

Hashemite Kingdom of Jordan

General Corporation for Environmental Protection

**Draft project for the preparation of a
National Strategy
for Environmental Education, Awareness and Communication**

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No legal responsibility is consequent upon the authors of this strategy vis-à-vis the information therein.

In the Name of God, All Merciful, All Graceful

I would like to call upon all sons and daughters of this homeland, whether they are in positions of responsibility or not, and wherever their positions may be, to focus most of their attention on protecting the environment through educational and information programs. This would render maintaining the safety of the environment a national value to which we have been keen to dedicate ourselves. Thus, we will be able to protect our resources from waste and loss and keep our environment healthy, clean and safe. This is the duty of our generation towards our upcoming generations, and it is as well our duty as human beings towards life.

From a speech by His Majesty the Late King Hussein Ben Talal
At the Graduation Ceremony of the first batch of students
of the University of Science and Technology
June 1988

ABSTRACT

The National Strategy (NS) for Environmental Education, Awareness and Communication (EAC) aims to achieve sustainable development. In structuring this draft strategy, the Team adopted several national and historical justifications. It also banked on the findings of a survey of environmental EAC in terms of the weaknesses and strengths of existing EAC efforts, as well as the obstacles such efforts have been facing during the last 10 years. Ten phases have been determined for structuring this strategy: Identifying objectives, the public, the required change in the behavior of the targeted categories, factors surrounding the issues involved, information and communication activities, the most suitable mix of channels, administrative strategies, educational strategies, available resources and a time framework.

The NS calls upon the concerned organizations to direct their work towards the priorities of achieving their objectives. NS programs stipulate success indicators for these organizations and propose several pilot projects to be implemented in the quest for achieving the aspired-for sustainable development. The NS calls upon the concerned organizations to re-consider the ways and means of evaluating their programs with a view to extending the objectives of the evaluation to cover the attitudes of the targeted categories towards protecting the environment. The NS also proposes a model towards that end. The Strategy has been structured on the basis of a thorough study and careful analysis of the status quo of environmental EAC in Jordan.

This Strategy was prepared with generous financial support from the Human Resources Capacity-Building Unit (HRCB) of the Middle East Technical Assistance Program (METAP), in cooperation with the United Nations Development Program (UNDP) and the General Corporation for Environmental Protection (GCEP). It constitutes an integral part of the National Development Project (NDP) for the 21st Century. The three-man NS team includes Environmental Communication expert Muhammad Jihad Shreideh, Environmental Education specialist Sami Yousuf Qaqesh and Environmental Awareness veteran Ziyad Jaber El-Alawneh.

The three experts devoted themselves to preparing the draft strategy, which was later subjected to participatory discussion in the framework of a small committee, and then presented at a national seminar for discussion by the Awareness, Education, Communication, Informatics and Capacity-building team of the NDP for the 21st Century.

Supporting materials used in the design of the national strategy were sorted out into the 11 annexes attached to this document.

1. INTRODUCTION

Many vital characteristics single out human beings from the other different forms of life. The ability to learn is a unique attribute that has enabled man's development since the beginning of creation in his dealing with the environment in which he has lived. The environment may be defined as the total aggregate of conditions, factors and components with which creatures, including man, react in the confines of a certain space and which influence the biological operations that such creatures perform. Dealing with the environment has varied from one age to another, but man has recognized finally that he affects and is affected by the various environmental issues and realized the amount of damage he has inflicted upon the environment.

For his viability, man relies upon the many resources available to him in the environment. To benefit from these resources, man resorts to different techniques, the use of which has led to the emergence of many environmental problems with unmistakable effects stretching over the long years, threatening his life and crossing borders uninvited with their consequences. Hence, facing these problems requires collaboration and cooperation at the national, regional and international levels and demands the preparation of strategies and plans of action for such confrontation and for escape from any future problems that impede the accomplishment of sustainable development.

The most dangerous problem that our contemporary world is facing today is, perhaps, inherent in abusing natural resources, the effects of such abuse on the environment, and the depletion of the environment's primary components. This has prompted many environmentalists to monitor and evaluate the various dimensions of this problem and to analyze its consequences on the potential for continued growth. This is especially significant in view of the linkage between mankind's environment and the policies that the various states adopt to protect their resources, rationalize the utilization of these resources, and counteract the deterioration that limits the renewal and continued availability of these resources.

Even though the civilized world is only an infant, in comparison with the age of the earth (the oldest civilization known to us is less than 5,000 years old). But, ever since he found himself on the face of this earth, man has embarked sought to utilize its natural resources to build his present civilization. Over-exploitation of these resources, however, grew exponentially over the centuries and reached its culmination in the 20th Century, thus detrimentally jeopardizing their ability to self-renewal and upsetting life's natural balance. Thus, developmental activities that did not take environmental considerations into account became unwilling contributors to damaging the natural environment and aroused concern over the urgency of safeguarding the components of life on this planet, where natural balances are both sensitive and vulnerable.

Awareness of the various dimensions of this problem is rapidly growing among intellectuals and the need has become evident for the provision of scientific, technical and economic information to demonstrate the ways and means of safeguarding the riches of this earth.

In the 1970s, environmental issues started to gain wide-ranging attention following an idea floated by the Club of Rome that natural limitations impede economic growth. The Brundtland Report, also known as the “Common Future” report, prepared for the 1987 United Nations Environment and Development Summit Conference, warned that meeting the needs of our generation should not hamper the abilities of future generations to satisfy their own needs. The Brundtland Report identified the role of environmental education, both formal and informal, as a tool for the achievement of sustainable development and called for incorporating such education into curricula at all levels to enable students to observe, protect and monitor the environment.

Jordan is facing environmental challenges arising from the limitation of its resources. Foremost among these challenges are: the water supply shortage, the high population growth rate, ineffective enforcement of legislation, absence of enough awareness at the level of the individuals and decision-makers alike of the importance of awareness as a means for rationalizing consumption of resources. All of these limitations place the public against its responsibilities in dealing with the environment in order to achieve sustainable development.

Environmental EAC activities constitute one of the main pillars for protecting and safeguarding the environment. Thus, this strategy has come to emphasize the important role of EAC, to determine the extent current EAC capabilities, and to employ acquired EAC experiences in the development of attitudes, values and knowledge that will help in the achievement of sustainable development in Jordan.

The Agenda 21 chapter on environmental EAC agrees with Jordan's pressing national needs and the citizens' attitudes vis-à-vis the urgency of designing an environmental strategy to help citizens and decision-makers to recognize the importance of environmental EAC. This will also win their commitment to safeguarding the environment through several pilot projects.

2. JUSTIFICATION

Structuring this strategy relies upon several historical and cultural considerations, as well as acquired local and international experiences in environmental EAC associated with sustainable development. These considerations are summarized as follows:

1. Environmental EAC is not new. It has deep roots in the cultures of peoples. The Arab-Islamic culture stresses the importance of protecting all elements of the environment and is distinguished among all other cultures in the environmental characteristics with which it deals.
2. The religious, social and moral values of all sectors of the Jordanian society stress the merits of protecting and safeguarding the environment.
3. Environmental issues in Jordan, like in all other countries, are characterized by complexity, in view of the multiplicity of their causes, total diffusion of their effects, diversity of the places in which problems arise, and the duplicity of agencies dealing with these issues. Hence, the need arises for coordinating all educational, informational, awareness and technical efforts in order to face these challenges and prepare contingency plans for dealing with any anticipated environmental problems. The need also arises for cooperation at the national, regional and international levels in tackling these issues.
4. There is a need to develop the Jordanian citizens' environmental knowledge, including educational, training, information and awareness programs, with a view to enabling them to live in equanimity with the environment throughout their lives.
5. The International Declaration of Human Rights stresses the right of every citizen, wherever he/she may be, to living in a clean environment that provides him/her with decent life and all aspects of security.
6. Jordanian laws and all the legislation associated therewith stress the importance of directing more attention towards the environment and adopting the appropriate measures to guarantee that.
7. Current attitudes tend to stress the existence of an assortment of considerations that have to be taken into account when preparing strategies for the environment. Such considerations include sustainable development, evaluating the environmental effect, safeguarding the various natural resources, international understanding and gender.
8. Jordan includes a significant historical and archaeological heritage — some discovered and some still buried under the layers of time. Hence, an urgent need arises for dealing with the country's historical and archaeological sites wisely and sensibly. This entails proficient environmental awareness and information campaigns.
9. Jordan's environmental resources are limited and they belong to every single Jordanian, who, in turn, is responsible for their protection and safety. Hence, the environmental awareness of the citizen should be developed to deal with the environment wisely and sensibly.
10. Building on previous environmental EAC efforts and integrating such efforts into efforts currently being exerted is an essential necessity that has to be taken into consideration when designing the strategy.

3. GENERAL OBJECTIVES OF THE STRATEGY

This strategy is defined as a set of practical measures, which are expected, when implemented, to enhance and develop values, knowledge and institutional capacities with a view to achieving specified objectives and improving and safeguarding the welfare of people and the environmental system. The need for such a strategy stems from the urgency for a tool to help people exchange and communicate environmental information, develop prevalent values, and understand environmental issues affecting the general public.

This strategy seeks to develop the capacities of environmental EAC, with a view to safeguarding the components of the environment and addressing environmental problems sensibly. The final objective is the achievement of sustainable development that contributes towards improving the citizen's quality of life and welfare of the upcoming generations.

Specifically, this strategy seeks to achieve the following:

1. Prompt decisions makers, as well as environmental practitioners in both the private and public sectors, to safeguard and curb the depletion of our natural resources, both technically and legislatively.
2. Enhance knowledge, skills, attitudes and values associated with the aesthetic aspects of the environment, safeguard and utilize natural resources towards the achievement of sustainable development through formal and informal education.
3. Help and empower the targeted categories to form a clear conception vis-à-vis evaluating measures and programs associated with protecting the environment through environmental EAC.
4. Win the commitment of the targeted categories, as well as the other sectors of the society, to safeguard the environment and adopt the required action towards that end.
5. Form new ties among institutions concerned with environmental affairs with a view to exchanging and up-dating information and achieving better protection of the environment.
6. Introduce the targeted categories to the importance of regional and international cooperation in protecting the environment.
7. Introduce the targeted categories to the fact that protecting the environment is one of the universally accepted human rights the protection of which entails certain duties and responsibilities.
8. Adopt environmental EAC as carefully-studied plans of action and effectively utilize such plans towards enriching, documenting and developing EAC teaching resources with a view to encouraging the public to participate in confronting and curbing the environmental challenges and problems Jordan is faced with.
9. Help the targeted categories form a conception vis-à-vis the environmental problems expected to arise and the steps that can be taken to prevent such occurrence.
10. Raise the degree of environmental awareness among people by prompting individuals and social groups to develop their knowledge of the components of the environment, the environmental situation in Jordan and the problems pertaining to it.

11. Increase the individual's commitment to, and interest in safeguarding country's natural resources and developing the citizen's spirit of initiative and feeling for the environment.
12. Train and qualify human cadres in the field of environmental EAC and build the institutional capacities of agencies involved in this sector.
13. Encourage citizens to participate in the various activities and subject them to different patterns of training in order to achieve the best utilization of natural resources and realize sustainable development.
14. Enhance the role of the media and the private sector in efforts aimed at spreading environmental awareness among the people through preparing, developing and distributing all forms of publications. This may best be accomplished by concentrating on those sectors — e.g., women, information practitioners and journalists — that possess the communication and education skills necessary for influencing the public.
15. Identify and develop national experiments and capabilities in the field of environmental EAC with a view to building upon and integrating with them.

4. NATIONAL STRATEGY FOR ENVIRONMENTAL EDUCATION, AWARENESS AND COMMUNICATION

4.1 PROPOSED DESIGN FOR THE STRATEGY

In general, strategy design relies on adopting logical, carefully-studied decisions regarding the issue at stake and certain questions pertaining to organization, as well as the resources made available for achieving the specified objectives. When starting to draw up a strategy, it is inevitable to take into consideration the overlapping circular process of information, education and communication (IEC). This is best achieved through a methodology that utilizes organized, overlapping and successive stages. It also relies on selecting the required human capabilities that appropriately fit each stage. The various stages of structuring the strategy may be defined as follows:

Step 1: Identifying Objectives

Identifying objectives for such strategies requires re-assessing the entire situation related to the issue at stake and preparing detailed reference reports about the causes and gravity of the problem, as well as any conceptualized solutions for it.

In the field of the environment, identifying objectives entails the following stages:

1. Gathering information about the various aspects of the environmental situation.
2. Identifying the origins, importance and ways of addressing components of the issue at stake.
3. Identifying details relevant to the various aspects of the problem.

Perhaps the most conspicuous problem to be faced when trying to identify the objectives of the strategy is how to formulate qualitative, clear, precise and measurable objectives.

Step 2: Identifying the Public in Accordance with the Specified Objectives

Once the objectives of the strategy have been identified, the targeted public that affects and is affected by the issue at stake is identified. Usually, the targeted public consists of individuals to whom the IEC messages are to be directed with a view to changing their behavior. Identifying the public also requires compiling knowledge about their general characteristics, including education and social and vocational status, in addition to their psychological and demographic characteristics and communications habits.

Step 3: Identifying the Required Change in the Behavior of the Targeted Categories

Previous research indicates that the media are able to accomplish three levels of effect:

1. Cognizant effects
2. Attitudinal emotional effect
3. Behavioral effect.

In order to accomplish these effects, it is necessary to achieve the following, in the same order:

- exposure to and awareness of the message,

- establishing a personal relationship with the behavioral models being presented in the message,
- discerning and subsequently getting convinced with the contents of the message, and
- creating a tendency towards changing the recipient's usual behavior.

Hence, IEC inputs are expected to effect a change in the targeted public's awareness, understanding, attitude and practice, which calls upon those in charge of structuring the strategy to ask such questions as: What is the expected behavior of the various categories of the targeted public? When, how and by what methods will it take place? What channels are to be used? Providing precise scientific answers to these questions will help in providing indicators for the success that can be achieved.

Step 4: Identifying the Surrounding Factors

Identifying and then analyzing factors surrounding the background of the targeted public will help in discovering unexpected problems, obstacles and circumstances that affect the strategy's events and activities upon actual implementation. This will also contribute towards identifying and evaluating the degree of difference between expectations and actual fact.

Step 5: Identifying IEC Activities

Identifying IEC activities is a technical, administrative process connected to the dimension of innovation and artistic creativity and linked directly and decisively to the set objectives. Hence, the strategy's events and activities should take the form of a blended mixture of IEC activities. Therefore, planners must determine curricula in accordance with the nature of the problems that have been monitored and identified through situation analyses and surveys of the public.

Step 6: Identifying the Basic Elements of IEC Content and Preparing Messages

During this stage, work begins on the eventual identification of the main ideas upon which IEC activities will be based, as well as the main themes for the messages. The following questions may be of help in identifying the basic elements of IEC content and preparation of messages:

1. What are the beliefs and behaviors that need to be changed as far as each category of the public is concerned?
2. What are the ideas that need to be communicated to each category of the public?
3. What kind of change is required (knowledge, attitude, and practice)?

Step 7: The Most Appropriate Channel Mix

The rule followed in selecting appropriate channels is based upon knowledge of the public's communications habits, its different characteristics and the nature of the ideas and messages to be directed at it. It may be said that the best method for determining appropriate channels requires knowledge of the following:

1. The manner through which the public seek information and guidance.
2. The sources of information that enjoy high credibility and easy access.
3. What channels are used by certain categories and how effective is their influence?
4. What channels present, or can present within their programs, messages relevant to the subject?

Here, it may be said that television is the most effective medium for mass communication, but other channels may be utilized as well. The channels to be utilized may be determined as follows:

- Mass communication, including television, radio, the press and cinema.
- Audio-visual aids, including information and educational materials and posters.
- Traditional channels, including the stage, songs, festivals, exhibitions, celebrations, etc.
- Institutions of the civic society, including educational groups, voluntary societies, youth and sports organizations, cooperative societies, labor and professional syndicates, etc.

Step 8: Identifying Administrative and Organizational Strategies

Identifying administrative and organizational strategies for IEC efforts depends upon the standard of such efforts and whether their function is sectoral or falls within a specified project. In general, an organizational, administrative strategy is based upon answers to the following questions:

- What are the tasks that need to be implemented?
- At what level?
- During what stage of the program?

Studies indicate that there are four organizational roles for institutions concerned with planning and implementing IEC strategies:

1. Institutions of the political leadership — e.g., the Ministry of Planning — that coordinate the efforts of national programs.
2. Institutions that provide technical IEC expertise, including specialized governmental organizations, universities and private sector think tanks.
3. Organizations concerned with promotion, mobilization and the provision of services, including the information organs, the ministries of education and social development, voluntary organizations, and other related government departments.
4. Implementation organizations that bear an administrative responsibility in the implementation and coordination of programs and projects.

Steps 9 and 10: Identifying Available Resources and a Timetable

These two steps are associated with calculating the costs of the strategy's events and activities in terms of available resources and expected expenditures. They involve the preparation of various studies, pre-tests and post-tests, and evaluation assessments, in addition to preparing IEC messages and materials.

It is noteworthy here to cite the importance of determining the time element for each of the strategy's stages, taking into consideration the adoption of realistic time intervals that provide appropriate opportunities for preparing and implementing the different stage of the strategy.

4.2 PROPOSED STRATEGY

This strategy is a mix of messages and communication patterns on the one hand and the mass communication media, as well as personal communication, on the other hand. To achieve the objectives effectively and efficiently on the basis of the environmental situation and the information strategy currently being implemented, we propose the following strategy for environmental education, awareness and communication:

Step 1: Identifying objectives

- A. General objective: To raise the levels of knowledge, attitudes and practice (KAP) of the targeted groups, as identified in Step 2 below, of environmental issues.
- B. Quantitative objectives:
 1. During Step 1: To raise the level of the public's awareness, with a view to enabling the various targeted groups to recognize the problems and dangers jeopardizing the environment as a result of faulty and irresponsible practices.
 2. During Step 2: To raise the level of practice to prompt the targeted groups to start actual implementation of the concepts, beliefs and methods of environmental protection.

Step 2: Identifying the targeted groups:

- Group A: Housewives, school students, university students.
- Group B: Farmers, businessmen, factory workers, and drivers.
- Group C: School teachers, nurses at hospitals and health centers, professionals, government employees, religious leaders.
- Group D: Communication and awareness officials, decision-makers.

Step 3: Identifying the levels of the desired change:

For Group A:

- Knowledge, attitudes, practices.
- Knowledge of causes and ways and means of addressing these causes.
- Development of positive attitudes towards the environment.
- Adopting and practice.

For Group B:

- Empowering 30 percent of the targeted group to recognize the importance of contributing towards checking pollution and adopting positive attitudes towards the environment.

For Group C:

- Empowering 50 percent of the targeted group to give advice, precise information and technical knowledge.
- Empowering 30 percent of the targeted group to stimulate the public to adopt and implement ideas.

For Group D:

- Empowering 100 percent of the targeted group to recognize environmental problems and contribute towards avoiding and addressing these problems.

Step 4: Identifying circumstantial elements (obstacles and motives of the targeted groups):

For Group A:

- They are not decision-makers for contingent, remedial measures.
- Lack of precise awareness of the size and gravity of the environmental situation.

For Group B:

- Lack of any knowledge at all of environmental issues.
- Belief that the environment is not an important subject for the average citizen.

For Group C:

- Lack of comprehensive knowledge of adequate communication skills required for the provision of advice.
- Lack of technical skills required for addressing environmental issues.

For Group D:

- Similar to Group C, in addition to lack of material means to address the issues.

Step 5: Identifying information and communication activities

For Group A:

- Education, persuasion.

For Group B:

- Education, stimulation, persuasion.

For Group C:

- Education, training.

For Group D:

- Education, training.

Step 6: Identifying appropriate messages

For Group A:

- Pollution harms the overall health of mankind and all living creatures.
- Depletion and pollution of natural resources lead to their abuse and exhaustion.

For Group B:

- Same messages as those for Group A.

For Group C:

- How to identify the environmental problem.
- How to take the required precautions to prevent the causes of the environmental problem.

- How to address environmental problems.
- Development advisory skills.

For Group D:

- Same messages as those for Group C.

Step 7: Identifying appropriate means

For Group A:

- Training courses, lectures, printed materials, radio, television.

For Group B:

- Television, radio.

For Group C:

- Workshops, training courses, printed materials.

For Group D:

- Workshops, training courses, printed materials.

Step 8: Identifying administrative and organizational strategies

- Donors:
 - Financing research, study trips and technical assistance.
- Academic institutions:
 - Preparing the required studies.
 - Preparing situation analyses.
 - Evaluation.
 - Feedback.
- Information institutions:
 - Disseminating messages prepared by communication units at the relevant departments and association.
- Associations and institutions involved in the environment:
 - Services, consultancy, information.

Step 9: Identifying the required financial and human resource

- Accurate estimates for each of the previous steps.

Step 10: Identifying a timetable.

- Identifying a timetable for the accurate implementation of each of the steps the project involves.

4.3 Institutional, Legislative and Financial Framework for the Strategy

The General Corporation for Environmental Protection (GCEP) shall be charged with organizing, managing and coordinating all events and activities related to environmental EAC. This requires the establishment of a directorate concerned with environmental EAC.

The institutional, legislative and financial framework shall be defined according to the following:

- The GCEP shall coordinate its efforts and cooperate with sectoral organizations (health, agriculture, tourism, etc.), the private sector, NGOs, research centers and universities, and international organizations on issuing the Strategy in the form of instructions by virtue of the GCEP Law (Article 5-i).
- The GCEP shall strive to bolster and develop its framework with a view to assimilating the most recent changes and coping with current events to face the 21st Century.
- Governmental and non-governmental institutions shall build up their cadres in preparation for entering and facing the requirements of the 21st Century.
- The GCEP, (governmental) sectoral institutions, the private sector, and NGOs shall cooperate with the National Information Center on all matters related to the supply of, and benefit from information.
 - The GCEP shall translate the Strategy into projects that qualify for support and funding by financial organizations.

4.4 MECHANISM FOR PREPARING THE STRATEGY

The National Strategy for Environmental Education, Awareness and Communication was prepared in several stages involving office research, personal interviews, assistance from local expertise, research, workshops and working groups. The main technical activities may be summarized as follows:

- A technical core team (TCT) was formed of experts involved in environmental EAC and representing the Ministry of Education, Yarmouk University and the Jordanian Environmental Society.
- A technical core committee (TCC) was formed representing governmental and non-governmental sectors that play a leading role in the preparation of strategies and action plans associated with protecting the Jordanian environment.
- The TCT conducted office research with a view to reviewing all strategies, references, previous research, periodicals and environmental education sources, prepared or used by governmental and non-governmental organizations involved in the Jordanian environment. Meetings and personal interviews were also conducted with environmental EAC experts.
- The TCT prepared a structural proposal for the strategy, as well as draft working papers on the provisions of the strategy. The draft structure and working papers were subsequently submitted to the TCC for discussion in periodic meetings. Remarks made during the 12 meetings were taken into consideration and the TCT was provided with reports on the achievements of the various Jordanian establishments involved in environmental EAC.
- The TCT prepared and submitted the draft strategy to those establishments interested in environmental affairs, e.g., the United Nations Development Program (UNDP), for further enrichment and development.
- A two-day seminar was held to discuss, adjust and adopt the present version of the strategy. The seminar was attended by 40 representatives from some 22 bodies, including sectoral ministries and governmental departments, environmental organizations, Jordanian universities, the Armed Forces, the civil defense and traffic departments, UNDP, and METAP's Institutional Capacity Building Unit.
- After incorporating the outcome of the seminar into the strategy, it was submitted to the TCC of experts.
- The Strategy was discussed with the METAP expert and adopted in its final form.

4.5 SCOPES OF WORK FOR THE STRATEGY

This strategy calls upon all parties, interested or involved in environmental EAC, as well as investors and decision makers, each according to his/her own position and competence, to take into consideration all or some of the following points when they plan and implement their environmental programs:

4.5.1 General Scopes of Work

- A clean, safe, and balanced environment has evolved as one of the Jordanian citizen's human rights, which everyone is called upon to uphold. Hence, educational, social, economic and developmental policy makers should link the requirements of sustainable development with human rights.
- Devise mechanisms for the exchange of experience and information among governmental and non-governmental organizations, especially those that play leading roles in the field of environmental protection, and prioritize action and responsibilities that need such experience and information;
- Prepare indicators for measuring the success of environmental programs in terms of performance, quality of outputs, and behavioral change;
- Identify and circulate among all parties a set of the main environmental concepts and issues, including theoretical, scientific and behavioral aspects, with a view to generating a common understanding by all the sectors of the society of these environmental issues;
- Create and identify specifications and criteria for specialized environmental jobs and utilize other countries' experiences in this field;
- Identify criteria and indicators for measuring the success of the relevant professional institutions involved in the effects of the environment at all levels of their management;
- Encourage governmental and non-governmental organizations to initiate environmental projects that lend themselves to investment; give such organizations the opportunity to conduct studies thereon and to benefit and develop previous programs and plans;
- Document scientific environmental information prior to publication and assume the responsibility therefor;
- Revise the evaluation approach to environmental programs by utilizing various direct observation-based approaches and giving outside parties the opportunity to conduct the evaluation;
- Conduct research and studies that employ tools to measure the attitudes of the targeted groups towards the various environmental programs;
- Encourage the establishment of various environmental associations and organizations, including clubs, committees, commissions, and networks of environmental information practitioners;
- Develop special environmental programs to help decision makers adopt specified environmental decisions conducive to the achievement of sustainable development;
- Urge ministries and other governmental and non-governmental institutions to establish and support national databases to provide basic data and information that may be used to measure and evaluate progress in the field of protecting the environment through constructive cooperation with the National Information Center which is currently implementing a national information strategy;

- Establish a national environmental information network to facilitate monitoring the implementation of environmental EAC programs and activities, wherein all data are scientifically analyzed and sorted to meet the requirements of research;
- Adapt patterns of consumption and production by adopting legislative and organizational measures to enhance sustainable utilization of resources;
- Adopt measures to enhance full participation of all sectors of the society, especially women, at all levels of decision-making relevant to the environment.

4.5.2 Special Scopes of Work for Environmental Communication

- Urge the media to address environmental issues transparently, candidly, courageously and comprehensively with a view to deepening the citizens' environmental awareness. The media should also be urged to avoid focussing only on theoretical aspects and to direct their attention also to attitudes and patterns of behavior.
- Urge the national media to benefit from regional and international experiences and techniques in the field of environmental communication.
- Enact legislation to guarantee the protection and stimulation of journalists through the provision of accurate environmental information that positively impact sustainable development.
- Call upon all parties involved in environmental publication to improve the quality of the content of their publications and devise an evaluation and documentation system therefor.
- Include information practitioners in the environmental decision-making process.

4.5.3 Special Scopes or Work for Environmental Education

- Improve the content of the curriculum with a view to enhancing responsibility and awareness vis-à-vis establishing linkages between education, awareness, environmental communication and sustainable development;
- Urge the appointment of an educational supervisor specialized in geology and the environment, just like other scientific subjects;
- Guide adult literacy programs towards deepening the concept of our historical and geographical linkage with the earth with a view to achieve our belonging to the homeland and our sense of the environmental;
- Raise the awareness of students of issues related to the various components of the Jordanian environment, especially those that are at risk of extinction or depletion, by preparing educational materials and manuals that are both simple and easy to use inside and outside the school;
- Call upon universities to devise and offer various environmental courses that stress the aspect of those techniques and skills suit the local labor market;
- Expose students to classroom instruction patterns that rely on environmental statistics and observations to construct a vision of environmental sites for a future period of time;
- Acquaint students with how the different cultures deal with the environment, especially in terms of forming a vision for the future that relies on scrutinizing literature on the future and stresses attitudes that highlight the role of the school in developing the students' sense of environmental achievement by developing the concept of their self-realization;
- Implement teaching strategies that rely on striking comparisons between the protective, remedial and global approaches to environmental issues;

- Guide environmental education programs towards adjusting and safeguarding human behavior and reducing man's resistance to change by providing positive messages and actual practices that lead to improving the quality of life;
- Incorporate ideas and concepts dealing with strategies relevant to the environment into curricula and textbooks, e.g., strategies on water, agricultural guidance, etc.

4.5.4 Special Scopes of Work for Environmental Awareness

- Raise awareness of priority environmental questions by conducting awareness campaigns that utilize entertaining educational methods, such as drama, poetry, singing, folkloric dancing, etc.;
- Encourage all categories of the society to get involved in all the events and activities, participate in adopting decisions related to environmental issues, and create a mechanism to encourage such participation;
- Identify training priorities with a view to raising the level of environmental awareness by all categories of the society.

4.6 INDICATORS FOR SUCCESS OF THE STRATEGY

The Strategy is expected to achieve tangible results only if governmental and non-governmental institutions implement its plan of action and directed their activities towards its scopes of work. The main indicators of expected success include the following:

- The targeted categories develop a positive attitude towards environmental issues.
- Governmental and non-governmental organizations use various tools to evaluate their environmental programs, record the impressions of both trainers and trainees, measure the amount of change in attitudes towards the environment, and employ training patterns that rely on effective performance and the transmission of impact.
- The media address environmental problems and issues objectively, transparently, candidly and courageously.
- Communities contribute towards safeguarding the environment, report environmental problems immediately, and form lobbies for amending environmental legislation.
- Valid environmental laws and regulations are being amended to become more effective in achieving sustainable development of the environment.
- Governmental and private universities offer environment courses that focus on scientific and technical aspects, as well as skills, information and evaluation.
- Governmental and private institutions announce vacancies of a purely environmental nature.
- Environmental educational publications — including brochures, posters, books, magazines, etc. — are of high quality and address environmental subjects carefully and precisely.
- Students at schools, universities and community colleges are taught environmental subjects by innovative teaching methods that adopt modern educational and consumption rationalization techniques, drama in education, and other methods that help develop sound environmental attitudes.
- The budgets of public and private sector institutions and NGOs, as well as scientific, research and specialized centers, increase allocations for environmental EAC programs.

- Quantitative indicators are observed to verify improvement of the components of the environment and their uses.
- Jordanian families use technical tools that contribute towards rationalizing water consumption.
- Jordanian curricula at schools, universities and community colleges revise and update their approach to environmental concepts.
- Environmental associations, clubs and committees adopt success indicators in their work and play a larger role in protecting the environment. Also, their memberships are increasing.
- Coordination between governmental and non-governmental organizations is evident when dealing with environmental issues.
- A training center exists that includes varied learning sources and employs training patterns that use modern techniques.
- Institutions of the civic society contribute towards spreading environmental awareness, solving environmental problems, including, *inter alia*, NGOs and religious leaders.
- Local and international environmental organizations seek Jordanian expertise in the field of training in environmental EAC.
- There is an increase in research and studies pertaining to environmental EAC that rely on studying the environmental situation and depict the future vision of the environment in Jordan.
- In every school, there is an active environmental club that contributes towards protecting and safeguarding the environment and plays an efficient role in developing an environmental sense for both the school and the community.
- The relevant institutions have developed contingency plans to face environmental problems that provide for practical measures that need to be adopted, including the roles and contributions of other concerned parties.
- Tangible improvement has been felt in the state of the environment and quality of life in Jordan.
- Environmental EAC programs focus on man's right to a clean environment and highlight his role in protecting the environment.
- Decision-makers seek the advice of lobbyists and use environmental studies when making a decision affecting the environment.

7.4 MECHANISM FOR EVALUATING AND MONITORING THE STRATEGY

Evaluating environmental EAC programs is a multi-variable process targeting categories that differ in their cultures and theoretical backgrounds and have contrasting tendencies and attitudes. Furthermore, EAC programs differ in content and method of implementation. Hence, no single evaluation tool can be reliable. In this field, the Strategy calls upon the parties involved in such programs to take the following into consideration when evaluating and monitoring their programs:

- Diversify their evaluation tools to include writing down observations; submitting personal reports, self-impressions, reflections and ambitions; conducting pre-, ongoing and post-interviews; using tools wherewith facilitators and supervisors can document the implementation of activities; and conducting and analyzing recorded interviews;
- Seek assistance from local and outside agencies for evaluating programs;

- Identify success indicators to evaluate each environmental program in terms of its performance;
- Consider using control samples and measurement tools to determine the extent of change in attitudes;
- That the evaluation tool should specify the procedural steps necessary for correcting, adjusting, enhancing, or expanding the program at all levels and stages. Furthermore, the evaluation should be periodical and ongoing.

5. PILOT PROJECTS FOR STRATEGY IMPLEMENTATION

The National Strategy for Environmental Education, Awareness and Communication proposes a set of programs designed on the basis of the actual urgent needs of implementation and consensus building. These programs are expected to contribute towards the achievement of sustainable development and help develop Jordan's human and institutional capacities to become a source that can be utilized in providing assistance at the local and regional levels. It is suggested that these projects be implemented within one year per project. These projects include the following:

5.1 ESTABLISHING A LEARNING AND TRAINING RESOURCE CENTRE TO DTUDY BIOLOGICAL DIVERSITY IN JORDAN

Justification:

- The components of the Jordanian environment, particularly the living species, are seriously endangered; indeed, some are almost extinct.
- This danger is attributed to lack of students' knowledge of these species.
- Teachers need training experience in how to identify and conduct surveys of these species.
- The proposed center will contribute towards safeguarding the environment and raising the environmental awareness of both teachers and students.

Objectives:

The proposed center is expected to produce the following results:

- Train teachers and students on conducting surveys of living species and locating their habitats.
- Prepare a simplified guidebook, including specific skills, of the living species, e.g., wild flowers and birds, butterflies, forest trees, etc.
- Expand the experiment of environmental protection clubs to cover all schools and introduce the idea of the rights of the earth and the living species.
- Form student groups to lobby for amending and/or enacting environmental legislation and regulations.

The Center will become a nucleus for regional training on surveying living species.

Targeted groups: Students, supervisors of environmental protection clubs.

Implementing agency: The Royal Society for the Conservation of Nature in cooperation with the Ministry of Education.

The following is a proposed budget for one year in Jordanian dinars:

| Item | Description | Budget |
|----------------------------|-------------|---------------|
| 1. Salaries and Wages | | 12,000 |
| 2. Equipment and Machinery | | 15,000 |
| 3. Transport and travel | | 1,500 |
| 4. Studies and Research | | 10,000 |
| 5. Training Activities | | 25,000 |
| 6. Publications | | 25,000 |
| TOTAL | | 88,500 |

5.2 RECYCLING PAPER WASTE

Justification:

- The cost of printing textbooks has risen sharply and is estimated at JD 5 million annually. A similar cost is incurred through the various types of paper we use, as well as the newspapers and magazines we read.
- Students use their textbooks and copybooks just once, after which these materials find their way to the garbage dump.
- Existing local projects contribute only nominally towards collecting these materials.
- The possibility does exist for investing this paper waste.

Objectives:

The project is expected to accomplish the following successes:

- Amend the students' attitudes and practices vis-s-vis the environment's resource.
- Reduce Jordan's imports of paper.
- Encourage the establishment of local recycled paper industries.
- Providing investment sources for schools.
- Encourage students to think about rationalizing the consumption of paper.
- Reduce pollution of paper waste and add an aesthetic aspect to participating schools.

Targeted groups: Students, teachers, parents, and families.

Implementing agency: Ministry of Education (Directorate of Student Activities).

Implementation mechanism: This project is to be implemented over one year as follows:

| Activity | Cost (JD) |
|--|---------------|
| Conducting surveys of schools' consumption of paper and how to dispense with it. | 5.000 |
| Issuing a guide on how to keep paper at home and deliver it to the recycling plant. | 10.000 |
| Training a team on how to contact people with a view to raising awareness of the program's objectives. | 25.000 |
| Buying and equipping containers. | 20.000 |
| Buying a vehicle. | 15.000 |
| Starting to implement the project in 20 schools representing school clusters in Amman | 5.000 |
| TOTAL | 90.000 |

5.3 Support Learning Resource Centers at the Ministry of Education

- Learning resource centers in the various governorates provide educational services with a view to improving the quality of education.
- These centers lack the software required for education.
- International trends and experiments stress the importance of educational techniques in developing environmental awareness.

Objectives:

The project is expected to achieve the following results:

- Raise the efficiency of supervisors at learning resource centers and their abilities in employing environmental educational techniques.
- Raise and develop the teachers' and students' environmental awareness.
- Diversify the sources and patterns of education.
- Establish a network for exchanging environmental information among learning resource centers.

Targeted groups: Supervisors at learning resource centers, teachers, education supervisors.

Implementing agency: General Directorate of Educational Techniques, Ministry of Education.

Proposed budget for one year:

| Activity | Cost (JD) |
|--|---------------|
| Conducting a survey of the situation of curricula and software required for Grades 6,7 and 8 | 3,000 |
| Conducting a survey of the situation of curricula and software for Grades 9 and 10 | 3,000 |
| Conducting a survey of the situation of curricula and software for Grades 11 and 12. | 3,000 |
| Prioritizing the required materials | |
| Funding visit outside Jordan to identify the required techniques. | 10,000 |
| Prioritizing the required materials and floating the invitation of bids. | 30,000 |
| Training the required personnel. | 10,000 |
| Preparing the training plan. | 5,000 |
| TOTAL | 64.000 |

5.4 NATIONAL ENVIRONMENTAL AWARENESS PROGRAM

This Program will seek to address all sectors of the society with a view to raising awareness of environmental issues. It will include the following subjects:

- Identifying the importance and role of environmental awareness in safeguarding the environment.
- 1. Describing the environmental situation in Jordan, as well as the challenges facing it.
- 2. Describing the ways and means that the individuals can take to check environmental degradation.
- 3. Highlighting the importance of popular participation in awareness programs and achieving sustainable development.
- 4. Highlighting practical, environment-friendly experiments and successful initiatives.

The project targets the following main groups of the society:

1. The public sector.
2. The Private sector.
3. Non-governmental organizations.
4. The educational sector, universities and institutions.
5. The following is a proposed budget for one year:

| Item | Budget |
|------------------------|----------------|
| 1- Salaries and wages | |
| Project director: 1 | 12.000 |
| Field guides: 10 | 6.000 |
| Secretary: 1 | 9.600 |
| Driver: 1 | 6.000 |
| 2- Transport | 5.000 |
| 3- Equipment | 1.000 |
| Overhead projectors: 2 | 1.000 |
| Slide projectors: 2 | 4.000 |
| Computers: 2 | 4.000 |
| Screens: 2 | 40,000 |
| 4- Activities: | |
| Seminars: 42 | 14.000 |
| Workshops: 21 | 17.500 |
| Forums: 30 | 1.500 |
| Occasions: 10 | 08.000 |
| 5- Printed materials | 20.000 |
| 6- Stationary | 1.000 |
| 7- Miscellaneous | 4.000 |
| TOTAL | 150.600 |

5.5 NATIONAL EAC TRAINING PROGRAMME

This program aims to empower communication specialists, particularly field guides, to implement awareness and educational programs included in the National Environmental Awareness Program and directed at the general public.

The program includes the following subjects:

1. Introduction to the environmental and national environmental challenges.
2. Ways and means of communication.
3. Ways of preparing and delivering an effective lecture.
4. Levels and techniques of participation.
5. Design of environmental action plans and implementation of public awareness campaigns.

It is suggested to benefit from the capabilities and equipment of an existing national center, such as the Institute of Public Administration or the Vocational Training Corporation's Vocational Health and Safety Institute. The following budget is proposed for one year:

| Item | Budget |
|---------------------------|---------------|
| 1. Salaries and wages | 06.000 |
| 2. Transportation | 04.000 |
| Equipment | |
| Computers: 2 | 04.000 |
| Overhead projectors: 2 | 01.000 |
| Slide projectors: 2 | 01.000 |
| Screens: 2 | 00.400 |
| 4. Studies & training: 26 | 24.000 |
| 5. Studies and Research | 14.000 |
| TOTAL | 54.400 |

5.6 ENVIRONMENTAL SCHOOL

Justification:

- The Ministry of Education is currently introducing educational innovations reflected in highlighting a new role for the school.
- The schools in an effective element in developing and improving the environment.
- The school may be utilized to spread and expand the base for environmental knowledge and awareness.
- Teachers and students need to be introduced to new teaching patterns that stress the right to protecting the environment.
- Experiments in some countries have stressed the role of the environmental school in developing the student's sense of the environment.

Objectives:

The program is expected to accomplish the following objectives:

- Provide teachers with new teaching patterns, such as learning through enjoyment, with a view to developing the students' sense of the environment.
- Prepare students to become environmental guides in their own communities.
- Develop the students' attitudes and provide them with the experience to deal wisely with the components of the environment.
- Support the community with trained environmental leaders.
- Prepare appropriate environmental curricula and extra-curricular activities for schools.

Target groups:

- Students in Grades 7-10, teachers of Grades 7-10, parents councils, science supervisors, school principals.

Implementing agency:

- Ministry of Education, represented by the Directorate of Activities, the Directorate of Training and the directorates of education in the districts.
- 190 students will be selected from all the directorates of education in the districts.

Stages for implementing the project:

Stage 1: Preparing the plan of action for the program, as well as the various extra-curricular activities and plays; equip the school building with a theatre, a projection hall, a computer hall, a solar energy utilization system, a paper waste recycling system, etc.

The cost for this state is estimated at JD 850,000.

Stage 2: Apply the school curriculum and extra-curricular activities to the selected group of students over one scholastic year.

Stage 3: Lay down plans for environmental awareness to be implemented by the selected group of students in their own schools and train another group of students.

Stage 4: Repeat Stage 3, establish a unit for evaluation and monitoring.

The cost of Stages 2-4 is estimated at JD 450,000.

PROPOSED BUDGET FOR IMPLEMENTING THE STRATEGY

The implementation of the various stages of this strategy requires conducting a variety of surveys and workshops with a view to identifying the most appropriate measures to be taken for each of the 10 stages. This means the achievement at the end of the aspired-for objectives effectively and efficiently by addressing the targeted groups that effect and are effected more than others by simple easy to understand messages. The following table shows the proposed budget for the implementation of this strategy:

| Implementation Mechanism | Estimated Cost (in JD) |
|--|-------------------------------|
| Stage 1: Survey | 5,000 |
| Stage 2: Survey | 5,000 |
| Stage 3: Survey | 5,000 |
| Stage 4: Survey | 5,000 |
| Stage 5: Survey | 5,000 |
| Stage 6: Workshop to identify suitable messages | 5,000 |
| Stage 7: Workshop to identify suitable means | 6,000 |
| Stage 8: Remuneration for employees and researchers, analysis and verification of information, and preparation of report preparation | 22,000 |
| Stage 9: Equipment (computers, overhead projectors, transportation, etc.) | 30,000 |
| Program evaluation | 5,000 |
| Miscellaneous | 5,000 |
| TOTAL | 97,000 |

ANNEX 1

Patterns of environmental education in the school curricula

Advocates of environmental education have exerted adequate efforts and devoted enough time to identify its objectives. At the same time, they devoted much of their attention to the ways and means of achieving these objectives. Their attempts and trials have led to the emergence of certain models through which the objectives of environmental education may be achieved. Recently, great attention has been devoted to informal educational activities. These activities are characterized by flexibility and openness and can effectively impact the preparation of students. Therefore, a number of active countries have chosen informal educational activities as a field for introducing environmental education. These activities have a special role in that they contribute towards invigorating the role of the school and maximizing information. At the same time, they contribute towards providing students with practical skills outside the framework of the educational process, which are sometimes difficult to convey to students through the formal education system.

Environmental education is facing the difficult problem of a very wide, varied and changing targeted audience. Furthermore, a certain mechanism is needed to deliver the quantity of information and applications to the targeted groups. Because environmental education, just like all other disciplines, is a continuous process that cannot be stopped, it has to address all these circumstances with programs disseminated through the formal school system, as well as the informal system clubs, youth organizations, natural and scientific museums, gardens, protected areas, etc.

It can be assumed that there are three patterns or approaches to formal environmental education to be included in school curricula at the different levels:

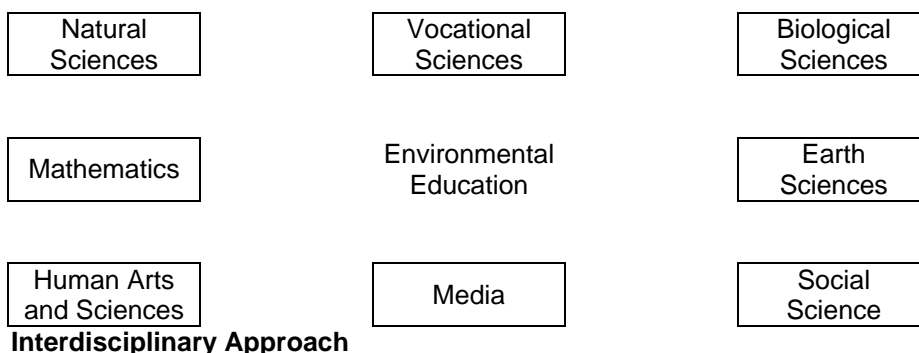
I. Integrative Approach:

1. INTERDISCIPLINARY APPROACH:

In a broad sense, this approach is defined as the achievement of a certain amount of integration among various disciplines of knowledge and the development of a language conducive to the establishment of an exchange of concepts and joint programs.

This may be accomplished by selecting and integrating a set of elements and concepts from several disciplines with a view to evolving a specific module for environmental education whose contents cover all the other different disciplines of knowledge.

The following chart represents this approach:

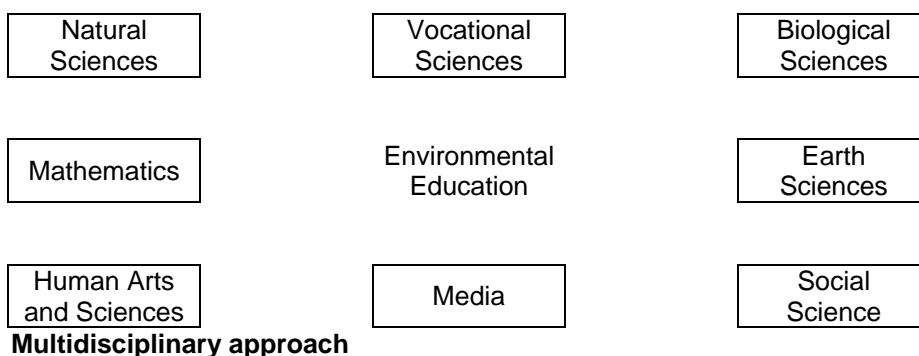


This approach may take many forms. It may, for example, focus on problems. Here, the interdisciplinary approach may be applied to a set of problems that cannot be attributed to any particular discipline, but are related to many aspects that no single discipline can address. Of course, it is preferable to employ several disciplines in addressing such problems.

2. MULTIDISCIPLINARY APPROACH:

This is the least developed integrative approach, wherein linkage among the various disciplines is at its minimum level. The disciplines, however, frequently overlap and complement one another to provide for future linkage, which is a possibility that can later be implemented. Therefore, we should, perhaps, juxtapose the various elements of the subject in order to demonstrate the inconsistency of their common aspects.

The following chart represents this approach:



This is accomplished by saturating the environmental dimension into traditional school subjects, i.e., introducing environmental information, or linking the content with suitable environmental issues. This relies mainly on the efforts of teachers and educational supervisors. This approach is valid for many subjects, especially the sciences and social studies. This method may lead to the creation of the students' positive environmental attitudes, in addition to teaching them some skills. Examples include the Jordanian experiment in the Basic Education Cycle, where it may be observed that the details of the curricula of most subjects have covered the environment. Environmental subjects are covered by the details of the science curriculum, in particular, and those of social education, Arabic language, Islamic education and English language, in general.

Characteristics of the Integrative Approach:

- It takes into account the development of each individual science, as well as that of the contemporary science module (transferable methodology, basic and common concepts).
- It caters to the needs of students in terms of providing individuals with a comprehensive idea of the environmental situation and the ways and means of tackling its complicated problems, as well as classifying phenomena and getting acquainted with the various disciplines of knowledge.
- It creates a scope for such varied elements as science methodology, to provide students with sufficient, precise and useful knowledge.
- It provides the ability to up-date content and keeps pace with the philosophies of all educational systems through the introduction of new elements.
- It provides the ability
- It permits the creation of a general education module through organizing the content according to the needs of the students.
- It enhances the output of education through ironing the difficulties that face organizing the content.
- It provides the ability to link the contents of formal and informal education.

II.

MODULES APPROACH:

This is a relatively popular approach in many international textbook series for the various study cycles. It addresses the various environmental subjects by providing sufficient coverage of their scientific and practical aspects and incorporating a study module or chapter into a certain textbook, especially those of the scientific disciplines. Examples of this approach include incorporating a module on the environment into the biology textbook of the Second Secondary Grade (science, agriculture and nursing streams), a module on population into the geography textbook, and a chapter on energy in selected Arabic language textbooks in the Jordanian curricula.

This pattern also tackles environmental subjects through earmarking the content of the curriculum of an entire course to the environment. Examples include a Kuwaiti textbook for the First Secondary Grade entitled "Man and the Environment", which deals with the basic scientific principles of chemistry, physics and geology from an environmental perspective. There is also the science curriculum for the preparatory cycle compiled by the Arab League Education, Scientific and Cultural Organization, which is entirely dedicated to the environment.

The science curriculum of the first four grades of the Basic Education Cycle in Jordan is totally dedicated to the environment. The focus in these grades is: “about the environment in terms of information, from the environment in terms of skills, and for the environment in terms of attitudes and values.”

The current science curricula for some grades contain independent modules dealing with environmental affairs. This is demonstrated in the following table:

| Grade | Module | Chapters |
|-------|---|---|
| Sixth | 6. Understanding the Environment 8. Safeguarding the Environment | Environmental Systems Relationships Among Living Creatures. The Soil Water and Air |
| Ninth | Biology | |
| | 4. Environmental Adaptation | Relationships Between Living Creatures Adaptation of Living Creatures |
| Ninth | Chemistry and Earth Sciences | |
| | 1. Water in the Household | 1. Purifying Drinking Water |
| Tenth | Biology | |
| | 1. The Environment: Resources and Problems | Resources of the Environment Contemporary Environmental Problems. |

The main objective of incorporating these subjects into the curricula of the first four grades is to provide students with the practical experience derived from scientific processes. It also seeks to acquaint them with natural phenomena in their immediate environment and helping them acquire basic skills in such areas as employing quantitative methods and mathematical manipulations in order to move into higher levels of abstraction and generalization.

Among the features of this approach is that most of the teachers in the lower educational cycles, as well as the science and social education teachers of the secondary school cycle, are able to teach environmental subject.

III. THE INDEPENDENT APPROACH:

This approach addresses integrated curricula for environmental education. It is taught as an independent curriculum by specialized teachers. It fits the pre-schools and grades 1-6 in that students in these two stages focus on learning by observation and that they are not interested in branching scientific knowledge. They look at phenomena in an overall comprehensive way. The teachers are able to teach this subject easily because the subject matter does not require comprehensive, absorbing coverage. The spread of this approach in secondary school education is relatively limited, but it is gaining popularity and expansion. Recent studies have demonstrated the positive effects on students' attitudes of taking environmental education courses, especially if such courses are taken as into consideration in measuring the students' academic achievement.

Secondary school textbooks resort to many approaches, mainly the independent approach, to deal with environmental education subjects. A textbook, entitled "Earth and Environment Sciences", recently-introduced for the First and

Second Secondary grades (science stream), deals with several environmental concepts including the following:

- Earth: The Environment for Life.
- The Characteristics of the Environmental System.
- Bio-geo-chemical Cycles of Some Materials.
- The Succession of Group Environment.
- Life Regions.
- The Depletion of Natural Resources (Natural Resources, Depletion of Natural Resources, Safeguarding Natural Resources).
- Pollution and the Effects of Natural Phenomena on the Environment (Waste, Air Pollution, Noise Pollution, Pollution and Mismanagement of Soil, the Effects of Natural Resources on the Environment).
- Sustainable Development and Protecting the Environment (Sustainable Development, the Modern Concept of Protecting the Environment, International Concern About the Environment, Islamic Attitude on Protecting the Environment, Environmental Protection in Jordan).

A matrix of environmental concepts contained in school textbooks, as well as teachers guides and guides for scientific experiments, are available at the General Curricula Directorate.

A set of teachers' guides, containing environmental, health and population concepts, has been prepared. The matrix of environmental concepts in the areas of population and the environmental system, contained in the Teacher's Population Education Guidebook, provides a good example of supporting books that help both teachers and students understand environmental concepts. Other guidebooks are available to provide teachers and students with teaching methods and skills to help them develop their attitudes towards environmental protection.

ANNEX 1

PATTERNS OF ENVIRONMENTAL EDUCATION IN THE SCHOOL CURRICULA

Advocates of environmental education have **devoted** adequate efforts and time to identify its objectives. At the same time, they devoted much of their attention to the ways and means of achieving these objectives **through school curricula**. Their attempts have led to the emergence of models through which the objectives of environmental education may be achieved. Recently, great attention has been devoted to informal educational activities, **which** are characterized by flexibility and openness and can effectively impact the **formation** of students' **attitudes**. Therefore, a number of countries have chosen informal educational activities as a **means** for introducing environmental education. These activities have a special role in that they contribute towards invigorating the role of the school and maximizing information. At the same time, they contribute towards providing students with practical skills outside the

framework of the educational process, which are sometimes difficult to **communicate** to students through the formal education system.

Environmental education is facing the difficult problem of a very wide, varied and changing targeted audience. Furthermore, a certain mechanism is needed to deliver the quantity of information and applications to the targeted groups. **Just like all other disciplines**, environmental education is a continuous process that cannot be stopped. **Hence**, it has to address all these circumstances with programs disseminated through the formal school system, as well as the informal system of clubs, youth organizations, natural and scientific museums, gardens, protected areas, etc.

There are three approaches to formal environmental education to be included in school curricula at the different levels:

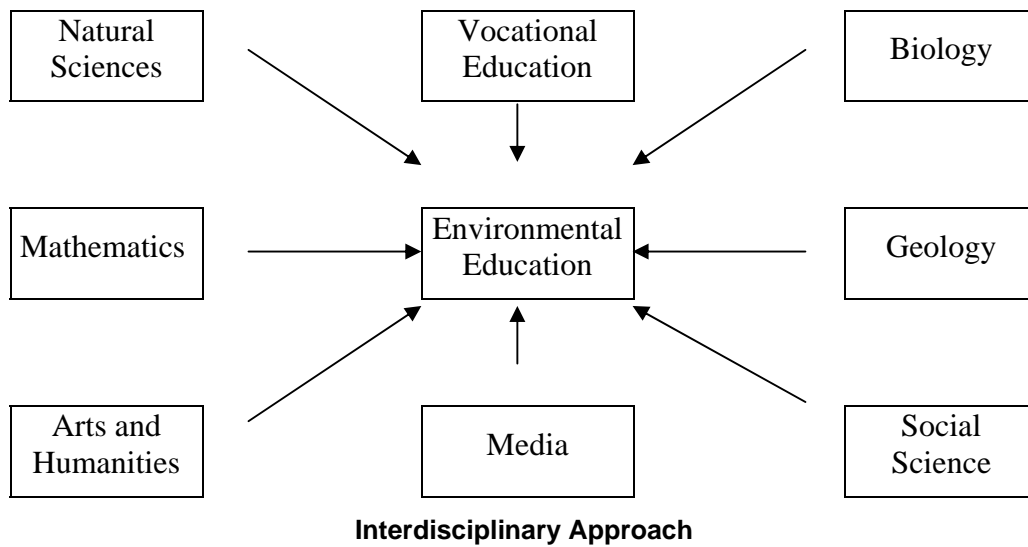
I. Integrative Approach:

1. INTERDISCIPLINARY APPROACH:

In **its** broad sense, this approach is defined as the achievement of a certain amount of integration among various disciplines of knowledge and the development of a language conducive to the establishment of an exchange of **common** concepts and programs.

This may be accomplished by selecting and integrating a set of **components** and concepts from several disciplines with a view to evolving a specific module for environmental education whose contents cover all the other different disciplines of knowledge.

The following chart represents this approach:

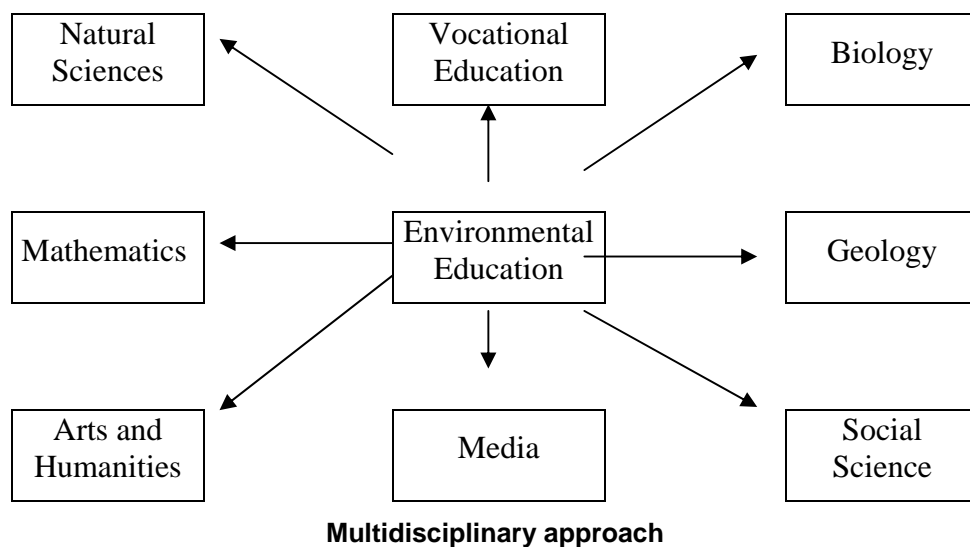


This approach may take many forms. It may, for example, focus on problems. Here, the interdisciplinary approach may be applied to a set of problems that cannot be attributed to any particular discipline, but are related to many aspects that no single discipline can address. Of course, it is preferable to employ several disciplines to address such problems.

2. MULTIDISCIPLINARY APPROACH:

This is the least developed integrative approach, wherein linkage among the various disciplines is at its lowest level. The disciplines, however, frequently overlap and complement one another to provide for future linkage, which is a possibility that can later be implemented. Therefore, we should, perhaps, juxtapose the various elements of the subject in order to demonstrate the inconsistency of their common aspects.

The following chart represents this approach:



deals with the basic scientific principles of chemistry, physics and geology from an environmental perspective. There is also the science curriculum for the preparatory cycle compiled by the Arab League Education, Scientific and Cultural Organization (ALESCO), which is entirely dedicated to the environment.

The science curriculum of the first four grades of the Basic Education Cycle in Jordan is totally dedicated to the environment. The focus in these grades is: “about the environment in terms of information, by the environment in terms of skills, and for the environment in terms of attitudes and values.”

The current science curricula for some grades contain independent modules dealing with environmental affairs. This is demonstrated in the following table:

| Grade | Module | Chapters |
|-------|---|---|
| Sixth | 6. Understanding the Environment 8. Environmental Conservation | Eco-systems Relationships among Living Creatures. The Soil Water and Air |
| Ninth | Biology | |
| | 4. The Environment and Adaptation | Relationships Between Living Creatures Adaptation of Living Creatures |
| Ninth | Chemistry and Geology | |
| | 1. Water in the Household | 1. Purifying Drinking Water |
| Tenth | Biology | |
| | 1. The Environment: Resources and Problems | Resources of the Environment Contemporary Environmental Problems. |

The main objective of incorporating these subjects into the curricula of the first four grades is to provide students with the practical experience derived from scientific processes. It also seeks to acquaint them with the natural phenomena of their immediate environment and help them acquire basic skills in such areas as employing quantitative methods and mathematical manipulations in order to move up to higher levels of abstraction and generalization.

This approach, whether applied in the lower educational cycles or secondary schools, is especially advantageous in that most science and social education teachers possess the ability to teach environmental subjects.

V.

THE INDEPENDENT APPROACH:

This approach addresses integrated school programs for environmental education, where specialized instructors teach environmental education as an independent curriculum. It is suitable for pre-schools and grades 1-6 in that students in these two stages focus on learning by observation and are not interested in branching scientific knowledge. They look at phenomena in an overall comprehensive way. The teachers are able to teach this subject easily because the subject matter does not require comprehensive, absorbing coverage.

The spread of this approach in secondary school education is relatively limited, but it is gaining popularity and expansion. Recent studies have demonstrated the positive effects on students' attitudes of taking environmental education courses, especially if such courses are adopted as a basic tool for measuring the students' academic achievement.

Secondary school textbooks employ many approaches, mainly the independent approach, to deal with environmental education subjects. A textbook, entitled *Earth and Environment*, recently-introduced for the First and Second Secondary grades (science stream), deals with several environmental concepts including the following:

- Earth: The Environment for Life.
- The Characteristics of the Eco-system.
- Bio-geo-chemical Cycles of Some Materials.
- The Succession of Group Environment.
- Biological Zones.
- The Depletion of Natural Resources (Natural Resources, Depletion of Natural Resources, Conservation of Natural Resources).
- Pollution and the Effects of Natural Phenomena on the Environment (Waste, Air Pollution, Noise Pollution, Pollution and Mismanagement of Soil, the Effects of Natural Resources on the Environment).
- Sustainable Development and Protecting the Environment (Sustainable Development, the Modern Concept of Environmental Protection, International Concern About the Environment, Islam's Attitude on Environmental Protection, Environmental Protection in Jordan).

A matrix of environmental concepts contained in school textbooks, teachers' guides and manuals for scientific experiments, is available at the General Curricula Directorate.

A set of teachers' guides, containing environmental, health and population concepts, has been prepared. The matrix of environmental concepts in the areas of population and the eco-system, contained in the *Teacher's Population Education Guidebook*, provides a good example of supporting books that can help both teachers and students understand environmental concepts. Other guidebooks are available to provide teachers and students with teaching methods and skills to help develop their attitudes towards environmental protection.

ANNEX 2

EDUCATIONAL ACTIVITIES

The Ministry of Education undertakes many school scientific activities with the aim of developing the students' sense of the environment and intensifying their environmental concepts through the application of the theories they learn in the curricula.

In this respect, the Ministry cooperates with all governmental institutions and NGOs in the field of environmental awareness by staging such activities as the following:

- The establishment of more than 850 environmental protection clubs, distributed throughout the Kingdom, with a total membership of about 7,000 students. These clubs organize many activities in the field of serving the environment and environmental conservation, spreading environmental awareness, and planting trees. Environmental activities are not restricted to club members; most of the student bodies participate in planting trees and general cleanliness campaigns.
- Organizing environmental camps with a view to enhancing environmental service and conserving bio-diversity. A camp was organized in cooperation with the Azraq Oasis Project and the Jordanian Anti-Desertification Project.
- Participating in a campaign organized by the Jordanian Archaeological Society and the Royal Society for the Conservation of Nature to clean archaeological sites in Jerash. Five hundred students participated in this campaign.
- Organizing annual environmental painting, photography and article-writing competitions in cooperation with the Jordanian Environment Association in which school students participate. So far, six competitions have been organized.
- Participating in a competition organized by the Jordanian Friends of the Environment entitled "A Better Environment", in which students present their own projects to solve Jordan's environmental problems. So far, two competitions have been held. More than 75 schools participated in the second competition, up from only seven schools in the first.
- Observing international, Arab and Jordanian environmental celebrations and promoting these occasions among students.
- Convening workshops and other meetings for supervisors of environmental protection clubs in the Kingdom.
- Cooperating with the Ministry of Water and Irrigation on a project to improve and maintain the quality of water. Students participated in a march organized on the occasion of International Water Day.
- Cooperating with the General Corporation for Environmental Protection on the corporation's annual competition.

- Participating in international competitions, such as environmental drawing and photography, organized by the United Nations in the various environmental fields.
- Convening three environmental workshops to train about 500 supervisors of environmental protection clubs.
- Participating for the third time in the international “Clean the Planet” campaign. More than 10,000 students have participated in this campaign.
- Participating in the campaign for rationalizing water consumption.
- Training 100 supervisors of various school subjects in the area of water awareness.
- Organizing the School Garden competition, where a prize is awarded to the school with the best-maintained garden.
- Utilizing the school public address systems (school broadcasts) in the morning to air speeches and editorials on the various aspects of the environment and environmental conservation.
- Organizing environmental exhibitions to promote recycling.
- Producing musical sketches and plays dealing with environmental conservation.

Through these activities, the Ministry of Education seeks to enrich the learners’ knowledge and information about the environment and deepen their environmental awareness. This is achievable by providing opportunities for dealing with the components of the environment through in-school and out-of-school activities.

The following are examples of that:

1. Collecting and classifying samples of such materials as rocks, soil, tree leaves, seeds and some fruits and organizing environmental exhibitions.
2. Conducting field trips and visits to organizations involved in the environment — e.g., the Royal Society for the **Conservation of Nature**, the Jordanian Environment **Society**, the Ministry of Rural **and** Municipal **Affairs** and **the** Environment, etc. — to benefit from their activities and participate in the events and camps they organize.
3. Developing the students’ skills in photography with a view to monitoring environmental changes during the four seasons, promoting positive environmental practices and fighting negative ones.
4. Encouraging students to write articles and short stories about the environment, **environmental** resources, the environmental problems affecting the world as a result of the imbalance of these resources, e.g., erosion of the ozone layer, acid rain, the various forms of pollution, etc.
5. Starting an “environmental album” wherein school environmental clubs can follow living creatures in certain environmental zones, monitor the **diversity** of plant and animal life throughout the seasons, and document their findings in writing, drawing and pictures, in order to compile a body of information covering

living creatures in these zones. This is a collective project that serves and documents our environment.

6. Supporting and encouraging **horticulture in schools** in view of its positive, constructive impact on the environment in general. In addition, school **horticulture** augments the other curricula.

Models and applications of environmental projects

1. Preparing an environmental map of the school's **vicinity** on which the area's natural and built-in features are delineated.
2. Conducting a study of the **flora** on the campus or a neighboring area, with special emphasis on the trees' shape, growth pattern, features, obstacles to **their** growth, **how to protect them**, etc.
3. Conducting a study of the fauna of a certain area and, as much as possible, photographing the animals, listing their correct names, highlighting their advantages and disadvantages, proposing ways and means for protecting them, etc.
4. Conducting a study of the nutritional habits of the population in the neighborhood, including gathering information about their consumption of cereals, poultry, meat, and dairy products, as well as the methods they use in cooking and the quantities and contents of meals as compared with balanced healthy meals.
5. Getting acquainted with **the sources, potability and other uses of drinking** water in the area, **as well as** ways and means of keeping water clean and rationalizing its consumption.
6. Conducting a study of the various types of buildings in terms of their classification, **construction** materials, heights, etc.
7. Conducting visits to the market to observe **its** activities, find out whether commodities are locally-produced or imported, **examine** cleanliness **and waste disposal** in the market, **etc.**
8. Surveying local newspapers for a whole month to monitor news items, articles and pictures they publish on the environment, with particular reference to classifying environmental problems on the basis of whether they are local, regional or international. Reports on the findings of the survey should be prepared for discussion in seminars and use in the school's wall magazine, monthly newsletters or yearbooks.
9. Conducting exploratory or case studies of such subjects as sources of energy, consumption rates, the flow of energy in the **eco-system**, food chains and networks, environmental "pyramids", etc. Studies should also be conducted on the types of wild plants in Jordan in terms of the places in which they grow, the time of the year in which they bloom and their flowers. These flowers should also be photographed.
Here, it must be stressed that students should be aware of these wild plants and the ways and means of safeguarding them, with particular reference to the rare plants that are endangered with extinction and the role of the Royal Society for **the Conservation of Nature** in this field.
10. **Initiating** an environmental library in every school and supplying it with local and international environmental books **and** local **and Arab** environmental magazines (e.g., *Al Reem*, *Risalet Al-Bi'ah*, etc). Such libraries should also include publications relevant to the environment by the United Nations Environment Program and the World Health Organization, as well as coverage of

such issues in the local press. These libraries might also be supplied with films and photographs on the environment.

11. Organizing environmental exhibitions of pictures, drawings, posters, samples, etc.
12. Paying due attention to spreading environmental awareness among children by encouraging them to write environmental short stories that are suitable both linguistically and scientifically, and producing these stories in a manner commensurate with the children's ages.
13. School trips: The Ministry of Education gives high priority to school trips as an effective means for observing the environment in a direct and tangible way. Here, we stress the significance of the skills of observation, experimentation, measurement and evaluation.
14. Youth camps: **These summer camps**, especially Al Hussein Youth Camps introduced 30 years ago, have succeeded in planting thousands of dunums with forest trees, which we **now** see every day. Undoubtedly, such camps support and enrich the human, social and physical dimensions of the environment, deeply implant the aspired-for environmental awareness, only to be resurrected in the future.

ANNEX 3

EDUCATIONAL INNOVATIONS

Jordan's educational reform process, launched 10 years ago, has focussed on improving the outputs of education, coping with contemporary innovations and the breaking forth of knowledge and technology world-wide, linking education with development and the labor market, and interacting with cultural developments around the world.

The educational reform process is based on several assumptions, mainly the need to concentrating on developing critical thinking, taking individual differences into consideration, and acquiring knowledge by linking its function to life.

The reform program's first two stages were completed as planned. The first stage focussed on various inputs of the educational system, while the second focussed on operations inside the classroom, the school itself and the school's vicinity, as well as the various levels of the administrative process. Objective evaluation, however, revealed satisfactory achievements in many areas and shortcomings in several other areas. This prompted decision-makers to go ahead with planning for the third stage, which will carry the educational system into the 21st Century.

Having secured an educational system characterized by consciousness, openness, acceptance, innovation, science and hope, the following tracks were adopted in planning the third stage:

- I. Devising practical strategies, plans and practical procedures to confront the major challenges of democracy, openness, globalization, comprehensive development, the technological and communications revolution, poverty, unemployment, and the frustration associated with the faltering peace process in the region.
- II. Securing a true partnership in national efforts between the parties concerned with the educational system and the beneficiaries of its outputs.
- III. Diversifying and developing the requirements for implementing strategies, plans and procedures with a view to actualizing the type of school, level of graduates and integrative growth we want for Jordan.
- IV. Adopting, verifying and endeavoring to find indicators for the success of innovative experiments.

The afore-mentioned basic foundations of educational reform can be broken down into skills and ideas, achievable through innovative qualitative experiments that can guarantee the quality of the aspired-for progress. In this respect, the Ministry of Education has developed and put to actual testing more than 30 experiments through a plan consisting of the following three steps:

1. Prudent preparation of the innovative experiments, followed by limited implementation in the field and crystallization and adaptation for the Jordanian environment (focus here is on certain skills or ideas).
2. Clustering successful innovative experiments into groups and axes (school administration, teaching methods, students, etc.) within the framework of the single school.
3. Developing a better learning environment in order to develop positive models for the school we want (here integrative, comprehensive school reform emerges).

These successful educational innovations constitute models that can be replicated in other schools, irrespective of whether the model is an idea or a skill (procedural research, democratic practice, etc.), an area or theme (developing school administration), or school as a whole (towards a better educational environment).

Truly, the continuation of serious work on the educational reform plan and the political leadership's support of these efforts have enhanced the Ministry of Education's earnest preparations for entering the next century with better-quality education and better graduates.

THEATRE IN EDUCATION

This program is implemented in cooperation between the Noor Al-Hussein Foundation and the Ministry of Education. It targets students in the age group (10-12 years) and aims to enhance their concepts of democracy, human rights and good citizenship through special activities that help them develop sound communication and positive interaction. It also seeks to provide them with the skills of resolving conflicts creatively and correctly, adopting non-violent choices when dealing with the environment around them, and developing the skills of constructive listening, discussion and dialogue. Finally, it seeks to make them proud of their Jordanian heritage and civilization.

Work team

A 10-member core team of educational facilitators has been chosen and trained in the various communication skills to implement this program with students and teachers. The team prepares special drama productions using marionettes and the "theatre in education" approach. These scenes and sketches address the issue of violence, no matter what the circumstances are, and provide a living example of creative problem resolving methods in which the students in the audience participate. The team has created the "Kanafeesh World", a fictitious place where problems are solved and conflicts discussed in a spirit of tolerance, understanding, and constructive work. This technique links the different communication skills into an integrative approach to the concepts that are put forward for discussion. Within the Kanafeesh World concept, the team has developed several creative activities in which the students' participation takes different forms, e.g., drawing, singing, writing, drama

and educational games. The students use these activities to express their viewpoints, ambitions and aspirations freely and spontaneously.

The team has produced a set of educational materials for the students themselves, such as stories, puzzles and posters. The team presents these activities in all Basic Education schools throughout the Kingdom according to a schedule approved in coordination between the Noor Al-Hussein Foundation's Theatre in Education Program and the Ministry of Education. A typical presentation takes three hours and is carried out within an "open educational day."

Objectives of the Program

The importance of this program lies in helping teachers and students achieve the following objectives:

1. Providing students with creative skills to peacefully resolve conflicts arising in their schools and communities.
2. Teaching students the democratic responsibility of decision-making in the service of national interests and providing them with adequate knowledge about their rights and duties.
3. Raising the students' awareness of human and child rights.
4. Enhancing the students' pride in Jordan's heritage and the Arab civilization.
5. Fostering the students' awareness of the advantages of peace to stability, socio-economic development and environmental conservation.

Stages of work in the program

1. Staging preliminary experimental presentations in a number of schools in the Amman Governorate.
2. Producing samples of teaching materials and an introductory brochure about the program, as well as posters, a teacher's activities guide and a brief guide to the peace treaty.
3. Convening workshops for headmasters and teachers in Basic Education schools to explain the program's idea and modus operandi.
4. Organizing a competition about the common heritage of countries of the Arab World, selecting the winners and distributing the prizes.
5. Preparing enjoyable teaching materials for students' use, including stories, puzzles and posters.
6. Preparing televised messages about the content and objectives of the program.
7. Organizing special presentations and activities about the program in youth and children's clubs and cultural centers.
8. Expanding the presentations to include all parts of the Kingdom.
9. Evaluation and feedback.

HEALTHY SCHOOLS

Introduction

Within the framework of its ongoing concern about the health of the Kingdom's students, the Ministry of Education has had continuous and wide-ranging cooperation with all parties involved in the various health fields that positively impact students. In this regard, the Ministry participates in the Healthy School Project, which is supported by the Environment Department of the World Health Organization and implemented in cooperation with the Noor Al-Hussein Foundation, the Ministry of Health and the Jordanian Society for Environmental Protection.

Objectives

The project aims to develop and enhance the school's local environment, both within the campus and outside, with a view to providing a suitable environment for the educational process. This development encompasses all the material and moral elements of environmental health.

Implementation Steps

A steering committee, consisting of representatives of the above-mentioned parties, was formed to initiate work on the project. The committee decided to start implementing the experiment in only three schools and proposed the following criteria for selecting these schools:

1. Selecting a school served by the Healthy Cities Program: For this purpose, the Ibn Al-Atheer Secondary School for Boys in Zarqa was chosen.
2. Selecting a school served by the Quality of Life Project in Jordanian villages: For this purpose, the Sab'i Siyar Basic School for Boys in the Northern Desert region was chosen.
3. Selecting a school in an area not served by any health projects: For this purpose, Al Qadi Iyas Basic School for Boys in Sahab was chosen.
4. In each of these schools a local committee was formed consisting of the headmaster, two teachers, four students, and one representative of each of the Ministry of Health, the Jordanian Environmental Protection Society, the Noor Al-Hussein Foundation, the municipality and the Ministry of Awqaf and Religious Affairs.
5. A two-day workshop was held on 11-12 March 1998 during which members of the local committees were trained on the project and its modus operandi, as well as laying and executing implementation plans.
6. Each local committee proposed a six-month plan. Implementation of the plans started immediately after the conclusion of the workshop.
7. A program was agreed for visits by the steering committee to these schools to get first hand information about progress in the project and discuss the plans in the field. These visits were undertaken on 28 April, 5 May and 12 May 1998.
8. In the light of its success, the experiment will be expanded to cover all schools in the various governorates.

TOWARDS A BETTER LEARNING ENVIRONMENT

This program reflects on the student against the backdrop of what generally affects him in the classroom, on the campus, and in the school's surroundings, including the family and the street. The program seeks to improve these environments in order to improve the quality of the student.

In the light of this comprehensive understanding of the learning environment, the need emerges for restructuring the Jordanian school in order to re-align the focus of the interactive classroom process. This involves several dimensions, including the processes of thinking, cognitive growth and balanced development of social and emotional aspects within an adequate physical framework. In addition, it guarantees a safe school environment, which guarantees a comfortable democratic atmosphere in which the students' health and psychological and social security are guaranteed.

This comprehensive understanding of a better learning process requires opening the school up to the society and extending the child rights awareness process to include parents, and securing better family care. On the other hand, in order to achieve a better learning environment, the following have to be achieved:

1. The student should feel that this environment responds to his/her interests, wishes and capabilities.
2. The student's positive attitudes towards the learning process should be developed.
3. The student's self-appraisal should be improved.
4. The student's self-control capability should be developed.
5. The student should feel that he/she belongs to the school, to the student body and to the school "family". He/she should interact with others, be sensitive to their feelings, trust them and respect their opinions.
6. The student should contribute towards general schoolwork in a manner conducive to creating his/her sense of responsibility.
7. The student should consider himself/herself a "citizen" of his/her school, not a tourist.

The training program "Towards a Better Learning Environment" is a national program in which many parties support the Ministry of Education, e.g., the Ministry of Health, the National Task Force for Children, and UNEICEF, as well as a number of specialists drawn from Jordanian universities. The program has four technical committees, each overseeing a sub-program. The Safe School Environment Program and the Global Education Program are based at the Ministry of Education. The Child Rights Promotion Program is implemented in partnership with the National Task Force for Children, while the Better Parenthood Program is implemented in partnership with the Ministry of Health.

UNICEF supports the entire program, but it is assisted by many specialists drawn from universities, as well as the informal and private sectors.

Planning for the main program and the four sub-programs has been carried out in a manner conducive to guaranteeing the integration of the implementation process

within the confines of the individual school. The first stage of implementation will involve preparing a standard list procedurally describing the meaning of a “better leaning environment”. As a first step towards action in the different fields, each of the participating schools will be compared against the standard list.

The program will benefit from many other innovative initiatives, irrespective of whether they focus on a specified skill or subject or on a particular field or theme. It will also benefit from documents, films, publications and training materials prepared for several other programs, thus saving time and effort as part of the general training plan explained earlier.

ANNEX 4

DUTIES OF THE DIRECTORATE OF OCCUPATIONAL SAFETY AND HEALTH AND THE ENVIRONMENT (MINISTRY OF LABOUR)

The Ministry of Labor's Directorate of Occupational Safety and Health and the Environment (DOSHE) is involved in empowering workers for maintaining their and protecting their health against the electrical, mechanical, chemical and biological hazards of the work environment. Thus, workers would be better prepared to prevent work injuries and accidents, protect themselves against occupational illnesses and acquire the skills and experiences needed to deal with the work environment, where they find themselves daily.

On that basis, the Ministry of Labor's physicians and engineers fan out from its labor office throughout the Kingdom on field visits to all types of work places and sectors. There they provide both employers and workers with awareness-building education and guidance relevant to safety and occupational health, the work environment, and protection against occupational injuries, accidents and illnesses as per the Jordanian Labor Law. In this context, the following are carried out:

1. The DOSHE provides work establishments with guidance and warning posters about the hazards workers may be subjected to in the work place.
2. The Directorate participates in laying down internal rules and regulations for these establishments in matters related to performance and occupational safety and health.
3. The DOSHE participates in defining specifications for personal safety equipment in these establishments as per the nature of work with a view to protecting workers from occupational injuries, accidents and illnesses.
4. The Ministry of Labor publishes a quarterly magazine addressing occupational safety and health issues.
5. The staff of the DOSHE deliver lectures in work places and labor education institutes (there are five such institutes covering all parts of the Kingdom), as well as the Institute of Occupational Safety and Health of the Vocational Training Corporation.
6. The Directorate organizes training courses and seminars in the country's labor education institutes on occupational safety and health in order to educate, guide and enlighten employers and workers vis-à-vis the nature of occupational safety and health. These activities also focus on the Directorate's role in protecting workers against occupational injuries, accidents and illnesses.
7. The DOSHE cooperates with Jordan Radio and Television on producing programs on occupational safety and health, e.g., Jordan Television's program "In the Workplace" and Radio Jordan's "Open Discussion" program.
8. The Directorate conducts various measurements in the work environment and proposes suitable solutions to avoid injuries and work accidents and provides technical advice on occupation public safety and health to the parties involved in production.

9. An ordinance, based on the Jordanian Labor Law, was passed to regulate the formation of committees and appointment of supervisors in the area of occupational safety and health. In this regard, the Institute of Occupational Safety and Health conducts a year-long training course with a view to graduating a batch of supervisors thoroughly acquainted with occupational safety and health to be later appointed in the various establishments where they can spread health awareness among the production partners.
10. The Institute of Occupational Safety and Health conducts basic and advanced training courses in the area of occupational safety and health with a view to spreading awareness among workers of all the hazards of the workplace in order to avoid work injuries and accidents.
11. The DOSHE submits proposals for developing rules, regulations and procedures pertaining to applying the Labor Law in the areas of occupational safety and health and the work environment and following up on the necessary measures for avoiding work injuries and accidents.
12. The Directorate, in cooperation with the relevant parties, lays down standards and specifications for occupational safety and health and the work environment as they impact productivity and the health and safety of workers.
13. The DOSHE sits on the various committees formed by the concerned parties in the areas of occupational health and safety and the work environment.
14. The Directorate monitors, analyses, sorts and classifies work injuries and accidents in order to submit the necessary recommendations to avoid recurrence of such injuries and accidents.

ANNEX 5

THE ROYAL SOCIETY FOR THE CONSERVATION OF NATURE

Since its establishment in 1966, the Royal Society for the Conservation of Nature (RSCN) has realized how important it is to spread environmental awareness among the various categories of the society. In this respect, the Society embarked on several programs aimed at acquainting the public with wild life and ways and means of safeguarding the country's flora and fauna. The following are some of these programs:

1. Environmental Awareness Programs for Hunters:

- A. THE RSCN HAS BEEN COMMISSIONED BY THE MINISTRY OF AGRICULTURE TO IMPLEMENT THE 1973 HUNTING LAW.
- B. THE SOCIETY OVERSEES HUNTING THROUGH PATROLS IN COOPERATION WITH THE PUBLIC SECURITY DEPARTMENT (PSD).
- C. THE SOCIETY IS THE AUTHORITY TO ISSUE HUNTING LICENSES.
- D. A BOOK ON THE BIRDS OF JORDAN HAS BEEN PUBLISHED TO RAISE HUNTERS' AWARENESS OF THE TYPES OF MIGRATING BIRDS, THE PATHS OF THEIR MIGRATIONS, AND THE TYPES OF INDIGENOUS BIRDS.
- E. MAPS OF THE HUNTING AREAS HAVE BEEN DRAWN.
- F. A HUNTING PROGRAM HAS BEEN LAID DOWN, INCLUDING THE NUMBERS AND TYPES OF ENDANGERED BIRDS OR ANIMALS WHICH HUNTERS ARE ALLOWED TO HUNT.
- G. THE SOCIETY IS CURRENTLY ENGAGED WITH THE PSD IN DEVELOPING A SECURITY NETWORK TO CONTROL HUNTING THROUGH AN INTEGRATIVE PLAN OF ACTION IN THE AREA OF ENVIRONMENTAL AWARENESS OF WILD LIFE IN JORDAN.
- H. THE SOCIETY, IN COOPERATION WITH THE MINISTRY OF AGRICULTURE (DEPARTMENT OF AFFORESTATION), IS ENGAGED IN DEVISING AN AWARENESS PROGRAM FOR FOREST RANGERS WHO WILL BE HELPING THE SOCIETY IN CONTROLLING HUNTING AND PROVIDING INFORMATION ON WILD LIFE IN THE AREAS WHERE THEY WORK.
- I. THE SOCIETY HAS PUBLISHED MANY BROCHURES, BOOKS AND POSTERS PERTAINING TO ENVIRONMENTAL LAWS AND REGULATIONS IN JORDAN. IT HAS ALSO CONDUCTED A SURVEY OF THE COUNTRY'S WILD ANIMAL AND PLANT LIFE, WITH A VIEW TO DEVISING A FUTURE STRATEGY FOR PROTECTING WILD LIFE AND HIGHLIGHTING THE DANGERS THAT THREATEN IT.

2. ENVIRONMENTAL AWARENESS PROGRAMS FOR STUDENTS
SINCE 1986, AROUND 850 NATURE PROTECTION CLUBS HAVE BEEN ESTABLISHED IN THE VARIOUS GOVERNORATES AND DISTRICTS OF THE KINGDOM. THE NUMBER OF MEMBERS WHO HAVE JOINED THESE CLUBS SINCE THEIR ESTABLISHMENT AND UNTIL 1998 TOTALED 850,000 MALE AND FEMALE STUDENTS. IN 1998, AROUND 35,000 STUDENTS IN GRADES 1 THROUGH 12 **WERE MEMBERS IN THESE CLUBS.**

- **NATURE PROTECTION CLUBS HAVE BEEN ESTABLISHED IN SEVEN JORDANIAN UNIVERSITIES AND SPECIALIZED AWARENESS PROGRAMS OF ACTION HAVE BEEN DEVISED FOR THEM.**
- **IN 1998, ABOUT 1,000 MALE AND FEMALE TEACHERS WERE TRAINED ON ENVIRONMENTAL AWARENESS TECHNIQUES, THE DEVELOPMENT OF COGNITIVE AND OBSERVATION SKILLS, AND THE USE OF THE “ENVIRONMENTAL FILE”. THE TEACHERS WERE ALSO TRAINED TO ORGANIZE ACTIVITIES INSIDE AND OUTSIDE THE CLASSROOM WITH THE OBJECTIVE OF ACQUAINTING STUDENTS WITH THE DIFFERENT ENVIRONMENTAL ISSUES AND COMMUNICATION SKILLS. THEY WERE SPECIFICALLY TRAINED TO COMMUNICATE INFORMATION TO THEIR STUDENTS THROUGH THE UTILIZATION OF MODERN EDUCATIONAL TECHNIQUES (E.G., LEARNING BY LISTENING).**

3. ENVIRONMENTAL AWARENESS TOOLS
THE FOLLOWING TOOLS, *INTER ALIA*, HAVE BEEN DEVELOPED IN THE AREA OF ENVIRONMENTAL AWARENESS:

- **FEATURES FOR RADIO, TELEVISION AND THE PRINTED MEDIA.**
- SPECIALIZED WORKSHOPS.
- ENVIRONMENTAL SEMINARS.
- PARTICIPATORY ENVIRONMENTAL SURVEYS.
- A PROGRAM FOR OBSERVING BIRDS IN NATURAL PROTECTORATES.
- ENVIRONMENTAL EDUCATION CENTERS HAVE BEEN OPENED AT THE SHOMARI AND AZRAQ PROTECTORATES. THERE IS A PLAN TO DEVISE AN INTEGRATIVE PROGRAM IN THE FUTURE.
- COMPILING THE FOUR PARTS OF THE “ENVIRONMENTAL FILE”.
- PRODUCING ENVIRONMENTAL POSTERS, BROCHURES, FACT SHEETS AND BOOKLETS.
- PRODUCING A TEACHER’S GUIDE FOR THE NATURE PROTECTION CLUBS.
- PRODUCING A TEACHER’S GUIDE FOR THE SHOMARI PROTECTORATE.
- PUBLISHING *AL-REEM*, THE FIRST SPECIALIZED ENVIRONMENTAL PERIODICAL IN THE REGION.

- OPENING AN ENVIRONMENTAL LIBRARY AT RSCN HEADQUARTERS.
- THE WATER AWARENESS PROJECT FOR STUDENTS IN SECONDARY SCHOOLS (GRADES 9-12).
- THE PAPER AND CARDBOARD RECYCLING PROJECT.
- ORGANIZING ACTIVITIES FOR THE NATURE PROTECTION CLUBS, TOTALING 36 ACTIVITIES INSIDE AND OUTSIDE THE CLASSROOM.
- THE OLIVE PICKING CAMPAIGN.
- PLANTING TREES IN SCHOOLS AND CREATING SCHOOL GARDENS.
- ORGANIZING COMMUNITY SERVICE PROGRAMS FOR MEMBERS OF NATURE PROTECTION CLUBS.
- ORGANIZING YEAR-ROUND PUBLIC CLEANLINESS CAMPAIGNS.
- THE AWARENESS PROGRAM OF NATIONAL HERITAGE AND ARCHAEOLOGICAL SITES.

4. ENVIRONMENTAL AWARENESS PROGRAMS FOR WOMEN

- INTRODUCING ENVIRONMENTAL ISSUES AND WOMEN'S ROLE IN ENHANCING CHILDREN'S POSITIVE PATTERNS OF BEHAVIOR.
- RATIONALIZING WATER AND ENERGY CONSUMPTION.
- AWARENESS IN THE AREA OF MANAGING, RECYCLING AND SORTING SOLID WASTES AT HOME.
- HOME GARDENS AND THE USE OF COMPOST.
- ENVIRONMENTAL AND HEALTHY MANAGEMENT OF THE HOUSE.
- REDUCING THE USE OF INSECTICIDES INSIDE THE HOUSE AND USING ENVIRONMENTAL-FRIENDLY MATERIALS.
- THE ROLE OF WOMEN IN PROTECTING THE ENVIRONMENT AND REDUCING EXISTING AND POTENTIAL ENVIRONMENTAL PROBLEMS.

5. ENVIRONMENTAL AWARENESS PROGRAMS FOR DECISION-MAKERS

- PREPARING COMPREHENSIVE INFORMATION FOR THE BENEFIT OF MEMBERS OF THE ENVIRONMENT AND HEALTH COMMITTEES AT THE TWO HOUSES OF PARLIAMENT (THE SENATE AND THE HOUSE OF DEPUTIES).
- PROVIDING ADMINISTRATIVE OFFICERS AND DEPARTMENT HEADS WITH THE SOCIETY'S PUBLICATIONS AND MAGAZINES AND CAUTIONING AGAINST ENVIRONMENTAL DANGERS.
- ORGANIZING FIELD TRIPS TO PROTECTED AREAS.
- ORGANIZING SPECIALIZED SEMINARS AND INVITING DECISION **MAKERS** TO PARTICIPATE IN OPEN DIALOGUE ON ENVIRONMENTAL ISSUES.

ANNEX 6

EVALUATION STUDIES

IN 1994, THE NATIONAL CENTER FOR HUMAN RESOURCES DEVELOPMENT CONDUCTED A SURVEY OF 5,702 STUDENTS FROM 153 SCHOOLS WITH A VIEW TO IDENTIFYING THE KNOWLEDGE AND AWARENESS OF ENVIRONMENTAL CONCEPTS BY STUDENTS IN GRADES 8 AND 10. THE SURVEY REVEALED THE FOLLOWING:

1. THERE IS A DIFFERENCE BETWEEN THE STUDENTS' UNDERSTANDING OF ENVIRONMENTAL CONCEPTS AND THE LEVEL OF ENVIRONMENTAL AWARENESS IN THE AREAS COVERED BY THE SURVEY.
2. ABOUT 54.5 PERCENT OF THE RESPONDENTS GAVE CORRECT RESPONSES TO QUESTIONS MEASURING ENVIRONMENTAL KNOWLEDGE AND AWARENESS.
3. THE MALE STUDENTS' PERFORMANCE WAS BETTER THAN THAT OF FEMALE STUDENTS.
4. THE PERFORMANCE OF STUDENTS IN URBAN AREAS WAS BETTER THAN THAT OF STUDENTS IN RURAL AREAS.
5. THE PERFORMANCE OF STUDENTS IN PRIVATE SCHOOLS WAS HIGHEST.
6. THE DESCENDING ORDER OF PERFORMANCE IN THE VARIOUS REGIONS WAS AS FOLLOWS:
AMMAN, IRBID, KARAK, AQABA, BALQA, TAFILEH, AND MAFRAQ.
7. THERE IS AN INTER-RELATIONSHIP BETWEEN THE PERFORMANCE OF STUDENTS, THE SUBJECTS THEY STUDY, AND THE DEGREE OF THEIR ENVIRONMENTAL AWARENESS. THERE ARE COMMON AREAS BETWEEN THE SCIENCE AND ARABIC LANGUAGE SUBJECTS ON THE ONE HAND AND ENVIRONMENTAL CONCEPTS ON THE OTHER HAND. THIS IS LACKING IN THE CASE OF MATHEMATICS.
8. THE PERFORMANCE OF STUDENTS IN THE RURAL AREAS IN RESPONDING TO THE ISSUES OF POLLUTION AND THE DANGERS POSED BY PLASTIC WASTES WAS BETTER THAN THAT OF STUDENTS IN THE URBAN AREAS.

ANNEX 7

ACTIVITIES OF THE GENERAL CORPORATION FOR ENVIRONMENTAL PROTECTION

Objectives

The environmental awareness and education project of the General Corporation for Environmental Protection (GCEP) aims to achieve the following:

1. Disseminating and intensifying environmental awareness and education among all sectors and categories of the local community, and stimulating citizens to participate positively in protecting their environment.
2. Activating the role of the media in communicating environmental messages to the citizens.
3. Introducing the basic principles of the correct ways and means of dealing with the various components of the environment.
4. Contributing towards introducing environmental concepts in the school curricula and stimulating students to participate in protecting the environment through extra-curricular activities.

Accomplishments

1. Celebrating International Environment Day which falls on June 5th of every year by organizing the following activities:
 - a. Convening a specialized environmental seminar on pollution problems in the Kingdom.
 - b. Producing and telecasting a special television program on International Environment Day every year.
 - c. Celebrating Arab Environment Day which falls on October 14th of every year and includes many activities, such as:
 1. Convening a specialized environmental seminar in Zarqa on pollution problems in Zarqa Governorate on October 14 at a total cost of JD 2,500.
 2. Producing and telecasting a special television feature on Arab Environment Day.
 3. Convening a specialized environmental seminar on pollution problems in one of the Kingdom's governorates.
 4. Organizing an environmental Short Story and Environmental Article Competition for school students with the aim of stimulating participation in environmental protection. The competition carries prizes totaling JD 500.
 5. Producing and telecasting television programs on various environmental subjects, pollution problems in the Kingdom and the role of the GOEP in protecting the environment and fighting pollution.

ANNEX 8

THE VOCATIONAL TRAINING CORPORATION

In the area of training:

- Training technical staff for all levels of basic work.
- Raising the level of practitioners' efficiency to higher professional standards.
- Raising the level of trainers' and supervisors' efficiency.
- Training supervisors of environmental safety and health.

In the area of organizing vocational work:

- Identifying the various categories of vocations.
- Preparing and developing the roster of vocational job descriptions.
- Preparing and implementing choices for defining the categories of vocations.
- Issuing certificates for practicing vocations.

Industrial Guidance:

- Conducting **studies on** the methods of work in small- and medium-scale productive enterprises.
- Providing technical consultancy with a view to improving the productivity of small-scale enterprises.
- Providing technical consultancy with a view to improving the productivity of medium-scale enterprises.

Research and Consultancy:

- Conducting follow-up of graduates of training programs.
- Conducting studies and providing consultancy in the area of training trainers and supervisors.
 - Conducting studies and providing consultancy in the area of vocational safety and health.

ANNEX 9

THE SITUATION OF ENVIRONMENTAL EAC IN JORDAN

THE SITUATION OF ENVIRONMENTAL EDUCATION

Environmental education seeks to create citizens capable of addressing all the components of the environment with wisdom and consciousness. This is achieved by providing citizens with the necessary knowledge to understand the inter-relationships between man and his environment, developing the necessary skills to solve or prevent environmental problems, and giving form to a system of attitudes and values governing their behaviour vis-à-vis the components of the environment, either to make environmentally-sensitive wise decisions or affect existing ones.

Since the middle of the century, several governmental and non-governmental organisations have undertaken many activities of a local, regional or international nature in order to achieve sustainable development of the environment. These activities may be classified into two main areas:

FIRST: Formal Environmental Education

Several educational bodies, e.g., the Ministry of Education, governmental and non-governmental universities and community colleges, and the Vocational Training Corporation, implement several educational programs to provide students/trainees with knowledge and specific skills to develop or adjust their behaviour vis-à-vis the different components of the environment and the issues related thereto. This is depicted in the following:

1. Recommendations of the Educational Development Conference

When His Majesty the Late King Hussein opened the First National Educational Development Conference in 1987, he elucidated the principles that should govern the development process, in terms of significance and accomplishment, and outlined the pillars of educational policy. The most important pillar, he stressed, was the need to strike a balance between resources and population growth. The recommendations of the conference underlined the balance between individual and social needs, the provision of sustainable educational opportunities, utilisation of patterns of parallel education, and implanting participatory principles.

2. The Education Act

Jordan's education philosophy, as stipulated in Provisional Law No. 27/1988, emphasises several intellectual, national (Jordanian and Arab), humanitarian and

social principles highlighting the importance of education in preparing students to face the challenges of the next century. According to the Act, this is achievable through assimilating and dealing with facts, concepts and theories to explain universal phenomena, serve mankind, solve man's problems, and provide the human race with the comforts of life.

3. Guidelines for the Basic and Secondary School Education Stages

In 1988, the Education Council adopted a set of guidelines for the Basic Education Stage. These guidelines highlight the importance of appealing to the citizens' physical, intellectual, spiritual and conscious propensities in order to empower them to be concerned about the safety, cleanliness, beauty and treasures of the environment and raise awareness of the basic facts related thereto. On the other hand, the guidelines for the Secondary Education stage, adopted by the Education Council in 1989, seek to make the student adapt to the physical, populational, social and cultural dimensions of the environmental variables affecting the country. These guidelines seek to prompt students to endeavour to utilise the environment properly and improve its capabilities and treasures. The guidelines for both stages identify a set of principles to be taken into consideration when structuring curricula for the various subjects in order to closely associate what the students learn with life and the local environment.

4. Guidelines for Basic and Secondary School Curricula

The curricula, adopted by the Education Council for the period 1990-1995, restated the importance of environmental education for preparing citizens and identified a set of principles therefor in the light of the global tenor of concern about the environment.

5. Textbooks for the Basic and Secondary Education Cycles

About 600 textbooks and guidebooks have been approved by the Education Council for the Basic Education and Secondary School Education stages for the period 1990-1998. These books address a total of 351 environmental concepts utilising three main approaches:

- The Multidisciplinary Approach, whereby environmental concepts are infused directly or indirectly into many textbooks.

- The Interdisciplinary Approach, whereby some environmental subjects are addressed by presenting the scientific and practical aspects of the environment as a separate module or chapter in a certain textbook, e.g., the Science textbook for Grade 6 and the Biology textbook for Grade 10.
- The Independent Approach, whereby a set of independent textbooks for students and guides for teachers are produced, each addressing a particular subject for a particular grade. Examples of this approach are *Earth Science and the Environment* for each of the First and Second Secondary Grades (Science Stream) and its accompanying *Teacher's Guide* and *Guide to Experiments*.

Textbooks generally start addressing environmental concepts by sorting them into main themes, principally the components and stability of the eco-system, pollution, sources of renewed and non-renewed energy, and protecting the environment. These themes also include enhancement activities — to implant the particular concept and enrich the student's theoretical background — and enriching activities to take into consideration the individual differences between students. Environmental concepts are generally structured around a “spiral model”, where the concept is elaborated as students advance up the grades and new concepts are added. Various teaching methods, including experimentation, investigation and field trips, are used. All teachers employed by the Ministry of Education have been trained to use these new textbooks (See Annex 1, 13).

6. Supporting Teachers' Guides

The Ministry of Education, in cooperation with several local and international organisations, has produced a set of guides in the areas of health education, global education, and population, as well as many low-cost teaching materials using locally available ingredients. Some 5,000 teachers and supervisors have been trained in the area of health education, 200 in global education and 300 in populational education. Some of these guides incorporate environmental subjects dealing with the health and components of the environment, environmental equilibrium and the effects of disturbing this equilibrium (Annex 2).

7. Supplementary Educational Activities

The Ministry of Education has undertaken many environmental school activities with a view to developing the students' sense of the environment and

deepening environmental concepts. Examples of these activities include the following (see Annex 3):

- cooperation with the Royal Society for the Conservation of Nature on initiating and expanding the Nature Protection Clubs experiment;
- organising environmental camps and participating in public environmental cleanliness campaigns;
- organising drawing, photography and article writing competitions;
- participating in formulating environmental projects aimed at solving environmental problems;
- observing local, Arab and international environmental events and convening workshops on these occasions;
- participating in international competitions, as well as the Prince Hassan *Sabila* Initiative;
- organising environmental exhibitions to advocate recycling;
- utilising drama in environmental education; and
- producing educational television programs dealing with environmental affairs.

8. Educational Innovations

The Ministry of Education implements many pilot experimental programs in selected schools with a view to confronting the challenges of integrative development, the technological revolution, environmental protection, school environmental development, etc. These experiments include the “Comprehensive School” initiative, the “Healthy School” initiative and the “Cooperative School” initiative, as well as Global Education, Populational Education and Weekend Camps. They also include the Promising Leaderships Program, the Globe Initiative and the Summer Schools Program for the South-eastern Mediterranean Region (Annex 4).

9. Curricula for Universities and Community Colleges

Four government-run universities offer major, minor or elective courses dealing with environmental issues as prerequisites for the Bachelor’s or Master’s degrees in engineering and agricultural engineering.

Several private universities and community colleges also offer similar courses for Bachelor's or Diploma students.

10. Vocational Training Corporation and the Directorate of Environmental Safety and Health and the Environment

In the area of environmental education, the VTC offers theoretical and practical courses for students enrolled in industrial safety training programs (Annex 5, 10).

11. Ministry of Health

The Ministry of Health cooperates with the School Health Department of the Ministry of Education in implementing several programs dealing with personal hygiene and environmental cleanliness. Such programs include vaccination campaigns of school students and inspection of school facilities and surroundings with a view to verifying compliance with health conditions.

Second: Informal Environmental Education

Other than the Ministry of Education and the country's universities, some 33 governmental and non-governmental organisations contribute to environmental education programs.

Environmental societies: These societies implement environmental programs dealing with protecting the environment and raising the environmental awareness of the various sectors of the community. Their contribution is a major tributary to environmental conservation.

A. The Royal Society for the Conservation of Nature (RSCN): Established in 1966, the RSCN has succeeded in establishing 850 nature protection clubs and training an average of 800 teachers every year since 1986 on ways and means of protecting nature. It has produced several teaching materials, e.g., the *Environmental File*, and developed environmental awareness tools, e.g., television programs and specialised workshops. It has opened teaching centres at the Shomari, Azraq and Dana protectorates with a view to promoting environmental tourism. Its members also take part in olive picking

and national heritage awareness campaigns. It publishes a magazine entitled *Al Reem*.

B. The Jordanian Environment Society (JES): Established in 1988, this society seeks to protect the environment against pollution through its 24 branches dispersed throughout the Kingdom. Its major accomplishments include publishing 12 books and short stories; conducting eight environmental studies; issuing 14 educational posters, 15 murals and eight posters on rationalising water consumption; and participating in annual environmental drawing and photography competitions and cleanliness campaigns. The Society is engaged in implementing four programs concerned with environmental awareness and information, water awareness, comprehensive protection and recycling. It targets many of its activities towards teachers and supervisors and publishes a magazine entitled *Risalet Al-Bi'ah*.

Non-environmental societies: These include some 31 governmental and non-governmental organisations, e.g., ministries, women's and workers' unions, children's clubs, kindergartens, places of worship, etc. Their major contributions include fighting blights (agricultural pests); raising awareness of environmental issues among the different sectors of the society; training various groups on public safety, the environment and the wise utilisation of environmental resources; lobbying for environment-friendly legislation; and conserving Jordan's archaeological and cultural heritage.

SITUATION OF ENVIRONMENTAL AWARENESS IN JORDAN

Environmental degradation, scarce resources and rapid population growth in Jordan during the last decade have contributed to the forceful emergence of environmental issues. The last decade has witnessed the emergence of active non-governmental organisations in the areas of the environment and environmental awareness. International support, in the form of launching programs and allocating funds to enhance environmental protection initiatives, has contributed to highlighting the different environmental issues. This interest is depicted in Environmental Act No. 12/95 establishing the General Corporation for Environmental Protection (GCEP) to be involved in environmental affairs. The last few years have also witnessed mounting interest by private and public sector institutions in establishing sections dealing with environmental issues, e.g., the Amman Chamber of Industry's Environment Department. This has led to an "active environmental movement" in all

sectors of the Jordanian society. This movement has contributed informally towards supporting environmental protection efforts in Jordan and rationalising the utilisation of the environment's components. Consequently, establishments of the private and public sectors have rallied to provide moral and material support and earmarked their facilities for staging environment-oriented activities. Hence, environmental awareness in Jordan has taken several sectoral tracks, the most important of which are the following:

First: The Public Sector

The Jordanian public sector has broad horizontal outreach and can play a remarkably vital role if it adequately funded, supported by decision-makers, and continuously rehabilitated and empowered to assume its real role. This should be coupled with the creation of conviction in its role and ability to participate in alleviating the pressures from which the environment suffers.

The Ministry of Education contributes towards raising the students' environmental awareness by incorporating environmental concepts into the school curricula. The Ministry of Municipal and Rural Affairs and the Environment conducts seminars and lectures with a view to enlighten the heads and staffs of municipal and rural councils vis-à-vis the need to protect the components of the environment.

The GCEP, on the other hand, has undertaken many activities, including the following:

1. Incorporating a summary of the Environment Act into some school textbooks;
2. Producing environmental awareness television programs;
3. Contributing to surveys of the ozone layer;
4. Convening environmental workshops and seminars;
5. Publishing books addressing and explaining climatic changes; and
6. Playing a distinctive role in the National Information Agenda 21.

In 1996, the Ministry of Agriculture drew up a strategy for agricultural guidance with the objective of providing farmers with services and solutions to technical agricultural problems. According to this strategy, 136 agricultural engineers are engaged in delivering the Ministry's services throughout the Kingdom. It specifically highlights the role of Radio Jordan, which initiated its agricultural guidance activities as early as 1959 with a daily 30-minute program entitled *Al Ardh Al Tayyibah* (the Good Earth). Currently, Radio Jordan broadcasts a 10-minute daily program called *Ma'a Al Muzare'* (With the Farmer). As a result of the progress achieved in the agricultural sector, the number of awareness programs aimed at both consumers and farmers in the areas of pesticide hazards and the importance of utilising modern technologies has increased.

The following are among the more important accomplishments of the Ministry of Agriculture:

- The establishment in 1983 of a laboratory to test fruits, vegetables and animal products for accumulated pesticide residues; and
- The establishment of a pesticide quality analysis laboratory to test pesticides for purity and effectiveness.

Coping with the growing interest in environmental issues, the Ministry of Water and Irrigation has established two directorates:

- The Environmental Awareness and Rationalisation Directorate, which concerns itself with guidance and awareness vis-à-vis water supplies and rationalisation of consumption; and
- The Environment Directorate, which concerns itself with environmental quality, specifications and information.

The Ministry has issued a "water strategy" and four policy statements: Water Facilities (July 1997), Management of Underground Water (February 1998), Management of Drainage Water (June 1998) and Irrigation Water (February 1998). In cooperation with the Jordanian Environment Society, the Ministry is currently implementing a project aimed at improving and preserving the quality of water. This

project includes a water awareness component that seeks to acquaint the public with the situation of water in Jordan and the ways and means of conserving this vital resource and rationalising its consumption.

The Ministry of Health also contributes towards environmental education through the following:

1. The Medical Training Institute, which graduates environmental supervisors with a Community College Diploma;
2. The Directorate of Health Education; and
3. The Directorate of Environmental Health, which contributes towards the development of environmental awareness programs.

Close cooperation also exists between the Ministry of Health and the World Health Organisation (WHO), which helps provide programs and financial resources for the Ministry's future plans.

The information sector contributes towards environmental awareness through the country's four daily newspapers, two of which (*Ad-Dustour* and *Al Arab Al Yawm*) devote a weekly page to the environment.

Environmental issues occupy a sizeable portion of radio and television programs, including *The Family Magazine* (radio), *Good Morning* (television), *The Open Hour* (radio) and *A New Day* (television). In 1995, the recently established National Committee for the Environmental Communicators Network conducted a survey of the Jordanian media. The findings showed that Jordan Television broadcast 81 programs containing 96 messages in the form of slogans and Radio Jordan aired 38 programs. Newspapers dealt with 209 subjects, including, *inter alia*, smoking, summer diseases and breast-feeding.

The Civil Defence Directorate also adopted an information/education strategy aiming at preventing accidents and reducing their consequences. In this endeavour, the Department resorts to publishing articles in local newspapers and magazines, utilising radio and television programs, issuing pamphlets, convening seminars,

compiling books and other publications, staging exhibitions and publishing a periodical that contributes towards disseminating environmental awareness.

The Directorate also participates in environmental awareness efforts through formal training of civil defence staff, as well as training of volunteers and the staffs of both the public and private sectors. All in all, the Directorate's programs involve all sectors of the society and focus on ways and means of averting environmental risks and reducing their consequences.

The Public Security Directorate adopted a draft strategy for action in the area of reducing traffic accidents. This strategy involves implementation, monitoring and rehabilitation, as well as traffic awareness and education, research and studies, legislation, testing drivers and vehicles, and implementing engineering measures in cooperation with the other competent bodies.

Second: Non-Governmental Organisations

NGOs play an effective, renewable role in disseminating environmental awareness among all sectors of the society. In this area, the efforts of the Jordan Environment Society (JES) and the Royal Society for the Conservation of Nature (RSCN) are the most prominent. Of the more than 1,000 NGOs in Jordan, only some 20 are involved, in one way or another, in disseminating environmental awareness. The JES reaches the public through its following programs:

1. The National Program for Environmental Awareness and Education
2. The Water Awareness Project
3. The Integrated Protection Project
4. The King Hussein Environmental Management Training Project
5. The Environmental Encyclopaedia Project
6. The Healthy School Project
7. The Environment Health Project
8. The Recycling Project
9. Publications
10. The Mobile Environmental Exhibition

11. The Bees Project
12. The Permanent Camp Project.

RSCN messages reach the public through the following activities and programs:

1. Some 870 nature protection clubs
2. Training teachers and developing their skills
3. Education and awareness programs conducted within the country's natural protectorates
4. Eco-tourism programs
5. Bird observation stations (lookouts)
6. Spreading awareness among hunters
7. The Directory of Birds
8. The map of hunting areas
9. Spreading awareness among policemen
10. Invigorating the role of legislation in monitoring hunting.

Professional associations — e.g., the Jordan Engineers Association and the Association of Agricultural Engineers — also contribute towards disseminating environmental awareness through the activities of members of their environment committees and their different publications.

Third: The Academic Sector (Universities)

Public and private Jordanian universities are becoming more and more involved in environmental issues. This involvement is highlighted by the fact that students of the Jordan University of Science and Technology (JUST) and the University of Jordan are able to obtain the bachelor's and master's degrees in water resources or environmental engineering. Yarmouk University also offers a major leading to a bachelor's degree in geology and the environment.

By offering these environmental courses and majors, Jordanian universities contribute towards awareness of environmental issues and affairs.

Scientific research centres also have a role in highlighting environmental issues, where the studies they conduct become material used by NGOs in enlightening the public. Leading centres include the Royal Scientific Society, the Centre for Environmental and Water Research, the University of Jordan's Centre for Strategic Studies and the National Centre for Human Resources Development.

Fourth: The Private Sector

The private sector contributes to national awareness-raising efforts among the public by employing practical measures to check the degradation of the Jordanian environment. In particular, the country's chambers of industry and commerce, the Industrial Development Bank, and several other banks private sector establishments contribute money to environmental awareness efforts. For example, the Industrial Development Bank financed the JES national cleanliness campaign in 1996.

The role of the Environment Department at the Amman Chamber of Industry was recently invigorated with a view to maximising economic benefits and preventing useless spending of money. The Chamber has made arrangements for the following programs:

1. A database for the exchange of wastes with a view to encouraging re-cycling.
2. A training centre attached to the Chamber to include subjects pertaining to the industrial environment.
3. A series of workshops and seminars related to the inter-relationships between environmental conservation, international trade and the national economy.
4. Individual awareness of factories with a view to avoiding pollution and conserving raw materials.

Fifth: International Organisations

International organisations and programs provide the much-needed technical expertise and funding to support national establishments active in the area of environmental awareness. The Global Environment Facility (GEF) has helped

finance more than 30 projects implemented by NGOs. The projects have all contributed, both practically and theoretically, to curbing environmental degradation and protecting bio-diversity against materials that accelerate environmental warming and erosion of the ozone layer.

The Canadian Government's International Development Agency (CIDA) has funded many national awareness projects, such as the JES's Environmental Encyclopaedia and King Hussein Environmental Management Training Project.

German foundations operating in Jordan provide expertise and funding. The Friedrich Naumann Foundation has provided technical and material support to the 7-year National Environmental Awareness and Education Program being implemented by the JES.

International organisations, such as UNDP, UNESCO, WHO, USAID, and GTZ, contribute to efforts aiming at disseminating public environmental awareness with a view to protecting the environment, combating poverty and achieving sustainable development. Also, the principle of writing off external debts in exchange for environmental projects in the local currency has emerged again.

THE SITUATION OF ENVIRONMENTAL COMMUNICATION

The media are bound to win public confidence and appreciation when they devote appropriate attention to environmental issues that arouse man's anxiety. Thus, the media become sources of information and references to be cited whenever necessary.

The media in Jordan — be they privately-owned daily or weekly newspapers or the Government-run radio, television and news agency — have been indefatigable in criticising, analysing and editorialising on environmental problems which erupt every now and then, irrespective of whether the causes for these problems are internal or external. In addressing the different environmental problems, the media have utilised accurate presentation and scientific analyses of the potential health, economic or social consequences of these problems.

In the light of the above-mentioned argument, we shall briefly present hereunder some of the activities undertaken by the mass communication media in Jordan vis-à-vis environmental issues:

I. Privately-owned media (printed press): Research indicates that the printed media in Jordan enjoy considerable readership and much confidence in the various technical and journalistic aspects of the information they present. The influence of Jordan's printed media came into view when they raised several environmental issues and problems that affect the Jordanian society, as well as the various forms of plant and animal life in the Kingdom. Thus, the printed media were able to create official and popular interaction with a view to providing radical solutions to these problems or to relatively reduce their intensity.

These media, for example, succeeded in exposing to local and international readers an extremely important and dangerous problem, i.e., the deterioration of the Israeli nuclear reactor at Dimona. The Jordanian printed media focussed on the effects of the reactor's nuclear radiation on the environment, in general, and on human, plant and animal health in the southern Jordanian and Palestinian regions, in particular. Subsequently, the Jordanian Government submitted the case before the United Nations General Assembly, where it showed the size of the potential dangers that await the whole region if that situation was not immediately remedied. The Jordanian press also introduced the world's ozone issue to the readers by conducting competitions and running reports and features about the problem of the ozone layer's deterioration and the potential damages such deterioration could inflict on the environment. They also discussed the dimensions and effects of the water contamination problem. The follow-up by Jordanian newspapers of this problem was well-documented with facts and based on scientific information, as well as opinions of specialists in the various fields. This made these newspapers a major source of information on the problem and ways and means of dealing with water contamination.

On the other hand, the Jordanian press contributed towards exposing many other problems that affect the environment. These included drainage of wastewater, air pollution by dust emanating from certain industries, urban expansion at the expense of agricultural land, desertification, extinction of certain plants and animals in the Jordanian environment, and many others.

II. Official Media (Radio Jordan, Jordan Television, Jordan News Agency):

Jordan's official audio, visual and printed media have shouldered the huge responsibility of contributing towards building the personality, shaping the convictions and developing the patterns of behaviour of the individual, as well as the society as a whole. Since their establishment, these organs have reported on and provided various information and materials about the different environmental issues and problems affecting Jordan. These media have dedicated many programs and panel discussions to extremely important environmental issues, such as the hazards associated with mis-management of the environment. Examples of such issues include spraying pesticides, desertification, urban expansion, food poisoning, air pollution, industrial waste, pollution of the marine environment, deforestation, and the unjust fragmentation of land ownership. Perhaps the most important issues have revolved around the dangers threatening drinking water in terms of failure to protect water sources against contamination, uncontrolled consumption, or awareness of the country's limited available quantities of water.

Both official and private media have dealt with environmental issues in a manner commensurate with their size, nature and potential effects on achieving sustainable development.

ANNEX 10

SITUATION ANALYSIS OF ENVIRONMENTAL EAC

SITUATION ANALYSIS OF ENVIRONMENTAL EDUCATION

Education is a fundamental element in the achievement of sustainable development. The objectives, content and activities of environmental education (EE) stress this attitude. There have been many accomplishments, whose positive results and quality success indicators cannot be belittled. These are depicted in the following:

- Tangible improvement has been achieved in the performance and implementation of EE programs as a result of the utilisation of high thinking skills, modern techniques and procedural methods, and legislation.
- Some EE programs have come up with pioneering experiments involving the participation of different sectors of the society and the utilisation of local and international experiences to enhance self-reliance and democracy and promote human rights.
- The majority of EE programs have covered all the local environmental issues and given momentum to these issues whenever they occurred. Also, numerous parties have adopted specific environmental causes.
- Most of the country's EE programs have presented the theoretical information necessary for enriching the theoretical and scientific backgrounds of the targeted audiences with a view to enabling them to understand the theoretical aspects and scientific bases of the relevant issues.
- Numerous environmental books, pamphlets and studies have been published and many high quality, easy-to-use teaching materials have been produced to help communicate environmental messages.
- A matrix of religious, moral, traditional and social values has been incorporated into most of the country's textbooks to stress the importance of environmental care and enhance the citizen's sense of being part of the environment.
- Some programs have organised local, regional, Arab and international activities, thereby gaining moral and material support. Some of Jordan's

programs have become sources for providing other countries with experience and teaching and training models.

- Some EE programs have achieved considerable quality accomplishments in the area of safeguarding living creatures in the eco-system and employing methods and strategies conducive to spreading and replicating the accomplishments throughout the country.
- Some pioneering experiments conducted at schools have introduced innovations in EE programs with a view to developing the targeted audiences' sense of the environment. Examples include drama in education, global education, health education, student care, and community schools.

However, these accomplishments have been limited and EE programs have faced several obstacles and difficulties attributed to the nature of the programs themselves, the attitudes of the targeted groups, or the quality and method of presentation. These obstacles have impeded the ambitions of these programs. Some of the negative aspects are listed below:

- Some EE programs are too verbose, rely on learning by rote, use instructional methods, intensify the isolation of the recipient from the overall framework of his/her surroundings, and hinder his/her ability to participate in anything beyond mere discussion and argument.
- Some of the EE programs, especially those offered at schools, community colleges and universities, lack those elements that introduce the techniques and scientific principles behind rationalising consumption. They also failed in employing advanced technologies.
- EE programs ignore the skills and vocational aspect, which is necessary for the technical labour market. Instead, they focus on graduating students to occupy governmental positions, which made Jordan the third country in the entire world in terms of the ratio of university graduates to the population.
- Numerous pioneering experiments have introduced several ideas for EE programs involving extremely advanced educational objectives, such as sustainable development, human rights and the environment, etc. But, they failed in providing field access to adequate training with a view to creating an atmosphere of discipline and gaining the commitment of the targeted groups to these objectives. Nor have they helped in continuing the development of

performance. Hence, numerous pioneering experiments in the area of EE programs have suffered from the following:

- a. No strategy has been defined for continuity.
 - b. Many programs have been linked to certain employment positions.
 - c. Many have been implemented in certain areas, thus creating many interventions in their activities and impeding the performance and tasks of other programs.
- Most EE programs are still unable to employ modern technologies, except in isolated cases, even though technology is emerging as the core for information in the future. These programs have not given priority to the use of informatics in training, nor to ways and means of maintaining informatics systems.
 - Some EE programs are accused of being immune schemes attached to the implementing agency, to the extent that some parties are monopolising and claiming possession of these programs. Hence, these programs very rarely reach all strata of the society.
 - The evaluation methods used to determine the success of EE programs rely on too-easy, too-diversified and predictable tools. It is, as well, rare to find evaluation tools that adopt specific practical measures at the different levels vis-à-vis a specific environmental problem.
 - Many governmental institutions pool their efforts to provide school health and nutrition programs, but they lack generalisation in order to reach all schools.
 - Vocational education programs graduate environmentally-qualified professionals, each in his/her own profession. However, these programs suffer from a lack of enriched environmental courses and a shortage of environmentally-qualified teaching staff.
 - The variety of agencies implementing EE programs is a good indicator, but it seems that horizontal and vertical communication within and among these parties lacks coordination and has not reached the level of objectivity that facilitates access to, and exchange of information. Nor have any studies been conducted to evaluate the performance of these agencies.

- Information presented in EE programs frequently contradict actual fact and often produce negative effects on the program itself and on commitment thereto. Furthermore, such programs are offered to uninterested groups.
- Some studies show a lack of tangible change in the attitudes of those groups targeted by EE programs, but these studies do not cover all the educational sectors and are, instead, limited in scope and conducted only sporadically.

SITUATION ANALYSIS OF ENVIRONMENTAL AWARENESS

Evidently, substantial efforts and momentum at all levels of the government, people and private sector go into the making of environmental awareness (EA) programs. It is also evident that these efforts have highlighted environmental issues and priorities and drawn the attention of citizens and decision-makers to these issues and priorities. These EA programs also highlight the significant role played by all the concerned parties to introduce environmental issues and successful national experiments in the area of the environment. Hence, it is fair to say that Jordan has made substantial progress in this area and that it is considered in the forefront of countries in the field of environmental awareness.

Despite this momentum and the establishment of the General Organisation for Environmental Protection, none of the articles of the new Environment Act No. 12/95 stipulates the importance of the role of information, awareness and communication as essential tools for accomplishing sustainable development and alleviating pressures on Jordan's limited resources.

It is worth to mention here that environmental efforts and programs are many and varied, but they lack coordination and sustainability, flourish only on national and international occasions, and the funds allocated to them are modest. Furthermore, Jordan needs to train its cadres in order to continue supplying the local market with its needs of qualified staff and achieve the sustainability of the programs.

Those who follow up the situation of EA in Jordan will perceive the role of NGOs in this area. During the last decade, NGOs prospered, their numbers increased, and their programs multiplied and were favourably received by the donors. This gave NGO awareness programs the required sustainability.

Reports indicate that EA has not attained the attention of researchers, hence the scarcity of studies dealing with, following up on, and monitoring EA programs and the results they have achieved.

ANNEX 11

REPORT ON THE STRATEGY WORKSHOP

Under the patronage of His Excellency the Minister of Municipal and Rural Affairs and the Environment, the General Corporation for Environmental Protection (GCEP) and the United Nations Development Program (UNDP) organised a workshop to discuss and adopt the National Strategy for Environmental Education, Awareness and Communication. The workshop was held in the framework of the National Development Program (Agenda 21) and funded by the Middle East Technical Assistance Program (METAP). It was held at Ashtar Hotel in Ma'in Spa Village during the period 26-28 December 1998 and attended by representatives of the public and private sectors, as well as non-governmental organisations and educational and research establishments. The opening was attended by the GCEP Director General, Dr. Saleh Ash-Shar'i, who delivered an address on behalf of His Excellency the Minister, in which he said:

I would like to welcome you in this country. I hope that this meetings and your discussions and deliberations will have the greatest effect on pushing forward our march towards creating a clean and healthy environment, capable of providing human beings with comfort and the ways and means of interacting with water, mother earth and air.

The efforts currently being exerted in the area of environmental conservation are huge; all local, regional and international capabilities are pooled together. Jordan is fully aware that maintaining a clean environment is a major contributing factor to the country's development and a precious objective it has to achieve. In this respect, Jordan endeavours to coordinate and find ways for cooperation with all regional and international actors. We can safely say that METAP has been able to culminate these efforts with distinctive success and to reflect the fruits of Jordan's pursuit, together with the international organisations, of achieving a clean environment.

The launch of METAP in the region is considered an important turning point for states bordering the Mediterranean Sea for addressing the environment. This program has been able to interact and develop positively and to expand the scope of its impact to all the states of the region. A capacity-building unit has emerged out of this emerged to help states in planning, designing and implementing activities with a view to strengthening and developing the capabilities of local institutions that are active in the area of the environment. This unit will utilise all the expertise and experiments developed in the region in order to sustain efforts aimed at encouraging the devoting of increased attention to environmental affairs. Hence, it was necessary to prepare a strategy for environmental education, awareness and communication to highlight the urgency of enhancing institutional and human efficiency in facing and alleviating environmental problems. To achieve this, a national task force was formed in cooperation with all the concerned parties. This task force was charged with preparing this strategy and drawing up rules for implementation at the national level. The task was to produce an integrated project to be submitted to international funding agencies for implementation on the ground.

Ladies and Gentlemen,

Your deliberations at this meeting are bound to produce a significant cumulative situation for environmental understanding. This meeting will also provide a forum for exchanging viewpoints and experience on ways and means of overcoming environmental problems. I am greatly hopeful that your discussions will produce the greatest impact on conceiving lucid perceptions and specific recommendations for an objective scientific approach to materialising this strategy, in which case your meeting will become a vital turning point for the region's progress in the area of the environmental affairs.

I am also hopeful that your discussions will produce an important environmental benchmark for this strategy. Let us work hand-in-hand, in full cooperation and coordination, to create a clean Middle Eastern environment that will rid us of the legacy of environmental floppiness and lay down solid foundations for new environmental action.

I reiterate my words of welcome and hope that your deliberations will produce good and lasting effects on the environmental question. I honestly wish that the international community would provide support and technical assistance to METAP's mission and to deepening the efforts emerging from that mission.

This strategy is structured on the basis of a set of national and historical justifications, in the forefront of which are the environmental challenges that

Jordan faces as a result of its limited resources, especially water. These challenges also include the country's high population growth rate and ineffective legislation. There is also lack of awareness on the part of individuals and decision-makers alike of the importance of enlightenment as an approach, of resource management, and of putting the public in the face of their responsibilities in dealing with the environment to achieve sustainable development.

Environmental EAC programs provide vital support to environmental protection and conservation. Hence, this strategy emphasises the importance of these programs, shows the extent of their capabilities, and employs their accumulated experiences to develop knowledge, attitudes, and values that help in achieving sustainable development for Jordan. The strategy specifies the overall objective of achieving sustainable development through advancing environmental capabilities in such areas as education, awareness and communication with a view to conserving the components of the environment and, ultimately, improving the individual's quality of life.

This strategy is also structured on the basis of a situation analysis of environmental EAC in Jordan, in terms of strengths and obstacles during the last 10 years. It consists of 10 stages, including identifying objectives, identifying the public, identifying the required change in the behaviour of the targeted groups, factors surrounding environmental issues, information and communication activities, the most suitable mix of channels, administrative and educational strategies, available resources and a time framework. The last stage stipulates preparing a plan of action for the strategy.

The strategy calls on all concerned institutions to steer their scopes of work towards priorities aimed at achieving the objective of raising the public's awareness of the need to protect Jordan's natural resources, conserve the environment's biological and non-biological components, and enrich and develop learning resources in environmental education, communication, training, and awareness. It also seeks to prompt individuals and social groups to develop their knowledge of the components of the environment and the problems related thereto, as well as their responsibility and vital role therein. It also seeks to encourage the public to participate in the various environmental activities and push decision-makers and environmental practitioners in the public, informal and private sectors to safeguard natural resources — technically and legislatively. The strategy also calls for enhancing the role of information and the private sector in disseminating environmental awareness with a view to accessing the public through various types of publications. It focuses on influential sectors that possess effective communications skills, such as women, information practitioners, and journalists.

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