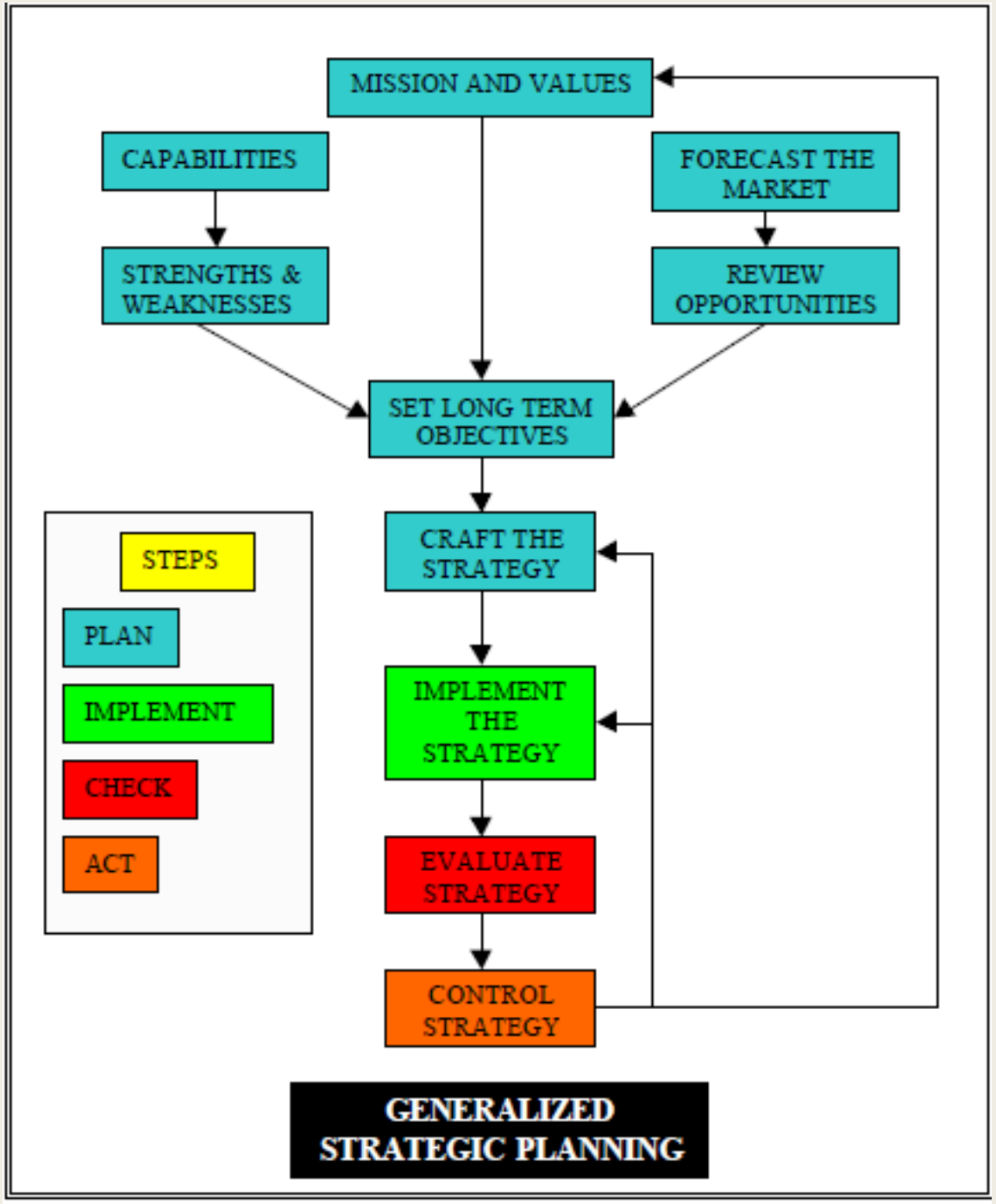
- Climate change are wider factors that are increasingly prominent as are legacy issues such as contaminated land.

Nature of EMS

- Wider factors can also be included, such as impacts on wildlife (biodiversity) and use of materials (such as embodied water).
- In implementing an EMS, a company should identify the significant effects relevant to its business.
- For maximum effectiveness, an EMS should not be set up as a stand alone system, but built into the exiting management structure.
- Thus the following figure (diagram) shows how an EMS fit in or is built into the strategic plan or vision of the organisation to ensure that pertinent environmental issues are addressed at a strategic level.


MISSION AND VALUES
CAPABILITIES
FORECAST THE MARKET
STRENGTHS & WEAKNESSES
REVIEW OPPORTUNITIES
SET LONG TERM OBJECTIVES
CRAFT THE STRATEGY
IMPLEMENT THE STRATEGY
EVALUATE STRATEGY
CONTROL STRATEGY
STEPS
PLAN
IMPLEMENT
CHECK
ACT
GENERALIZED STRATEGIC PLANNING

Functions of EMS

- Adopting an EMS can help an organisation to:

1. Manage and improve its environmental performance (managing negative impacts) and helping to increase resource efficiency (e.g. cutting waste and energy use);

2. Comply with environmental laws and regulations;

3. Generate financial savings through well-managed use of resources and efficient practices; and

4. Improve its standing and reputation with staff, client companies, partner organisations and wider stakeholders;

5. Adapt to a changing environment (either its operations or its products/ services).

Contextual Background of EMS

- EMS is largely based on certain standards which are called ISO (International Organisation for Standardisation).
- For organisations, International Standards make things work as they give world-class specifications for products, services and systems, to ensure quality, safety and efficiency.
- National and international EMS certification schemes thus emerged in the early 1990s; and
- Have since evolved to become standardised and structured so they are compatible and complementary with other mainstream standards (e.g. ISO 9001 for Quality Standard).

Contextual Background of EMS

- Like national or international standards, the ISO 14001 standard is a specification for an environmental management system that can be assessed by external bodies.

- The standard (ISO 14001) also provides an umbrella for the rest of the ISO14000 series which covers a wide range of environmental management issues including auditing, labelling, life-cycle assessment etc.

- The use of ISO 14001 is voluntary, but is often cited as a requirement of commercial tendering processes.

Contextual Background of EMS

- A series standards on environmental management that provide a framework for the development of an environmental management system and the supporting audit programme.

- ISO 14001 specifies a blueprint for an Environmental Management System against which an organization can be certified by a third party.

- Other standards in the series are actually guidelines, many to help achieve registration to ISO 14001 (although they can be used as ‘stand alone’). These include the following:

A series of international standards on environmental management

AN INTERNATION STANDARDS	DESCRIPTION/PURPOSE OF EACH STANDARD
ISO 14004	provides guidance on the development and implementation of environmental management systems
ISO 14013/5	provides audit program review and assessment material
ISO 14020	For labelling and certification of specialized products
ISO 14030	provides guidance on performance targets and monitoring within an Environmental Management System
ISO 14040	covers life cycle issues of the development and implementation of EMS
ISO 14063	Deals with environmental communication and certain communication procedure with an organisation
ISO 14064,14065 and 14067	on greenhouse gas emissions measurement, monitoring, reporting, verifying etc.

Environmental Management Systems Assignment

- You are required to part of a group of no more than **six** individuals. The assigned group of this nature will plan to visit a specific company in which you have to learn as far as you can about the planning, acting, and checking aspects of the Environmental Management System adopted by that organisation. In order words, you have to gather relevant information, learn from it, and report to us about the entire EMS life-cycle of the company, with specific reference to its commitment in meeting the ISO 14001 standards.

- **First Phase of your assignment:** Conduct a **compulsory meeting** with your group members to discuss the entry point strategy of consulting the company assigned to your group.
- **Products:** Agenda of Meeting, Minutes of the Meeting, Attendance Register; Draft Letter of Appointment to the responsible personnel.
- **Submission dates:** 24 August 2018 at 11:30 am. MARK: 10

- **Second Phase of your assignment:** You contact the company for the purpose of setting up an appointment in which you will start gathering information about the EMS or ISO 14001 planning, implementation and monitoring aspect of the company that is assigned to your group.
- **Products:** Proof of the communication with the relevant personnel in that company; proof of the email(s) sent and the reply thereof; proof of the follow up communication with the relevant person. It is crucial that marks with be allocated on the basis of how the group conducted itself professionally. Date of the visit should be submitted. This information should be submitted in a form of a progress report of no more than two pages. MARK: 10

Elements of EMS and ISO 14000/1

- It is thus understood that the Generalized Strategic Planning process of an organization in the context of ISO 14001 as the major component of EMS is essentially based on a "plan-implement-check-act" cycle;

- Thus the development of EMS to meet the ISO 14001 is a continual process aimed at improving on a regular basis, the performance of Environmental Management Systems;

- **The major question here:** is How do you improve the environmental management system?

- **Answer:** ISO 14001 requires that you evaluate the organization's interactions/impacts with the environment.

- Following this evaluation each impact is ranked based upon its significance.

Elements of EMS and ISO 14000/1

How do I get started with ISO 14001:2015?

A number of resources provide detailed guidance on how to use the standard, but here are a few tips to get you started:

Tip 1 Define your objectives. What do you want to achieve with this standard?

Tip 2 Get buy-in from senior management. It is essential that the leaders of your organization support the objectives of an effective environmental management system and are committed to the process.

Tip 3 Get a good overview of existing processes and systems relevant to your environmental impact. This will allow you to more easily identify gaps.

Environmental Policy as an Element of EMS

- Usually, it is informed by policy and legislative frameworks;
- Establishes the position of the organisation and communicates its commitment to the environment and stakeholders.
- Top management commits to environmental improvement and establishes a written environmental policy for the company.

SAFETY, HEALTH AND ENVIRONMENTAL POLICY

The Cape Peninsula University of Technology is committed to create a safe and healthy work environment. It will continuously strive to prevent injury and disease to staff, students and visitors as well as to prevent damage to property and the environment.

In order to achieve the above, the Cape Peninsula University of Technology's Safety, Hea th and Environmental programme will focus on the following elements:

1. **Provide and maintain** a working environment that is safe and as far as reasonably practicable without risk to the health of its employees, students and visitors and the environment;

2. **Prevent** accidents and occupational hygiene stresses to person and property;

3. **Minimise** the consequences of such accidents and incidents;

4. **Comply** with legal requirements and other best practices.

5. **Promote** health, safety and environmental awareness amongst employees, students and visitors as a powerful tool to improve the quality of life of all university stakeholders and to protect our natural environment.

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Environmental Policy

- ✓ Appropriate to nature & scale of business
- ✓ Improvement of environmental performance
- ✓ Compliant with legislation and other requirement
- ✓ Protect the environment & prevent pollution
- ✓ Provide the framework for setting objectives and targets
- ✓ Documented & communicated to all personnel and the public

Normally one sheet outlining the environmental aims of the organization

Planning as an Element of EMS

- Identification of environmental requirements and issues; within and surrounding the organisation;
- Defining the actions and resources needed to attain its economic goals and actively sustain its environmental policy.
- In essence, the company conducts a review of its operations, identifies legal requirements and environmental concerns, establishes objectives, sets targets, and devises a plan for meeting those targets.

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Environmental Planning

- ✓ Environmental Aspects
- ✓ Legal and Other Requirements
- ✓ Objectives, Targets and Programs

…Understand and plan to control risks…

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Environmental Aspects

- ✓ Identify the most significant environmental aspects of your past, present and future activities, products and services

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What is an Environmental Impact

…any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects…

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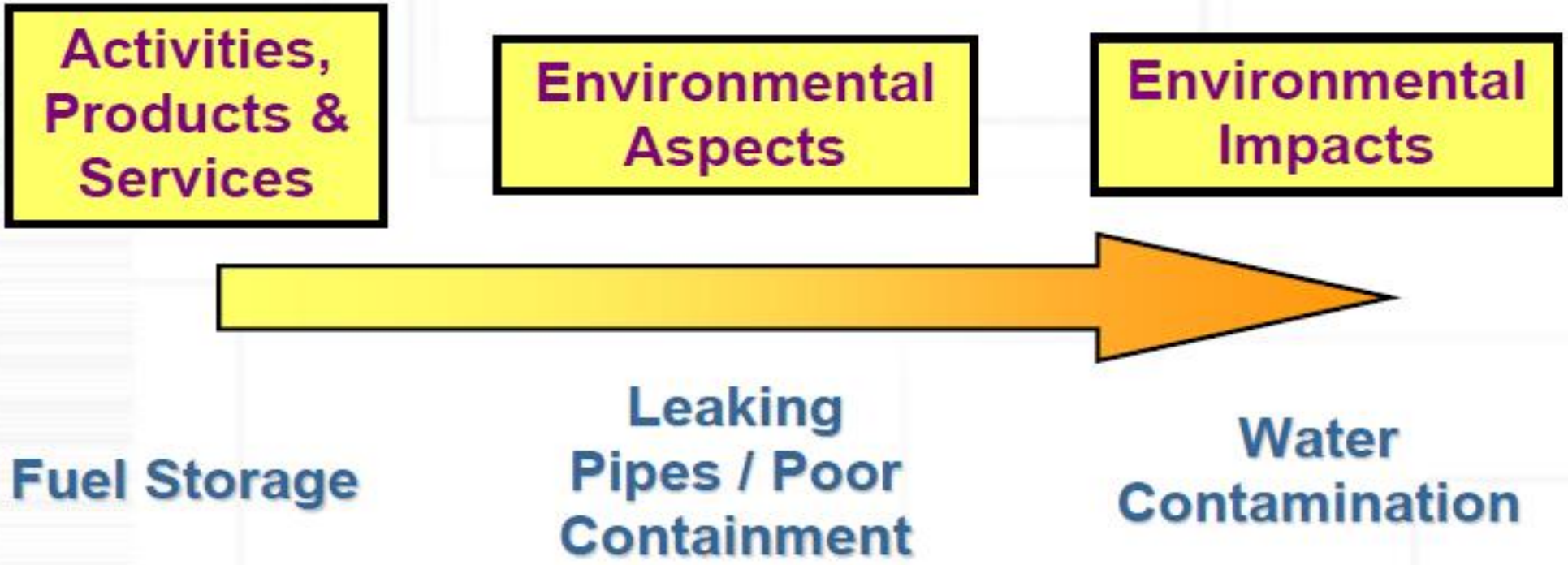
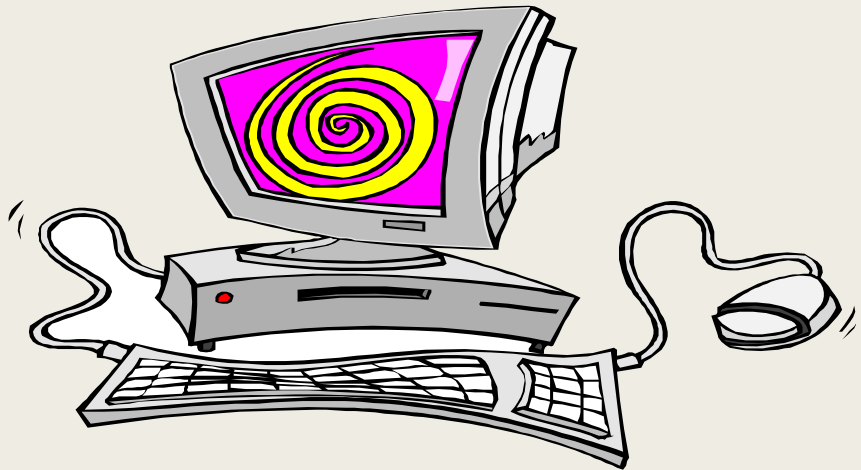
Activities, Aspects and Impacts

"…elements of an organization's activities, products or services that can interact with the environment."



Environmental Aspects Vs. Impacts

Activity	Aspects	Impacts
Use of computer	Consumption of electricity	Depletion of energy resources



Environmental Aspects Vs. Impacts

Activity	Aspects	Impacts
Making Report	Consumption of paper	Depletion of natural resources

Environmental Aspects Vs. Impacts

Activitity	Aspects	Impacts
Delivery of goods by suppliers	Use & disposal of packing materials	Create unlimited solid waste

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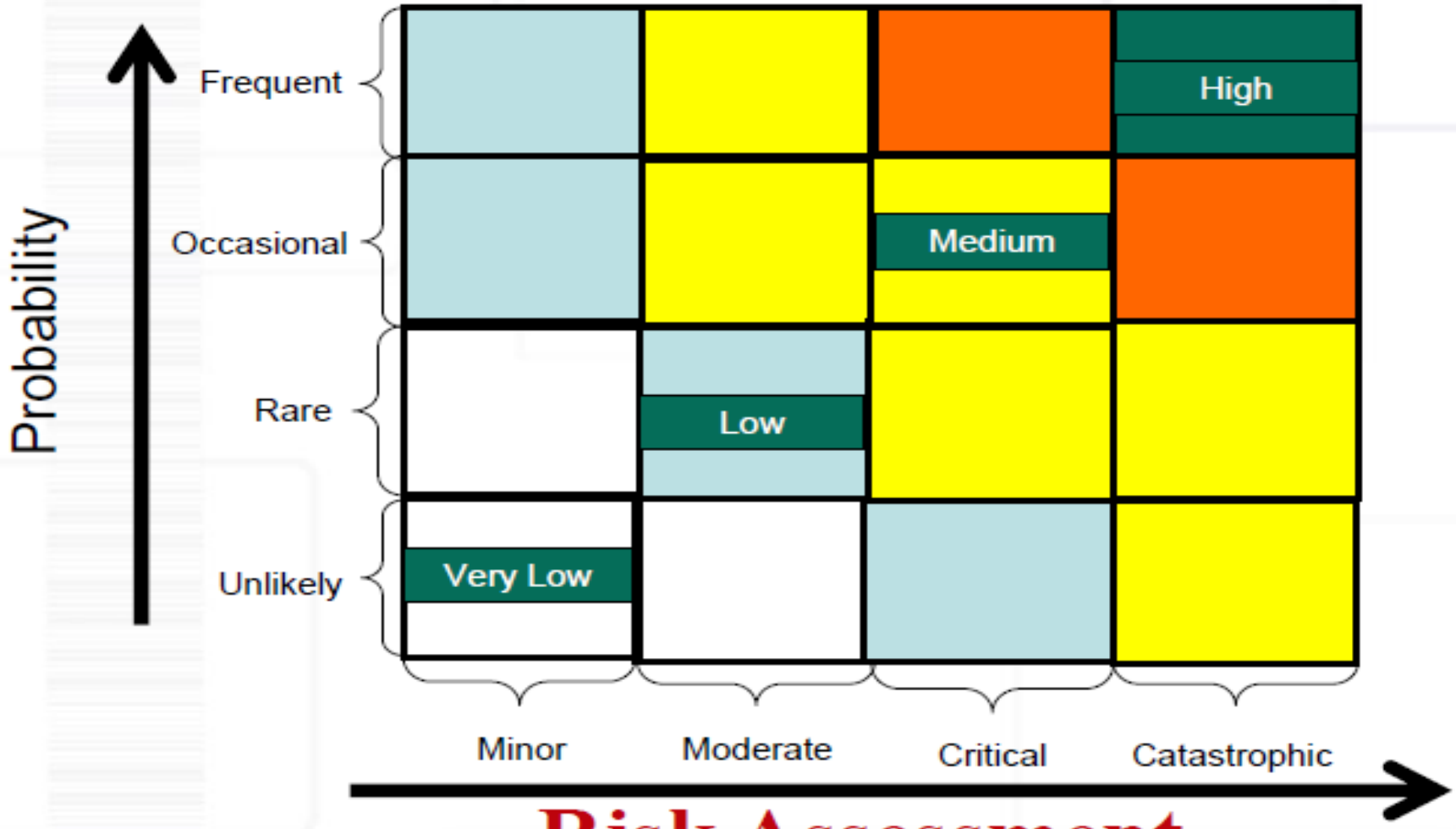
Environmental Risk Assessment



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Legal & Other Requirements

- ✓ Clarify and respect the legal and other requirements that apply to your organization's environmental aspects
- ✓ Identify and meet these requirements including:
  - ❑ Legal Requirements
    - National
    - Provincial
    - Municipal
  - ❑ Other Requirements
    - Industry Standards
    - Agreements

Planning

- Identify aspects and impacts from facility activities, products, and services
- Review legal requirements
- Set objectives and targets
- Establish formal EMS program

Implementation as an element of EMS

- A description of the programmes, procedures and responsibilities that are required to implement key actions needed to attain goals;
- Development of a set of toolkits, a checklist and strategic operating procedures (SOPs) and the adoption thereof;
- In essence, the company follows through with the plan by establishing responsibilities, training, communication, documentation, operating procedures, and an emergency plan to ensure that environmental targets are met.

EMS Action Plan

- **Obtain Management Commitment** –:

The first step in the EMS-building process is gaining top management's commitment to supporting the EMS. Management must understand the benefits of an EMS and what it will take to put an EMS in place.

- **Choose a Champion – :**

A champion is a management representative who has the necessary authority for leading the development and implementation effort and for serving as a liaison to customers and regulators.

EMS Action Plan

- **Form an EMS Team** –:

A team made up of representatives from key management functions, production, and service areas. The team will identify and assess issues, opportunities, and existing processes.

- **Build Support/Involve Employees –:**

Build support for your EMS by making a presentation to your company's managers and employees on what an EMS is and why the company is developing one.

- **Conduct a Preliminary Review** –:

Conduct a preliminary review of your current environmental programs and systems, and compare these against the criteria for yourEMS.

- **Plan the Process –:**

Create a plan for the EMS effort.

Implementation and Operation

- Define roles and responsibilities
- Provide EMS training
- Establish internal and external communication mechanisms
- Establish document control system
- Establish operational controls
- Integrate with or establish emergency preparedness procedures

IMPLIMENTATION ASPECT OF EMS

- **Develop EMS Documentation:**
- **The EMS Manual -** Although EMS Documentation is an EMS Implementation element, it is addressed here because each EMS element must be documented throughout the development process.
- This is a good point to begin the organization of the EMS manual, since each ensuing step involves documenting activities that become part of the manual.

IMPLIMENTATION ASPECT OF EMS

- **Establish a Communication Plan –**
- Communication is another EMS Implementation element. However, communication is an integral part of the EMS development, with more effective communication improving the efficiency of your EMS development.
- Therefore, it is necessary to start the process of developing communication procedures at this point to ensure that resources devoted to EMS development and implementation are used efficiently.

IMPLIMENTATION ASPECT OF EMS

- **Develop Operational Controls** – :

To ensure that your environmental policy is followed and that your objectives are achieved, certain operations and activities must be controlled.

- **Develop Emergency Preparedness and Response Procedures** –:

Emergency plans and procedures must be developed to ensure that there will be an appropriate response to unexpected or accidental incidents.

- **Designate Organizational Structure and Responsibilities** –:

For your EMS to be effective, roles and responsibilities must be clearly defined and communicated.

- **Establish Document Control** –:

To ensure that everyone is working with the proper EMS documents, your organization should have a procedure that describes how documents are controlled.

IMPLIMENTATION ASPECT OF EMS

- **Train Employees** –
- Once the procedures and other documents have been prepared, you are ready to implement the EMS.

As a first step, train your employees on the EMS, especially with regard to the environmental impacts of their activities, any new/modified procedures, and any new responsibilities.

Checking and Corrective Action

- Conduct periodic monitoring of environmental performance
- Identify root causes of findings and conduct corrective and preventive actions
- Maintain environmental records
- Conduct periodic EMS audit