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Abstract - Dealing with the imperatives of sustainable development represents a growing challenge in the context of rapid globalization, persistent poverty and social inequality, and the changing patterns of production and consumption, climatic and environmental changes, and the changing roles of public and private sector institutions.

The concept of sustainability for the industrialists and the businessmen in the past is to try to achieve coordination between the profits and a commitment to environmental considerations, but things become more complicated due to the world transformation into open and global market which it emerged under increasing pressure to meet environmental and social responsibilities, which continually expands its scope.

Information and data are necessary in supporting and rationalizing decision making to build an Egyptian information society as well as the industrial sector which it will able to pursuing and absorbing the great flow of advanced knowledge and aid cost savings. The current approach does not have an unified methodological framework, data collection and management is not standardize. Moreover, the existing set of environmental indicators is not comprehensive and does not respond to the information requirements. Limited environmental information is produced currently and it is not fed into the planning and policy making process, on the other hand available monitoring data is not shared among the agencies. Furthermore, there is no coordination and cooperation occur among the relevant institutions resulting in gaps and duplications.

The current regulation is not comprehensive for the implementation of an adequate national environmental monitoring system. It is worth mentioning that monitoring and evaluation, particularly with regards to information management, is the "most significant constraint to effective environmental policy making and implementation in Egypt". In this regard, the need for a "unified methodological framework" for monitoring activities is identified as essential, together with the need to synchronize data collection, storage, accessibility and usability.

Keywords: IS evaluation, evaluation research, Software Quality Model, ISO 9126 Standard, information systems performance, sustainable development.

I. INTRODUCTION
Dealing with the imperatives of sustainable development represents a growing challenge in the context of rapid globalization, persistent poverty and social inequality, and the changing patterns of production and consumption, climatic and environmental changes, and the changing roles of public sector and private sector institutions.

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coordination between the profits and a commitment to environmental considerations, but things become more complicated due to the world transformation into open and global market which it emerged under increasing pressure to meet environmental and social responsibilities, which continually expands its scope.

Information and data are necessary in supporting and rationalizing decision making [1] to build an Egyptian information society as well as the industrial sector which it will enable to pursuing and absorbing the great flow of advanced knowledge.

Information provided by an e-Environment service should be integrated in order to facilitate correlation, and comparison. A multi-dimensional subject such as the environment conservation relates to information that comes from a wide variety of sources. Interoperability, the ability to exchange information from different sources becomes a real problem, when a vast number of data formats and information representation schemata are employed. When providing an e-Environment service, this information should be integrated and provided in the form that best suits its users.

Environmental management systems can assist an organization to meet its increasingly heavy burden of responsibility for the future condition of our world environment. In many cases, the introduction of an environmental management system can also aid cost savings.

The Management Information System integrates a number of advanced analytical functions for operational real-time control (based on multi-criteria optimization tools) but also scenario analysis, strategic planning, and optimization, within a shared common information basis [2,3].

Evaluation of Information System performances means evaluation of performances in hardware, software, computer networks, data and human resources [4]. The main purpose of Information System functionality performances evaluation is upgrading and especially improvement in quality of maintenance [3] on the other hand The Information System functionality valuation represents the procedure of assessing how successfully Information System fulfills its objectives [2].

The main objective of this research is how to improve the current Environmental Management Information System (EMIS) by the evolution process and affording the solutions in order to support decision making planning and policy making process. On-the-ground, this cannot take place in isolation of the broader social and economic context in which generates and utilizes information and data.

Section 2 focuses on the evaluation of Information system which involves several quality models especially evolution model ISO 9216. The review of current information systems is discussed in section 3. Refinement of the proposed model is explained in section 4. Moreover, the situation analysis and outcomes evolution of current Environmental Management Information System (EMIS) is described in section 5. In section 6, the focus is on the project goals and objectives. Finally, conclusion, the recommendations and the actions is discussed in section 7.

II. INFORMATION SYSTEM EVALUATION

There are several software quality models as the foundation for proposing an appropriate model for evaluating the information system. A quality model is defined as ‘the set of characteristics and the relationship between them, which provide the basis for specifying quality requirements and evaluating product quality’ [5]. There are numerous works found in literature focusing on software products evaluation[6-8]. Among the most accepted models include McCall, Boehm, FURPS, Dromey, Bayesian and ISO 9216.

2.1 MCCALL MODEL
McCall defines the quality of a software product through 3 different perspectives namely Product Operations, Product Revisions and Product Transitions [9]. It consists of 11 quality factors to describe the external view of the software (users’ view); 23 quality criteria to describe the internal view of the software (developer's view); and a set of metrics that are used for quality evaluation. The fundamental idea of this model is assessing the relationship among external quality factors and product quality criteria. A major contribution of this model is the relationship between quality characteristics and metrics. However, there are criticisms such as not all metrics are objectives [5] and the functionality of software product is not considered in this model [10].

2.2 BOEHM MODEL
Boehm introduced a model for evaluating the quality of software as well as the quality of hardware [11, 12]. It presents a hierarchical structure similar to McCall consisting of High-Level, Intermediate-Level and Low-Level characteristics. Each of these characteristics contributes to the total quality of software product. This model takes into account some considerations of software product with respect to the utility of the program. Boehm also extended characteristics to the McCall model by emphasizing the maintainability factor of a software product, which is one of the advantages of this model. However, it does not suggest any approach to measure its quality characteristics [5].

2.3 FURPS MODEL
Robert Grady and Hewlett Packard proposed the FURPS model that decomposes characteristics into 2 categories of requirement: Functional Requirements (FR) and Non-Functional Requirements (NFR)[13]. Functional requirements are mentioned by character (F) are defined by input and expected output while non-functional
requirements consist of usability, reliability, performance and supportability is mentioned by (URPS). It is important to note that domain specific attributes and software product portability were not addressed in this model.

2.4 DROMEY MODEL

Dromey proposed a working framework for evaluating requirement determination, design and implementation phases [14, 15]. The framework consists of three models namely requirement quality model, design quality model and implementation quality model. Layers are defined as high-level attributes and subordinate attributes. The main idea of this model is to create a framework that is broad enough for different systems; and to understand the relationship(s) between characteristics and sub-characteristics of quality product [10]. Different evaluation is proposed for each product. However, the more dynamic modeling of the process is needed since this model lacks the criteria for measuring software quality.

2.5 BAYESIAN BELIEF NETWORK MODEL

The Bayesian Belief Network (BBN) model is represented in hierarchical structure, similar to McCall and Boehm. The structure is graphically illustrated, where nodes represent variables and arrows represent the relationships between nodes [16, 17]. The root of the tree represents the node quality and is connected to quality characteristics nodes. Each quality characteristics node is further connected to corresponding quality sub-characteristics. The advantage of this model is that it can represent and manipulate complex models that could not be implemented using conventional methods as conformance to established practice or accepted standards [10]. However, this model cannot be used for evaluating software quality product due to the lack of characteristics.

2.6 ISO 9126 MODEL

ISO 9126 is an international standard for the evaluation of software [18]. It is divided into 4 parts which addresses the Quality Model; External Metrics; Internal Metrics; and Quality in Use Metrics. This model is based on previous works by McCall, Boehm, FURPS, etc. The fundamental idea behind this model is specifying and evaluating the quality of a software product in terms of internal and external software qualities and their connection(s) to attributes.

Quality attributes are classified into a hierarchical tree structure of characteristics and sub-characteristics. The highest level consists of quality characteristics and the lowest level consists of quality criteria. ISO 9126 specifies 6 characteristics that are further divided into 21 sub-characteristics. These sub-characteristics are manifested externally when the software is used as part of a computer system, and the results of internal attribute. The main advantage of this model is that the characteristics defined are applicable to every kind of software while providing consistent terminology for software product quality.

This section has presented several quality models for evaluating software product. (Table1) illustrates a comparison between the models including advantages and disadvantages. It can be concluded that the ISO 9126, since it is based on previous works and models, is more complete than the other (older) models and suitable to be used in the evaluation of software. ISO 9126 covers all crucial characteristics such as hierarchical structure; criteria for evaluation; comprehensive expression and terms; simple and accurate definitions; and one to many relationships between various layers of model [10]. In addition, work in [19] also concluded that ISO 9126 supports strategic decision-making activities, avoiding costly mistakes.

<table>
<thead>
<tr>
<th>Table 1: Comparison of Software Quality Models</th>
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<tbody>
<tr>
<td>CHARACTERISTICS / MODEL</td>
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<tr>
<td>STRUCTURE</td>
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<td>NUMBER OF LEVELS</td>
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<td>RELATIONSHIP</td>
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<td>MAIN ADVANTAGE</td>
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<td>MAIN DISADVANTAGE</td>
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III. 3 THE EVALUATION MODEL ISO 9126

The ISO 9126 has been used to detect design flaws in evaluation the system [20]; to evaluate software quality using generic external quality characteristics and sub-characteristics [8]; and to analyze technological, managerial and economic factors in systems [21]. The generality of the
ISO 9126 means further analysis and mapping of characteristics are required before it can be fully adapted to system. ISO 9126 specifies 6 characteristics namely Functionality, Reliability, Usability, Efficiency, Maintainability and Portability and 21 sub-characteristics. The quality characteristics are briefly discussed below:

### 3.1 FUNCTIONALITY
Functionality is 'the capability of the software to provide functions which meet the stated and implied needs of users under the specified conditions of usage’. Functionality is divided into 5 sub-characteristics: Suitability, Accuracy, Interoperability, Security, and Functional Compliance.

### 3.2 RELIABILITY
Reliability is 'the capability of the software product to maintain a specified level of performance when used under specified conditions'. Reliability is divided into 4 sub-characteristics: Maturity, Fault Tolerance, Recoverability and Reliability Compliance.

### 3.3 USABILITY
Usability is 'the capability of the software product to be understood, learned, used and attractive to the user, when used under specified conditions'. Usability is divided into 5 sub-characteristics: Understandability, Learn-Ability, Operability, Attractiveness and Usability Compliance.

### 3.4 EFFICIENCY
Efficiency is 'the capability of the software product to provide appropriate performance, relative to the amount of resources used, under stated conditions'. Efficiency is divided into 3 sub-characteristics: Time Behavior, Resource Behavior and Efficiency Compliance.

### 3.5 MAINTAINABILITY
Maintainability is 'the capability of the software product to be modified'. Modifications include correction, improvements or adaptation to changes in the environment, in requirements; and functional specifications. Maintainability is divided into 5 sub-characteristics: Analyzability, Changeability, Stability, Testability and Maintainability Compliance.

### 3.6 PORTABILITY
Portability is 'the capability of the software product to be transferred from one environment to another'. The environment includes organizational, hardware, and software. Reliability is divided into 4 sub-characteristics: Adaptability, Install-Ability, Co-Existence, Replace-Ability and Portability Compliance.

The generality of ISO 9126 makes it possible to classify quality characteristics according to domain [20]. This is due to the fact that none of the quality characteristics can be measured directly, but in fact, should be assessed in terms of the objective of sub-characteristics and criteria of the software [5]. Thus, the context of evaluation should be taken into consideration before determining on specific quality characteristics to be used [7]. This includes description of the software product and the environment the software will be deployed.

Quality characteristics based on the ISO 9126 that have a direct impact to information system can be classified into FIVE (5) namely Functionality, Reliability, Usability, Efficiency and Portability (Table 2). Sub-characteristics are also identified and analysis of how these characteristics and sub-characteristics influence information system is also presented in the model.

Functionality is chosen as it is dependent on the application domain (education) while Reliability is chosen as it concerns information presentation and content in academic product [20]. Usability is included as it is an important factor especially in user driven applications [5]. Efficiency is also included as it refers to the capability of the software product to provide usable function to achieve its aim [20]. Maintainability is left out from the model since it can be only evaluated either by the developer or third party with access to the technical documentation of the project and the source code [2]. There is a line with software product evaluation in the academic domain, where Maintainability and Portability are not deemed important characteristics. However, it is argued that Portability should be included in the model as software product(s) needs to co-exist with existing ones.

### IV. REFINEMENT OF CHARACTERISTICS
This section presents the refinement of the proposed model by incorporating quality criteria to be evaluated. These criteria are used to aid the evaluation of the software product from the user's perspective. There are five criteria that should be evaluated in information system (Table 3):
Table 3. Quality Criteria and Characteristics for Information

<table>
<thead>
<tr>
<th>CRITERIA / QUALITY CHARACTERISTICS</th>
<th>Functionality</th>
<th>Reliability</th>
<th>Usability</th>
<th>Efficiency</th>
<th>Portability</th>
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<tr>
<td>Accuracy &amp; Reliability</td>
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<td>Communication &amp; Connectivity</td>
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<td>Completeness of Description</td>
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<td>Consistency of Layout</td>
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<td>Content Quality</td>
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<td>Demonstration &amp; Accessibility</td>
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<td>Ease of Installation</td>
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<td>Ease of Understanding Information</td>
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<td>Easy of Performing Tasks</td>
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<td>Effectiveness of Design Content</td>
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<td>Effectiveness of Help System Use</td>
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<td>Effectiveness of Navigation Tool Function</td>
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<td>Effectiveness of Search Engine Function</td>
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<td>Effectiveness of User Documentation</td>
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<td>Error Messages</td>
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<td>Failures &amp; Avoidance</td>
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<td>Flexibility &amp; Speed</td>
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<td>Hardware Environmental Adaptability</td>
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<td>Hardware Independence</td>
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<td>Interface Operation Adequacy</td>
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<td>Input &amp; Output Devices Utilization</td>
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<td>Load &amp; Response Time</td>
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<td>Mean Recovery Time</td>
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<td>Network Reliability</td>
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<td>Preventing Errors</td>
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<td>Processing Time</td>
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<td>Readability</td>
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<td>Robustness</td>
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<td>Simplicity</td>
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<td>Software Independence</td>
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<tr>
<td>Suitability Of Hardware Size, Weight, Battery Life</td>
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<td>Usability</td>
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<tr>
<td>Uniqueness</td>
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From this evaluation model a number of fundamental evaluation design questions can be stated. There are questions about artifacts, actors and activities in order to design a proper evaluation [1]:

- What should be evaluated? What should we say something about? (the evaluation object)
- Why should this evaluation be conducted? For what reasons do we evaluate? What do we aim for?
- How should the evaluation results be used? (the purpose and intended uses)
- What are the characters of the evaluation object and its context? How should we define the conceptual base for the evaluation? (ontological assumptions and definitions)
- With what shall we evaluate? What are the evaluation grounds? (the criteria)
- How shall we select and formulate evaluation criteria? (the generation of criteria)
- From whom shall we gather criteria? (the originators of criteria)
- Of what shall we evaluate? What kind of knowledge about the evaluation object shall be generated? (data about the evaluation object)
- How shall data be collected or generated in other ways? (the generation of data)
- From whom shall we generate data? (the originators of data)
- Who should conduct and participate in the evaluation process? (the evaluators)

- What kind of activities shall be conducted in the evaluation? (the evaluation procedure)
- How should the evaluation result be structured and presented? (the evaluation result)
- To whom should we address the evaluation? (the evaluation recipients)

V. SITUATION ANALYSIS

The National Environmental Action (MEA) Plan (2002-2017), identifies the need to consider MEAs and their associated obligations for incorporation into national policies and plans. It mentions that monitoring and evaluation, particularly with regard to information management, is the "most significant constraint to effective environmental policy making and implementation in Egypt"[22,23].

The need for a "unified methodological framework" for monitoring activities is identified as essential, together with the need to synchronize data collection, storage, accessibility and usability. Moreover, the Minister of State for Environmental Affairs(MSEA) most recent policy directives include "supporting the multilateral environmental agreements to which Egypt is a signatory"[24].

This project is fulfilling the needs for improved environmental monitoring to include Environmental monitoring systems which are systematic and compatible, based on a unified methodological framework. The standardization of data collection storage and evaluation; strengthening institutional capacities and ensuring financial resources [22,23].

An Information System for the Multilateral Environmental Agreements had been The Egyptian Environmental Information System (EEIS) created in 2001 which was funded by the Canadian International Development Agency (CIDA) which aimed at developing an environmental information system within Egyptian Environmental Affairs Agency(EEEA). One of its main outputs is the development of a database for multilateral environmental agreements (MEAs), enabling EEEA to easily access, retrieve, and update relevant information for each of the MEAs, including decisions, national reports, and the national status. The database, though developed, is not fully operational yet [24].

Constructing central database about Multilateral Environmental Agreements, which effect the environment and Linking between International Multilateral Agreement Obligation & EEEA focal & initiative points, legal affair and convention financial follow up in order to tracking Convenion violation and Convention Events.

5.1 STRENGTHENING MONITORING AND REPORTING SYSTEMS FOR THE MEAs [25,26]

The aim of this project is to strengthen monitoring activities for Multilateral Environmental Agreements (MEAs) in Egypt by:
1. Improving of data management (including acquisition, processing, exchange and utilization)
2. Delineating the monitoring and reporting roles and responsibilities of different concerned entities;
3. Ensuring the financial sustainability for environmental monitoring, evaluation and reporting. This project focused on the three Rio conventions {United Nations Convention on Biological Diversity (UNCBD), Conventions United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Convention to Combat Desertification (UNCCD)} in coordination with the overall environmental monitoring and reporting mechanisms in Egypt.

Multilateral Environmental Agreements Information System (MEAIS) Main Modules …
- Supportive data (Authorities, connection, Formal letters...etc.)
- Conventions (Articles, Agenda, Follow up, key Reports... etc.)
- Convention & low association, Conflict…etc.)
- Convention violation.

VI. PROJECT GOALS, OBJECTIVES AND THEIR ANALYSIS
The objective of the project is to strengthen monitoring, evaluation and reporting for MEAs in Egypt. This falls under the overall goal of better mainstreaming global environmental issues in national developmental plans [27].

Although National Communications on the 3 Rio conventions responding accurately and timely to Egypt’s obligations state of the environment report produced yearly and accurately, there is inadequate information and reports are not responding to the government requirements; including its international obligations under the MEAs which it could measured by The government continues to fulfill its international commitments; including the obligations from the 3 Rio conventions; The government stays committed to produce yearly State of Environment report The government of Egypt and UNDP-GEF(United Nations development programme - global environmental facility) continues to support the capacity development orientation of this project and the key features of capacity development for the environment.

Also limited environmental information is produced currently and it is not fed into the planning and policy making process. So moreover monitoring information is being incorporated in new related plans and policies which needed the new policies and plans integrate information from these national communications on the Rio conventions as the government of Egypt continues with its commitment to global environmental management and sustainable development, and that the national legislation, policies, programmes and allocation of resources will reflect this commitment.

Outcome 1:
An operational monitoring and information management system for MEAs, enhanced at the policy, institutional and individual levels

Output 1.1: Database with an information management system to manage all data of global environmental issues.
Output 1.2: Legislative and regulatory changes developed for streamlining integrated monitoring and evaluation for global environmental management.
Output 1.3: Capacity of the MSEA and other institutions strengthened for monitoring and evaluation through necessary technical assistance and targeted training.

Although an integrated monitoring, evaluation and reporting system for the MEAs created and used to monitor and report the implementation of MEAs in Egypt. The current approach does not have an unified methodological framework and data collection and management is not standardize, The existing set of environmental indicators is not comprehensive and does not respond to the information requirements which it needed the officials standards, norms and procedures are in place and use by the relevant institutions on the other hand The government particularly its relevant Ministry – the MSEAs should pursue its policies and budget support to integrate the 3 Rio conventions monitoring and reporting obligations into the national environmental monitoring and reporting system.

Also the current regulation is not comprehensive for the implementation of an adequate national environmental monitoring system, so the government of Egypt is required to improve its related regulatory framework by stating roles and responsibilities of relevant agencies, as well as set of regulations stipulating of all relevant agencies in monitoring and reporting on the implementation of the Rio conventions.

Outcome 2:
Coordination mechanisms for complying with reporting obligations
Output 2.1: Legislative and regulatory changes for involving sectoral agencies in national reporting to the 3 conventions in a consistent manner.
Output 2.2: Communication and feedback mechanisms for the reporting process to contribute to national policy development and decision making.

Although coordination mechanisms to comply with the reporting obligations under the global environmental conventions are established, the available monitoring data is not shared among the agencies, no coordination and cooperation occur among the relevant institutions resulting in gaps and duplications. The main analysis points as follow
- Coordination mechanisms in place at MSEA, EEAA and related agencies statutes of relevant institutions.
- The EEAA as the technical arm of the MSEA continues to commit itself to improve the monitoring, evaluation and reporting system of Egypt’s
environment; including the implementation of the Rio conventions.
• Institutionalized coordination mechanisms in place to fulfill reporting obligations of the signed/ratified global environmental conventions.
• The institutional framework is revised with clear mandates reflected in the statutes of the relevant institutions.

Outcome 3:
Developed funding scenarios for achieving monitoring, evaluation and reporting in a sustainable manner

Output 3.1: Different funding scenarios developed.
Output 3.2: Legislative and regulatory changes for operationalizing funding mechanisms for sustainable monitoring, evaluation and reporting.

Although an increased financial allocations for environmental monitoring, evaluation and reporting over the long run there is inadequate funding level to carry out monitoring, evaluation and reporting of the Egyptian’s environment, on the hand the Assumptions which should put in our consideration the UNDP-GEF Medium-Size Project (MSP) document as follows…

• The priorities and procedures of the EEAA and of the MSEA include environmental monitoring and reporting.
• Preparation of annual work plans, funds requisition, six-monthly progress and financial reporting and monitoring of outputs and outcomes as per GEF standards.
• Disbursement of funds as per operational procedures consistent with financial management standards of the Government and UNDP-GEF.
• Ensure coordination of project activities with related government and donor-funded initiatives.
• Ensure that all appropriate government and non-government stakeholders are involved in the project.

VII. CONCLUSION, RECOMMENDATIONS AND THE ACTIONS
The information system functionality evaluation represents the procedure of assessing how successfully information system fulfills its objectives especially when there is a gaps in implementing the requirements of environment and sustainably development in general and the three Rio conventions in Egypt, as per the obligations set by each convention, and implementation activities carried out, could be generally grouped in two categories.

The first category gaps/weaknesses with an overall impact on the implementation of the obligations of the conventions. These monitoring, evaluation and reporting gaps/weaknesses are generic, being primarily a consequence of the administrative practices in application in national public entities in Egypt. These gaps/weaknesses entail the following:
• Weak accountabilities, particularly at the individual level.
• Unclear lines of reporting.
• Weak experiences in reporting.

• Limited use of performance monitoring/measurement systems, and a lack of clear measurable targets and performance indicators.

The second category includes monitoring, evaluating and reporting gaps/weaknesses specific to the obligations of the conventions. These affect the observation and recording of the thematic factors related to the three conventions. They affect the systemic, institutional and individual levels. These primarily entail the following:
• Data collection and management is carried out by a variety of different entities, often with incompatible data definitions, frequency of collection and update, design of structure for data storage, etc. This renders data exchange difficult, resulting in no optimized use. Moreover, it also results in apparent contradictions [29].
• Poor coordination between entities responsible for the data collection and management. This is primarily resulting from a lack of institutional frameworks to specify this coordination. This lack of coordination leads to incompatibilities of data and data collection and management, resulting in limitations of data exchange thus leading to gaps/duplications in data collection [29].
• Weak integration of technical and scientific expertise. This leads to gaps/duplications in activities between different technical and scientific institutions [29].

In light of the above, monitoring, evaluation, and reporting represents not only a significant capacity constraint on their own but also a cause for a number of the other constraints [28]. Without effective monitoring, evaluating, and reporting development of integrated national policies within the thematic areas with a holistic approach cannot take place adequately, even if the necessary capacity needs for policy and strategy formulation were addressed. Similarly, proper enforcement of legislation cannot be effectively carried out without proper monitoring, evaluation and reporting.

Now strengthen monitoring activities for Multilateral Environmental Agreements (MEAs) Project is in the process of enhancing information system/center database to fulfill the needs of the stakeholders. A gap analysis can be conducted that will identify issues and problems within and between the current database and the one needed. This task involves analyzing deficiencies in current database, opportunities to enhance its quality, providing information that is not currently available, and systems integration [25, 26].

The gap analysis focuses on identifying opportunities to enhance operational efficiencies.
• Identify stakeholders concerns and issues related to their requirements. Identify inefficiencies, technical issues and opportunities for improvement. Identify the major systems/applications with focus on identifying gaps that impacts use of database. Identify data integration issues and concerns. Define mismatches between current data and desired data then building central database to help all the stakeholders. Define the activities by all
authorized Authorities (main & sub convention focal points).

- Sharing information together through one system, contains data about conventions, protocols, environmental organizations, articles, obligations, related laws, issued key reports, meetings, arrangements, delegation, charters, and even negotiations. Review of key issues and challenges, this includes information about areas that are not satisfying needs or are redundant; missing forms/reports that should be present; and, any other issues. MEAIS should capable for tracking and mentoring all environmental convention then supporting the planning department and decision.

- The human element will remain the crucial element in environmental management system, so it will require from all interested parties and stakeholders an effort, harmonious and coordinated manner, in order to reach these strategicto the intended goals.

Finally monitoring and evaluation, particularly with regards to information management, is the "most significant constraint to effective environmental policy making and implementation in Egypt". In this regard, the need for a "unified methodological framework" for monitoring activities is identified as essential, together with the need to synchronize data collection, storage, accessibility and usability.

REFERENCES


