

Section 4



Putting It All Together

Chapter 13

El Salvador's National Environmental Education Strategy

José Ignacio Mata

When GreenCOM was invited to El Salvador in 1994, the country had no environmental education in the schools, virtually no environmental information in the media, and no government agency charged with the environment. The situation was urgent in this small, war-torn country with a heavily damaged environment and a rapidly expanding population.

In what became one of the most comprehensive and ambitious programs, GreenCOM was brought in to promote environmental awareness and management throughout the nation. We undertook a five-year, multi-million dollar campaign, at the end of which, El Salvador possessed:

- ◆ A national environmental education (EE) strategy
- ◆ EE as a major theme of K–12 schooling
- ◆ Environmental studies at the university level
- ◆ An active environmental press.

In just a few years, environmental education became a transformational force in the schools, politics, media, and lives of El Salvador. How we helped the citizens of El Salvador achieve this so quickly is the subject of this chapter.

First, some thoughts on our general approach. Prior to the GreenCOM El Salvador project, a number of environmental NGOs were working in the country. But their efforts were mostly ineffective since they took one of two tacks, both of which failed in the El Salvadoran context. One tack was to protest harmful policies and development, but since the protesting groups lacked any real clout, they were largely ignored. The second approach was preservationist—these groups tried to keep natural areas intact and limit development. But since El Salvador is a small, overpopulated

country, pitting preservation against development is futile. The power elite dismissed these environmentalists as out-of-touch hippies. In the middle—between preservationists and developers—lay public opinion. Since the public was basically uninformed, people chose sides based on emotion.

GreenCOM decided to take a third approach: one of proposing solutions. In fact, I see environmental education as a matter of offering solutions. This was harder than fighting or protesting, but ultimately it worked.

For instance, we proposed linking development with environmental improvement. Let's say you need to build houses and you also need to let the aquifers recharge. How can you put together a housing plan that also allows for the recharge of local aquifers? Asking ourselves and the residents to think through such challenges proved to be the most useful way we could proceed.

In 1994, GreenCOM and the Executive Secretariat of the Environment (SEMA) formulated a national environmental education strategy. We knew it would need to be:

- ◆ **Comprehensive**, covering all educational fields and communication channels in the country
- ◆ **Integrated**, so that educational and media efforts would be coordinated to produce synergy, and
- ◆ **Participatory**, involving people from all walks of life in both planning and implementation.

Our strategy focused on three fundamental areas:

- ◆ **Formal education**—the school and university system. Activities here have included curriculum development, teacher training, develop-

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ment of student materials, and developing university degree programs.

- ◆ **Nonformal education**—non-degree educational forums. Activities include working with literacy and adult education, agriculture and extension programs, park interpreters, museum exhibits, churches, professional organizations and unions, and other associations.
- ◆ **Informal education**—the mass media.

Clearly, working in these three areas at once produces synergistic effects as individuals receive environmental messages through more than one “channel.”

FORMAL EDUCATION

Rarely does the opportunity arise to build a national environmental education system from the ground up. But because of El Salvador’s pressing needs, the country was already committed to fundamental educational reform when GreenCOM arrived on the scene. We took this opportunity to infuse environmental education throughout the curriculum. GreenCOM used a three-pronged strategy:

- ◆ Making the environment, along with science and health, one of eight central themes for education
- ◆ Preparing EE materials to teach major environmental issues through standard subjects like Spanish and math
- ◆ Training teachers: the project trained some 5,000 teachers, including a corps of Ministry of Education trainers, and the training will continue.

In cooperation with the Ministry of Education, GreenCOM developed three environmental education guides—one each for grades K–2, 3–5, and 6–8. These guides include dozens of lessons and explain how to incorporate the lessons into the standard subjects.

Rather than being transposed from another setting, the guides are a completely new curriculum specific to El Salvador. An outside consultant assisted with the first two; the third was developed with in-country expertise. The Ministry of Educa-

tion paid for printing. The first printing of each guide was 83,000; nearly every teacher in the country now has a copy.

Institutionalizing the Reforms

It is not easy to modify a formal education curriculum. Ministries of Education are often large, well financed, bureaucratic, and slow to make decisions. However, a national education reform movement, common in many countries in the late 1990s, shakes up the status quo and can provide an opportunity for introduction of environmental themes. Without an overall curriculum revision, bringing environmental education into the curriculum can be a slow and difficult process that should begin with the most closely related subjects, such as the natural sciences and health. After teachers in these subject areas accept EE, teachers of other subjects may be trained about its importance.

In El Salvador, to assure that environmental themes are adequately considered in the national formal education system, a unit responsible for environmental education was established in the Ministry of Education. The unit was an interdisciplinary group comprised of scientists and specialists in education and curriculum design. This unit had direct contact with the Ministry of the Environment.

GreenCOM worked with the Ministry of Education to create and train an environmental education unit within the Office of Curriculum Design. The Ministry selected the specialists for the unit: two biologists, both specializing in education and curriculum development, and short-term national and international consultants for executing specific projects such as the production of teacher’s guides and teacher training activities.

Introducing Environmental Themes into the Curricula

Two considerations are crucial in introducing Environmental Education into a school curriculum: it must be integrated throughout the curriculum and it must focus on problem-solving.

...students who are perfectly capable of recognizing flora and fauna, but do not see beyond their enumeration, will not be motivated to act.

We followed two guidelines in introducing environmental themes to schools. First these themes must be integrated throughout the curricula, not added as a separate course. Second, good environmental education goes beyond learning facts about nature to understanding how to solve practical environmental problems.

Integrating Throughout the Curriculum

Environment can, and should be, associated with all subjects of the curriculum. For example, a physical education class can explore air quality and the effects of environmental contamination on the performance of the athletes; a geometry class can study the angles of a slope that is subject to severe soil erosion resulting from intensive agriculture. By this means, we acknowledge that environment subject matter is not limited to a few pages or lessons in a book but that it integrates all school learning.

Have a Practical and Problem-solving Focus

Specialists in the area of formal education may think that environmental education is limited to the study of ecology or to a factual understanding of nature. It is necessary to convince them that students who are perfectly capable of recognizing flora and fauna, but do not see beyond their enumeration, will not be motivated to act. If environmental knowledge is developed without creating positive values about the importance of wise conservation, this knowledge could be used to exploit nature even further. On the other hand, if students develop only an emotional sentimentality towards nature without a practical focus on its rational and sustainable management, this sentimentality could be applied merely to a preservationist position without thinking through practical solutions.

Teacher Training

The Ministry produced a series of beautiful color textbooks for “Science, Health, and Environment” but this led to two challenges. First, teachers could not use the texts effectively since they were not aware of environmental issues nor trained to teach

with interactive projects. Second, adding “environment” to science and health reduced its potential to be an integrative force in the schools.

GreenCOM worked with the Ministry to develop a series of three teacher guides that provide concrete teaching activities, background information, and involve all teachers in environmental exercises. A training program was designed to accompany the distribution of the guides.

Teacher training should begin with basic information about the environmental situation of the world in general and their nation in particular as well as the consequences of environmental problems on the economy, personal health, and quality of life. Teachers should be trained to analyze different environmental situations, applying the knowledge offered by different disciplines, searching for alternative solutions, whether political, legal, technological, or related to changes in personal behavior. Training should promote developing these analytical, problem-solving skills in the students. This training should be supported with manuals for the teachers, applicable to appropriate grade levels, which give examples of how to relate subject content to environmental issues.

Production of Educational Materials for Classroom Use

Important teaching aids include booklets, videos, audio cassettes, illustrations, murals, games, models, etc. Teacher training includes developing abilities to use these resources and prepare similar materials.

GreenCOM produced several sets of educational materials to be used in schools:

- ◆ A radio series “Drop by Drop: The Adventures of Clarita the Water Droplet in her Trip Around the World,” offered, in ten 10-minute radio programs, information related to water and the water cycle. This information was conveyed in the form of the adventures of a water droplet that falls to earth as rain and travels the country through rivers until reaching the ocean.

...students can be involved in planning measures for solving specific environmental problems...

- ◆ Two video series with a total of 11 programs approximately 12 minutes each addressed environmental themes for different educational levels. The 5 programs from “Our Home, the Environment” explained about water, soils, forests, biodiversity, and urban environmental problems for secondary students. The 6 programs in the series, “The House of Water” address themes related to water for primary students.
- ◆ A series of booklets for schoolchildren. Each booklet was created in collaboration with an NGO, with the goal of reinforcing the capacity of these organizations in environmental education. Booklets were about birds, sea turtles, forests, air and water. To develop the booklets, a local consultant contracted by GreenCOM and the specialists from the NGO prepared the contents of the booklet. Subsequently, the GreenCOM team reviewed the contents and adapted them to the educational level of school children to which they are directed (6th to 9th grades). Later, the concept and presentation of the contents was developed with an illustrator, who created explanatory games, jokes, and pictures that made the lesson fun and simple. Thus, the booklets became something very different from textbooks but they complement their contents. Of the 10,000 copies of each booklet printed, 3,000 were submitted to the Ministry of Education to be sent to schools as part of didactic packages, another 3,000 were turned over to the NGO that participated in the development, 2,000 were given to the Executive Secretariat of the Environment to be distributed to NGOs and students that request them, and 1,000 were distributed directly by GreenCOM.

School Environmental Projects

Through community projects, students can apply knowledge acquired in the classroom as well as develop values and skills for improving environ-

mental conditions. Projects can be part of the social service activities required for graduation or can be conducted by a classroom working with their community.

Projects can focus on the development of positive individual environmental behaviors among students, such as planting trees in green spaces in downtown areas, separating and appropriately disposing of waste, conserving water and electric energy, maintaining nurseries and orchards, and making organic products for agriculture or horticulture. Projects can also focus on environmental assessments of the community: students can be involved in planning measures for solving specific environmental problems, such as solid waste disposal, pollution of river beds, deforestation of certain areas, or the erosion of agricultural soils in the community; or the execution of environmental education and promotion actions in support of solving identified environmental problems.

Environmental Education in Universities

Introducing environmental education into universities follows the same rules recommended for the other levels of education, including training of professors, a greening of courses where instructors express interest, and instituting a mandatory course on national environmental problems.

In El Salvador, several universities have undertaken this challenge. Each university planned an initial seminar on the environmental issues of El Salvador for all faculty that approaches environmental issues from geographic, geologic, historical, economic, social, political, and cultural perspectives. According to the interest expressed, the university can choose the next step from several alternatives. One option is to create seminars in various departments as electives. Another option is to design seminars about specific environmental topics for relevant degree programs: for example, a seminar on water quality for biology and chemical engineering departments, or on population dynamics and environment degradation for the sociology

and economics departments. A third option is to establish a seminar in environmental issues as a mandatory course for all students. Finally, some universities have begun to design environmental degree programs, such as the Universidad Centroamericana José Simeon Canas (UCA) which will soon offer a Masters degree in environment and natural resources.

NONFORMAL ENVIRONMENTAL EDUCATION

Our objective in El Salvador was to enable technicians from public and private institutions to provide environmental education and help implement the national environmental education strategy. To do this we:

- ◆ Formed environmental education units in institutions related to the environment and education
- ◆ Trained technicians, mayors, legislators, and decision-makers about the environmental reality of the nation based on the diagnostic content of the National Environmental Education Strategy and updated studies
- ◆ Trained technicians in the design, formation, execution and evaluation of environmental projects
- ◆ Developed national parks as educational opportunities for visitors, by building interpretative trails, interpretation centers, and training guides and park guards as environmental educators

Nonformal environmental education encompasses the vast variety of educational opportunities, such as programs and exhibits at zoos, museums, nature centers, and parks; workforce training and education; civic and religious programs; extension activities; programs with leaders, decision-makers, and elected officials; and work with NGOs.

GreenCOM's approach to nonformal education was to encourage a massive training effort, focusing on technical staff of a variety of relevant institutions, interpretation training for parks, and agricultural extension workers.

Formation of Technical Staff of the Involved Institutions

At the beginning of its operations in El Salvador, GreenCOM created a multi-disciplinary team of technicians from different institutions related to the activities of the national environmental education strategy. These institutions were both public and non-governmental; representatives of public relations firms and the media were invited to participate.

A first task of this multi-disciplinary team was to learn the environmental issues in El Salvador through a series of seminars named "immersion workdays," in which the group analyzed environmental themes with the assistance of the best national experts in the subject. The team members later planted the seeds for creating environmental education units within their own institutions, which eventually multiplied the training to other groups of people.

Training of NGO Technical Staff

Training key staff in environmental NGOs or lead agencies ensures that the environmental education later offered to the public has a common focus and methodology. This training should stress the methodology for developing environmental projects in communities or neighborhoods, such as:

- ◆ Participatory techniques for environmental assessments of the community
- ◆ Design and planning of environmental education programs
- ◆ Design, testing and production of EE materials
- ◆ Monitoring and evaluation of EE programs

GreenCOM developed a training program for NGO technical staff about the steps to follow for the design, execution, and evaluation of EE projects. This training program was theoretical and practical; after each workshop the participants completed an assignment, the results of which were the basis for the development of the following workshop and the following activity. For example, the first workshop dealt with techniques for conducting a community assessment for an EE project. The participants were given two months to carry

The news media says that it will address environmental themes if the public is interested.

out their assessment. The results of these assessments were used in a second workshop where participants learned to plan an EE project. As part of the planning, participants discovered training needs in graphic and radio materials production. A final workshop at the end of the process provided tools for evaluating their EE projects.

As a result of the training process, a number of the NGOs submitted requests for project funding to the Initiatives Fund of the Americas for El Salvador. Many of these requests were approved and resulted in successful educational projects.

Training Environmental Interpretation Specialists in National Parks

National parks, both natural protected areas and urban recreational sites, could be environmental education opportunities for the citizens. The “natural” national parks can introduce visitors to the natural cycles and importance of the environment for human life. In this sense, they are educational opportunities about natural resources such as water, forests, biodiversity, and their sustainable management. Environmental interpretation is the discipline that creates different instruments like interpretive trails, visitor centers, exhibits, and slide shows. Training for interpreters should cover:

- ◆ Design of interpretive instruments: paths, display boards, exhibits, etc.
- ◆ Preparation of low-cost educational materials
- ◆ Techniques for giving educational talks
- ◆ Use of educational props and aids
- ◆ Human relations and treatment of visitors
- ◆ Management and guiding of groups
- ◆ First aid

Urban recreation parks, zoos, museums, and similar sites can also become opportunities for the public to learn about the urban environment, water systems, air concerns, and the proper disposal of wastes. In this sense, the placement of trash cans in these parks is an important ingredient to the practical education.

The national parks of El Salvador are co-managed by different government institutions (e.g., the

Salvadoran Institute of Tourism and the Office of National Parks and Wildlife of the Ministry of Agriculture) and NGOs (SalvaNatura, AMAR and Cedro). GreenCOM created an inter-institutional team of technical staff from each of these institutions and developed with this team an ambitious training program to improve EE and environmental interpretation techniques.

This group of environmental interpreters developed a training exercise for more than 120 park guides and guards in the nation’s principal national parks. In these parks, the team established different interpretive trails. They later played a fundamental role in the reform of the Museum of Natural History and in the creation of a new educational tool for children called “ecological carts,” mobile wagons that carry articles for interactive learning.

Currently, the team is assisting the National Secretary of the Family in incorporating an EE component in all the recreational parks that the institution is constructing.

INFORMAL ENVIRONMENTAL EDUCATION

The majority of the people in El Salvador depend almost exclusively on the mass media to acquire information with which they form opinions and adopt behaviors. It is assumed that public awareness, boosted by the media, will create a greater demand for environmental legislation and for environmentally sound decision-making.

The news media says that it will address environmental themes if the public is interested. The public, on the other hand, is more likely to display interest in the environment if it has the opportunity to hear about the topic regularly, a task that only the communications media can do.

The fact that the environment has been a topic of global concern can help generate media coverage. The communications media will be interested in dealing with such a “fashionable” topic if they have reliable, valid, and relevant information. Thus, the first strategic guideline in increasing media coverage of the environment is to establish

Soon the news media were competing to address topics they saw affecting the health and well being of the population.

the channel by systematically informing journalists about relevant environmental topics.

Developing interest in environmental problems among the media in El Salvador was not an easy task. GreenCOM supported numerous meetings with the owners and managers of the different media, selling the idea that environmental topics were inescapable and that the communications media had the opportunity to get ahead by anticipating the interests of their readers, radio listeners, and television viewers. Finally, some media (including the two most important newspapers of the country) assigned journalists to cover the environment. GreenCOM offered to give these reporters all the assistance necessary to do this work well.

In 1994, the First National Environmental Journalism Encounter Conference attracted 45 journalists. Some prepared commentaries on the management of solid waste, which was viewed by the population of the capital city as a serious problem. These first reports were followed by other negative aspects of environmental problems. The reporters seemed to be discovering facts that previously passed unperceived, such as the dangerous pollution of the river passing through the capital or the heaps of trash that were mounting on many of its banks. Soon the news media were competing to address topics they saw affecting the health and well being of the population. The interest of the population generated a demand for more information, fed by the NGOs, as reliable sources of information about these topics. By the Third National Environmental Journalism Encounter, attended by approximately 150 people, the coverage of environmental topics was reaching 60 to 70 reports per month, with even some editorials on environmental topics.

Inform Communications Media about Environmental Themes for Stories

The institution responsible for the national EE strategy should take on the responsibility of providing environmental information to the media or

serving as a link between the media and specialized sources of information. Trained technical staff may be able to cover this role of specialized sources to be consulted and interviewed by the different media.

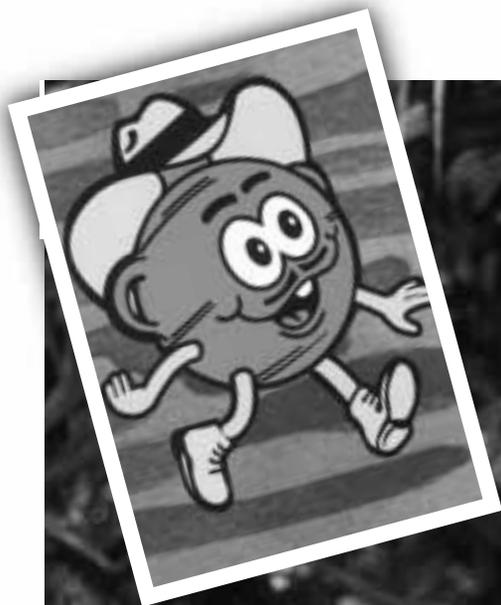
Some news organizations consider environmentalists to be influenced by the inheritance of the 'hippy' era and its romantic interest in nature. Others identify concern about the environment with political accusation. Others, especially those interested in development, believe that concern for the environment is at odds with the need for countries to develop economically, sacrificing environmental quality. Relating environmental themes to economic and health issues often attracts attention since they are already important issues.

Journalists depend on decisions from their editors on what and what not to publish. Therefore, gaining media coverage is also the product of a series of visits to the managers and chiefs of information to discuss the importance that environmental themes have in the development of the country and the quality of life of its inhabitants. One technique is holding breakfast conferences involving decision-makers from the media and environmental specialists.

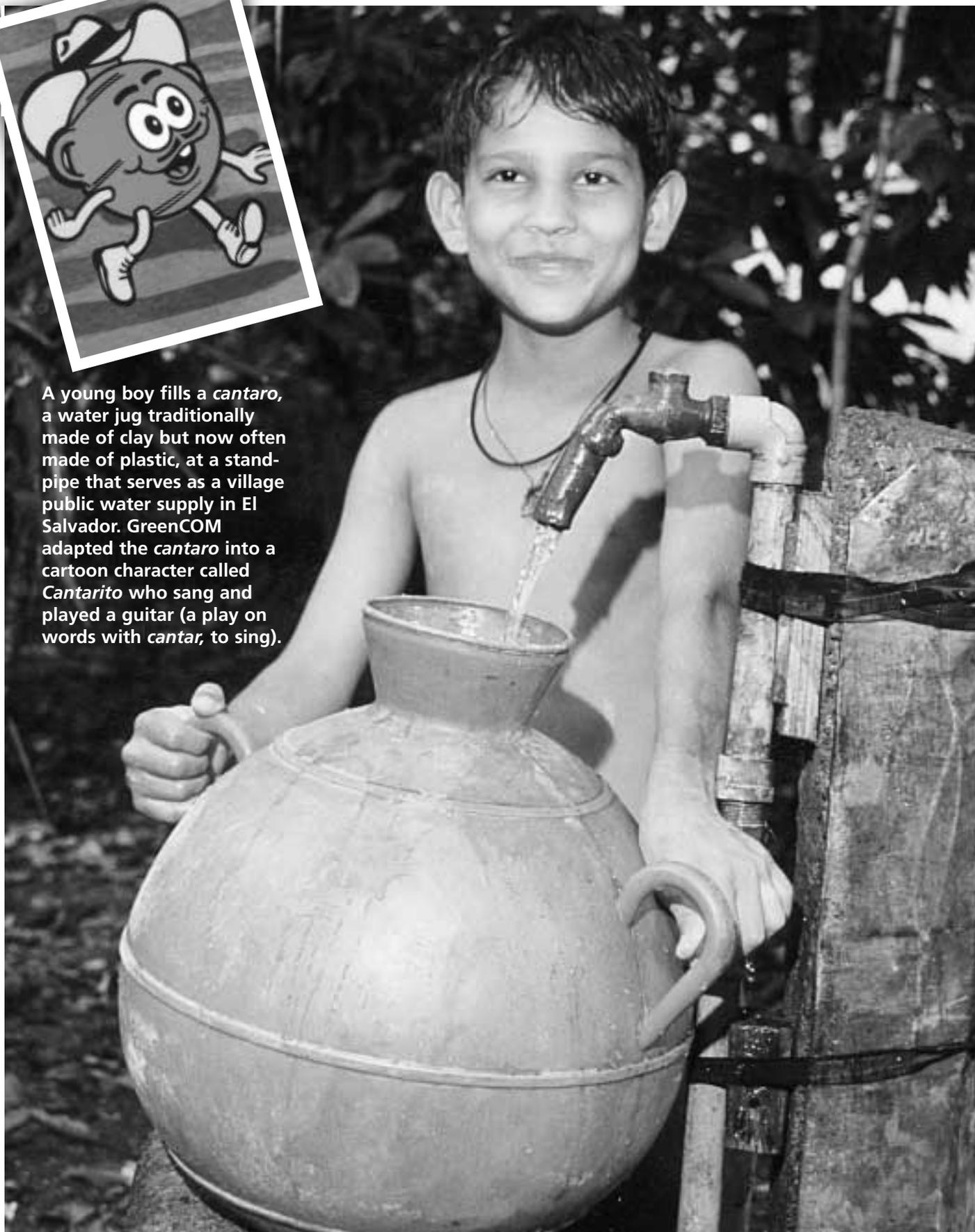
Background conferences to analyze specific environmental themes with recognized experts could help provide the news media with environmental information that may turn up in a later story. Environmental institutions should regularly send the news media press releases on their opinions and activities.

Interested journalists will begin to look for further information. It is important to identify these interested professionals and concentrate on them when sending information and invitations to conferences. These first interested journalists should be exposed to projects developed by NGOs and to environmental problems (such as heavily polluted rivers, areas of high erosion, etc.) with guided field trips led by technical staff.

During 1996 and 1997, the principal newspapers in El Salvador published several supplements dedicated to the environment. These supplements were



A young boy fills a *cantaro*, a water jug traditionally made of clay but now often made of plastic, at a stand-pipe that serves as a village public water supply in El Salvador. GreenCOM adapted the *cantaro* into a cartoon character called *Cantarito* who sang and played a guitar (a play on words with *cantar*, to sing).





“If you live in this country, help save it,” was the slogan of the GreenCOM sponsored National Environmental Education Encounter held in San Salvador in 1996, shortly after the end of the country’s devastating war. The two hands in the poster show people of different politics coming together to mold a new country—pictured as a piece of clay—in peace (left). Other environmental education materials included teachers’ guides, videos, audio cassettes, and books (above).



*El Guañaquín, a weekly children's supplement to the newspaper *El Diario de Hoy*, carried environmental activities to homes and schools.*



of great use to students and GreenCOM distributed several thousand to schools (see Box 13.1).

To produce these supplements, the newspapers requested technical assistance from GreenCOM, recommending the subject matter and treatment, contacting the most highly regarded technical specialists and sources of information, arranging interviews, and reviewing the contents before publication.

Reward Journalists for Their Interest in Environmental Themes

In many nations, few communicators receive acknowledgments for their important work of providing information and shaping opinions. One way

to obtain greater media coverage of environmental themes is to create a competition with awards for journalists for published or broadcast works related to environmental themes (see Box 13.2). Numerous private businesses, whose public relations policies are focused on maintaining the best relations with the communications media, are usually willing to finance this type of initiative.

Environmental topics are not only for the news and editorial pages. Many newspapers have special sections for women or for children, financial supplements for business people, sections on agriculture, or development. Given the global dimension of the environment and its relationship with all human activities, it should not be difficult to integrate environmental themes into these sections.

BOX 13.1

The *Guañaquín* Bridges Formal and Nonformal Education

The *Guañaquín* newspaper supplement for children produced by *El Diario de Hoy* is the most successful example of the pairing of mass communication with formal education. This Sunday supplement for children was seen as an enormous potential for youth education as soon as it was launched.

GreenCOM met with executives of the newspaper to urge them to incorporate environmental themes into the popular supplement. It was agreed to dedicate one edition each month to environmental themes. GreenCOM offered the technical assistance as well as reference materials and specialized sources of information.

Guañaquín promoted an annual contest about the environment for all of the nation's children with prizes donated by the newspaper. In 1994, 2,500 entries were submitted for the first contest titled "Let's Paint El Salvador Green." In 1995, the second contest, "Let's Work for our Environment," 10,000 entries were submitted. In 1996, a new contest was announced under the title "Defenders of the Environment" which received 36,000 entries from across the country. In 1997, the *Guañaquín* contest drew more than 101,000 entries.

GreenCOM also evaluated whether teachers were actually using the supplement in the class-

room. Eighty five percent of the teachers interviewed and a similar percentage of students used the supplement as a reference source for their homework, planning their science, health, and environment classes and conducting the experiments outlined in its pages.

This children's supplement is an example of how mass media can effectively reinforce the work of environmental education in schools. As a product of the evaluation and recommendation of GreenCOM, the contents of the *Guañaquín* will follow the guidelines and programming of the Ministry of Education for the science, health and environment subject area.

BOX 13.2

National Environmental Journalism Awards

In El Salvador, GreenCOM established the National Environmental Journalism Awards in 1996 to stimulate reporters to write about environmental topics and to thank those already covering environmental themes in the media for their efforts.

The prizes are awarded annually in three categories: print media, radio, and television, with a first, second and third place awards in each category. Three private businesses sponsored the awards. The procedures stipulate that a call for nominations be issued to journalists requesting works published or broadcast in the previous year. A jury is formed of

two NGO representatives, one representative of the Communications faculty of the University of El Salvador, one technical staff member from the Executive Secretariat for the Environment and one representative of the Association of Journalists of El Salvador (APES). Evaluation criteria were established by the jury.

The awards are given each April during the week of Earth Day. The first event in 1996 for works produced during 1995 received a total of 47 entries. In addition to the nine awards, special recognition was given to one of the daily newspapers of greatest circulation for its con-

tribution to environmental education. In the second event in 1997, 147 works were submitted. Nine awards were given and nine institutions, media organizations, and journalists received special recognition for their outstanding contributions in defense of the environment.

The National Environmental Journalism Awards have achieved in only two years an enormous credibility and prestige in the union of journalists. This is reflected in the increase of nominations for the installments and in the massive attendance at the awards ceremonies, as well as the coverage given by the media.

A NATIONAL EE STRATEGY

Since launching the national environmental education strategy in 1994, GreenCOM has led the nation of El Salvador in the organization and training of an environmental community that participated in a process to design a National Environmental Education Policy. That Policy was begun at a three-day conference called the National Environmental Education Encounter. Three participatory planning meetings were held to involve representatives from the formal, non-formal, and informal EE communities. They created a showcase of their achievements and built from their successes to fabricate a new plan to continue their work. In small working groups, conference participants had a chance to voice their ideas for the national policy. The conference evaluated environ-

mental education in the country, identified the institutions that could help plan a strategy with the representatives of these institutions, and assigned responsibilities to each institution.

In the ensuing year, representatives from each group fine-tuned the policy for presentation to the Ministry of Education and the Executive Secretariat (now in the Ministry of Environment). Institutions and NGOs developed the capacity to execute their responsibilities.

By 1996 each institution was developing activities under the coordination of the Executive Secretariat of the Environment (SEMA) and the technical assistance and advice of GreenCOM. At the National Encounter for Environmental Education that year the groups formulated a proposal for a national environmental education policy (see Box 13.3).

BOX 13.3**More Than 1,000 People Confer on EE Policy**

In El Salvador, more than 1,000 people gathered for a national conference, or “Encounter,” to develop a national strategy that would lead to specific policies implementing environmental education. Even the opposition party showed up at the event, which was opened by the nation’s President. One year later a second national encounter kept the public’s interest and involvement and led to a more complete implementation of the strategy.

This support-building method guaranteed the adoption of the national environmental education strategy by the institutions involved and built political support for the policy.

SUMMARY

By working closely with the decisionmakers in the Ministry of the Environment and the Ministry of Education, and by involving professionals in the process of designing and extending training programs, GreenCOM enhanced an entire EE community across the country. The capacity to continue this work has been established within organizations and agencies through the development of offices, procedures, policies, and materials. A framework has been constructed for others to prosper.

Chapter 14

The Gambia Environmental Awards Scheme— Creating Environmental Awareness Through Participation

Irma Allen

In 1995, the National Environment Agency in The Gambia launched an Environmental Award Scheme. In a brief period, with limited financial resources, and in a climate of political uncertainty, the awards competition captured the imagination of the country. Eight awards categories engaged a wide range of groups at both regional and national levels.

The competition created an organizational infrastructure throughout the country that is being used in follow-up environmental planning and projects. The meetings, media coverage, posters, and other dissemination methods that were an integral part of the awards scheme became the springboard for broader discussions on environmental problems and solutions, involving many more people than those who formally entered the competition. All this was accomplished with extremely limited financial resources and—after a July 1994 coup d'état—in an atmosphere of political uncertainty.

This case study describes how the awards scheme was organized and why it succeeded. It shares these lessons with readers interested in a general overview of the program, and also provides details for those who wish to conduct their own awards program. Awards programs, in general, are excellent tools for generating awareness, sparking imagination, and building support. They are usually used in conjunction with other strategies for building awareness and education. Awards programs are most powerful when used in conjunction with teacher in-service programs, media campaigns, small-grant programs, or other communication or education efforts.

THE GAMBIAN ENVIRONMENT AND GAMBIAN POLICY

The Gambia stretches along the River Gambia in West Africa. Natural and human influences have created serious environmental problems. Desertification, deforestation, erosion, and soil degradation are among the issues that affect daily life and future prospects for thousands of people in all parts of the country.

The Gambia had a population growth rate of about 3.4 percent in 1994, one of the highest in the world. Most of its one million inhabitants are employed in the agricultural sector, although migration to the coastal city of Banjul is increasing at an alarmingly fast rate. This, in turn, has exacerbated environmental and health concerns related to solid-waste disposal, groundwater pollution, and the deterioration of infrastructure.

To address these and other environmental concerns, the Gambia Environmental Action Plan (GEAP), the country's national environmental strategy drafted in 1992, sets national priorities in the areas of natural resources, environmental health, and energy. Further, the GEAP identifies three cross-sectoral programs necessary to achieve these environmental objectives: 1) institutional and legislative framework development, 2) improved environmental-information services, and 3) environmental education and public awareness. The GEAP states: "Well-intentioned programs for the protection of the environment and sustainable development of natural resources have failed to avert accelerated environmental degradation and natural-resource depletion. A lack of public awareness of environmental issues remains a major constraint to the success of these programs."

Contests are frequently used by public and private institutions in many countries to interest citizens in some current concern.

NATIONAL AWARD SCHEME

To begin to address this shortcoming in public awareness, the National Environment Agency (NEA) developed a social-mobilization effort focusing on a National Environmental Award Scheme in 1994 and 1995. The NEA is an agency within the office of the Head of State with a 25-person staff and good credibility with the public. Competitions took place on divisional (regional) and national levels in eight categories, including those relevant to schools, businesses, and voluntary organizations. More than 200 individuals and groups entered. Many times that number of people were exposed to the scheme's messages of environmental awareness and action through media coverage, community meetings, the awards ceremonies, and other aspects of the project.

Contests are frequently used by public and private institutions in many countries to interest citizens in some current concern. Factors important to this award scheme's success were mobilizing participants, decentralizing the scheme, financial feasibility, communication, and time.

Mobilization

Participation by a wide range of individuals and groups was encouraged by developing a broad variety of competition categories and by building a media strategy for each step of the process. The award scheme became a major national event.

Decentralization

Planning, implementing, communicating, and decision making took place at the local, regional, and national levels. District Environmental Task Forces were formed to carry out the scheme in The Gambia's geographic divisions. They worked under the direction of the National Steering Committee, but with a great deal of autonomy.

Financial Feasibility

The small budget was decreased even further in July 1994, when a coup d'état resulted in reduced

donor funding for government initiatives. NEA spent approximately \$5,000 on the scheme, primarily for publicity, fuel costs for the outreach vehicle, some of the prizes, and a portion of the assessment trips in the Divisions. Throughout the process, Gambian public and private organizations donated gasoline and other materials, lent vehicles and other equipment, and otherwise enabled the scheme to go forward with a minimum of funds. If these groups and individuals had not already agreed to support the program through the mobilization and decentralization described above, they probably would not have contributed their own limited resources to the Award Scheme's success.

Communication and Publicity

Throughout the whole scheme, NEA publicized each step of the process through the media, to the general public. At the same time, NEA communicated with the task forces, and they, in turn, with the communities. This two-way street encouraged active distribution of relevant information.

Time

The Awards Scheme took place over a period of a year, thus there was sufficient time to create awareness, sensitize the public, mobilize resources, and build support.

SOCIAL MOBILIZATION AT WORK

The success of many programs and efforts often lies in the degree to which the public accepts the ideas, are excited by the opportunities, and are supportive of the goals. Social mobilization is a way of achieving this support. It is a very broad approach that gives ownership to the community as a whole and retains little "control."

Author Neill McKee (1992) succinctly summarizes the strategies of social mobilization as five approaches to mobilize human and financial resources, as follows:

- ◆ *Political mobilization* wins political and policy commitment for a goal; the targets are national decision makers
- ◆ *Government mobilization* informs and enlists the cooperation and help of government organizations which can provide direct or indirect support
- ◆ *Community mobilization* informs and gains the commitment of local political, religious, social, and traditional leaders, NGOs, women's groups, and others
- ◆ *Corporate mobilization* secures the support of national or international companies in promoting appropriate goals
- ◆ *Beneficiary mobilization* informs and motivates the program beneficiaries through training, establishment of groups, etc

By most accounts, social-mobilization programs attempt to build national consensus. To do so, programs carry out a national education campaign through all possible channels, gearing up quickly and spreading the word. There is an assumption that by energizing more people to pay attention to a problem, good things will happen. Critics claim that accelerated programs are unsustainable approaches to long-term problems. Social mobilizers respond that these campaigns are merely the peaks in a continuous process of working toward the goal; that publicizing one event or program can have a positive impact on other programs; and that involving the community in the energy of this process will have far-reaching benefits that are not easily gained through other avenues. The National Environmental Awards Scheme is an example of social mobilization. The ways in which it used each of the five strategies listed above is told in the following pages.

Setting Objectives

The National Environment Agency established five objectives for the Awards Scheme:

- ◆ Increase environmental awareness among the public
- ◆ Promote and encourage public participation in environmental activities
- ◆ Promote environmentally friendly technology among relevant businesses and groups
- ◆ Demonstrate government recognition of individual and community efforts
- ◆ Reward individuals and groups taking positive environmental action

To achieve these objectives, NEA identified potential partners, established a coordinating mechanism to link these partners, and built support among target audiences. NEA wanted to carry out the scheme with a minimum of expenditure (using available resources and infrastructure) and maximum participation from the community at large.

The NEA Executive Director formed an Environmental Awards Steering Committee with representatives from organizations that ranged from The Association of Non-Governmental Organizations (TANGO) to the Ministries of Education, Interior, and Health. A total of 14 individuals served on the committee. NEA served as the facilitator and secretariat. The committee members included seven ministry representatives, and one representative each from the municipalities, women's organizations, NGOs, the technical training institute, and the chamber of commerce.

The Steering Committee had many tasks during its tenure. It first modified and approved the plan for the whole process, including the eight awards categories. It also discussed the choice of a logo and the entry forms for the competition designed by the NEA. Once the Divisional Task Forces were constituted, the Steering Committee defined their role, guiding their activities and monitoring their progress. The Committee was largely responsible for the media campaign, helping to design and implement it. The Committee also participated in the development of the judging system and discussed the types of prizes to be awarded. Some members of the Steering Committee took an active role visiting projects as part of a sub-committee, which reviewed all the top entries in each Division for the selection of the national winners.

Decentralizing the Scheme: The Divisional Task Forces

The NEA next approached the Commissioners, the heads of government of the country's regional divisions, to request that they serve as focal points for the Awards Scheme in their areas. All five agreed to appoint Environmental Task Forces to operate the program. While the task forces used the logo, entry forms, and other materials developed centrally, they had autonomy and decision-making power in determining how the scheme would unroll in their divisions. Although some variations existed among the Divisions, the task forces generally included the following members:

- ◆ Divisional Commissioner
- ◆ Assistant Divisional Commissioner
- ◆ Natural Resources Officer
- ◆ Divisional Health Team Officer
- ◆ Divisional Agricultural Coordinator
- ◆ Divisional Education Officer
- ◆ Divisional Forestry Superintendent
- ◆ Community Development Officer
- ◆ Field Officer of NGOs, such as Save the Children, Action Aid, and the Child Support and Rural Development Agency (CYSARDA)
- ◆ Divisional Councilors (including Chiefs)

THE COMPETITION: SOMETHING FOR EVERYONE

Eight categories of competition were established to encourage participation from every element of Gambian society—young and old, women and men, rural and urban, industry and microenterprises, government and NGOs, groups and individuals. Thus, the following types of activities qualified: school clean-ups, dramatists' performances, entrepreneurs' inventions, and neighborhoods "clean" income-generating projects, and others. (See Table 14.1 for a list of the award categories, their target groups, and possible activities.)

Broad criteria guided what types of projects were eligible within the eight categories:

- ◆ Environmental rehabilitation activities

- ◆ Activities that enhance the environment through sound and/or innovative natural-resource management, education, or energy use
- ◆ Achievements of individuals or groups that have campaigned, championed, or advocated for environmental causes

The major reason for holding eight competitions simultaneously was to maximize the number of people who could enter. The categories were chosen to focus attention on environmental priorities, which needed greater public participation, e.g., sanitation, sustainable agriculture, use of appropriate technology, reforestation, land rehabilitation, and sustainable development. A competition for women was provided to create an incentive for women's groups (typically formed to create income-generating projects) to become environmentally sensitive. Ultimately, these groups might integrate environmental strategies with profitable projects.

Another important consideration was to promote activities that people would not only want to do, but also would be able to do given their existing resources, such as time and equipment.

The individual competitions were broad in scope to allow innovation and more equitable participation. At one point, more specific activities for schools were discussed, but the Committee believed the schools with greater resources might out-compete those with fewer materials and money, and chose to keep the competition accessible to all.

Finally, the competitions were designed to generate activities in three broad, priority areas:

- ◆ Clean and beautiful surroundings
- ◆ Appropriate technology and sustainable development, and
- ◆ Clean and safe industry and enterprise.

Eight award categories, their target groups, and possible activities:

LAUNCHING THE AWARDS SCHEME

The Head of State officially launched the Scheme in April 1994, at a meeting of the National Environment Management Council. At the same time,

Table 14.1 Eight Categories for Gambian Environmental Awards Scheme

Category	Eligible Participants	Eligible Activities
1. Clean Schools, Clean Surroundings	Schools and other educational institutions	Clean-ups on school grounds or the surrounding community
2. Clean Ward	Groups, associations, the public at large	Clean-ups within the ward or surrounding community
3. Women and Environment	Women's groups and associations	Environmentally sustainable projects, e.g., tree planting or cooperative vegetable gardens
4. Community Sustainable Development	Individuals, groups, and associations	Environmentally sound innovations that improve the quality of life
5. Appropriate Technology	Individuals	Environmentally friendly technology that facilitates work
6. Clean Business and/or Industry	Companies and industries	Clean technology, appropriate waste disposal, clean premises
7. Clean Enterprise	Businessmen and businesswomen	Clean technology, appropriate waste disposal, clean and safe premises
8. Advocacy and Promotion	Individuals not employed in the environment sector	Projects that promote environmental issues locally, regionally, or nationally

NEA introduced a logo, entry forms, and posters in Banjul and in the Divisions.

The NEA Executive Director and Environmental Education Officer visited all Division Commissioners to enlist their participation and assistance and to plan how to publicize the Scheme regionally. These visits proved fruitful. In each case, the Commissioner decided to form and chair a task force to implement the Scheme in his division.

NEA also embarked on two major publicity activities at the national level: a multi-media outreach program and a media campaign. NEA worked with the Agriculture Communication Unit on the outreach program. Using the Communication Unit's vehicle and a portable generator, a team visited 35 villages and held meetings, displayed posters, and played films and cassette tapes with environmental themes. More than 6,000 people attended the various meetings, more than 25 percent of whom were women and about 10 percent of whom were youth. These meetings provided general information on environmental topics and then introduced the Awards Scheme. The team reported lively question-and-answer sessions, many

with community members who had never before had a discussion about the environment with a government official.

As part of a media campaign, NEA regularly provided articles to the newspapers. In addition, the agency, with the assistance of a local consultant, developed a series of interactive radio programs broadcast through Radio One FM, a popular private radio station. A team from NEA, including the Executive Director, answered questions phoned in by listeners in a format that proved highly successful.

Each Divisional Environmental Task Force planned the publicity in its own Division. This meant that each plan responded to local audiences and local media channels. Below are some examples:

Promoting to Farmers

The Upper River Division Task Force held meetings for farmers about the impact of agriculture, livestock, and forestry on natural resources and about the Scheme. In addition to interest in the competition, the meetings resulted in specific vil-

lage requests for follow-up meetings on environmental protection.

Working through Community Leaders

The MacCarthy Island Division Commissioner invited community leaders to a special meeting to discuss the Scheme. Guests included religious leaders, local officials, and representatives of youth and women's groups. The Commissioner explained the Scheme and asked these key individuals to support the Scheme through their channels.

Appealing to User Groups

The Western Division invited NEA to set up an exhibit at the National Livestock Show to display logos, posters, and other information. The NEA staff answered questions on the Scheme and distributed entry forms.

Focusing on School Administrators

In the North Bank Division, the Commissioner convened a meeting for primary and middle school headmasters to introduce them to the scheme and encourage them to initiate activities in their schools.

Multiplying Efforts through Teachers

In Greater Banjul, a meeting was held with teachers about the Awards Scheme, where the discussion turned to the role that teachers play in helping students acquire the concepts, skills, and attitudes needed to interact wisely with the environment. Teachers also asked about the role of the NEA.

Word spread beyond the people actually attending the meetings, listening to the radio, or otherwise participating in publicity activities. For example, students in several schools organized clubs and initiated school-wide activities. Indeed, at the end of April, when a NEA team made follow-up visits to all five divisions, they found that most traditional and religious leaders, *alkalos* (mayors),

women's groups, youth groups, and others knew about the Awards Scheme and its objectives.

ASSESSMENT

Assessment consisted of two steps: verification to ensure that what was reported on the entry form actually took place; and judging, to determine which activities merited prizes.

Designing an Assessment Strategy

NEA developed a verification procedure and judging criteria for the Steering Committee. The Committee decided that the Divisional Task Forces should judge the entries, using common criteria (see Box 14.2), rather than forwarding the entries to national decision-makers. NEA produced uniform judging forms and met with each task force to train for the assessment process and begin making plans for prize presentations.

Each meeting followed a similar pattern:

- ◆ Review of the progress of the Scheme
- ◆ Discussion of how to carry out field visits to verify and judge each entry
- ◆ Distribution of judging forms and training on how to use them
- ◆ Schedule the assessment
- ◆ Discussion of the prize-giving
- ◆ Discussion of a general time frame

Each Divisional Task Force then carried out its assessment using its own resources. Again, perhaps because the task forces had ownership in the process, and were given real decision-making authority, they were willing to spend their own money on travel and other expenses.

Each Division carried out the assessment slightly differently. The MacCarthy Island Task Force divided up the entries among the group. For example, the Education Officer was primarily responsible for visiting schools, interviewing the participants, observing the impact of the environmental activities on the school, and completing the judging form. In the Western Division, the entire task force created a grid to judge each entry as a group. In the

BOX 14.1

Four Major Criteria

- ◆ **Degree of participation:** for a group, the percentage that participated. For an individual, the level of commitment and motivation exhibited.
- ◆ **Cleanliness:** did appropriate solid waste disposal, reuse, recycling take place?
- ◆ **Magnitude:** did it cover a large area or population, or deal with several environmental issues?
- ◆ **Sustainability:** has this, or will this, become an ongoing activity?

Greater Banjul Area, an assessment team spent an average of four hours visiting each entry. Interestingly, while the committee members visiting schools reported some difficulty in differentiating among the many school clean-up activities, they had no hesitation in selecting the winners, which went far and beyond clean-up and beautification activities.

Each Division selected first-place winners in each category and, if there were sufficient high-quality entries, second and third places. The names of the top three overall winners (regardless of category) were then submitted to the National Steering Committee as candidates for the national prizes. A subcommittee was constituted to visit each of the finalists' projects to observe the activity, interview participants, and seek opinions from others in the community about the impact of the activity. The National Steering Committee reviewed the subcommittee's findings and selected the three national winners.

The Steering Committee decided that the prizes should be appropriate tools or other equipment to allow the winners to continue with their work—prizes included wheelbarrows, watering cans, gardening tools, and the like. The

winners also received certificates, and each entrant received a letter of appreciation for having participated. Funds for prizes (\$25,000) were provided by the U.S. Agency for International Development and the United Nations Development Programme.

THE WINNERS

In total, there were 210 entries. Of these, 94 were prizewinners that received certificates and tangible, useful prizes; the rest received letters of appreciation for their participation.

Each Division submitted their three top entries, regardless of category to the national competition. From these, the National Environmental Awards Steering Committee selected three national winners through actual visits to each of these projects. The prizes were determined through consultation with the recipients to ensure the prize would be valuable to them. The First prize winner was given a borehole (well). Second prize was \$5,000 to be spent according to a participatory rural appraisal study. Third prize was fencing materials requested by the recipients. In addition, each of them was nominated for UNEP's Global 500 Award.

The National Winners

First Prize

Tahir Ahmaddiyya Muslim High School—A Model of Environmental Management

The students in this Lower River Division school have turned their school into a model of environmental management. They planted drought-tolerant trees, plants, and an orchard; collected rain water for use during the dry season; made compost and used organic fertilizers in the gardens; and established a waste-disposal system with recycling measures. In addition, they established an Environment Club, which produces drama on environmental issues for neighboring schools and communities. This has been so successful that other schools in the area are copying the idea. The school is relatively small, with 450 students.

The students in this Lower River Division school have turned their school into a model of environmental management.

Second Prize

Touba Taffsir Village Community— Preventing Bush Fires

This Jahanka farming village in Upper River Division has been collectively managing their environment (a large forest, livestock grazing area, and an orchard) around their village for the last 18 years, primarily by preventing bush fires. At the end of each rainy season, the village Imam (Muslim leader) and the elders of the village mobilize the community in bush fire control measures, including fire belts and fire tracing. If by accident there is a fire, the entire village is mobilized to control it. The village and surrounding area are in outstanding condition. The government and others in the Gambian civil society are now trying to integrate this approach into other natural-resources-management programs.

Third Prize

Somita Kambeg Kafo—Community Sanitation, Health, and Environment Improvements

This kafo (group) consists of about 200 women in Somita Village in Western Division, who are successfully carrying out an environmental-health program that involves regular cleaning of the village and proper waste management. The kafo also established an environmentally friendly garden, where compost is used and water is conserved. Through songs and drama, the women in the kafo teach others in the community about sanitation and the environment, while providing entertainment.

Additional Entries

Following are examples of entries in each category. Every category did not draw equally from every region of the country. As Table 14.2 indicates, some categories attracted more entries from rural areas, and other categories from urban areas.

Clean School and Clean Surroundings: Bakau Newtown Primary School

More than 1,000 students, teachers, and parents worked together to maintain a school garden and

Table 14.2 Categories of Entries by Region

Category	Rural	Urban
Women in Environment	high	low
Sustained Development	high	low
Clean/Safe Business	low	high
Appropriate Technology	low	high

compost pile, plant fruit trees and flowers, promote an inter-classroom clean-up competition, and clean the area surrounding the school. Families contributed money to purchase plaster and paint for the classrooms and additional trees and plants.

Enhanced Ward: Serrakunda East Kafo

Serrakunda is a peri-urban area with a very high population density in the Greater Banjul area. There are many street vendors and limited street-cleaning services. The Serrakunda East Kafo consists of a group of people, mostly women, who have organized themselves to systematically clean and protect an area surrounding their homes. They provide and maintain refuse bins, sweep the compounds, supervise the proper disposal of human waste, and plant trees and other plants to keep the area clean and attractive.

Women and Environment: Women's Cooperative Crop Production

A women's association in Jamwelle Village mobilized 70 people to work together on a year-round gardening, tree planting, and a sheep and poultry project. All these activities were complementary. For example, the poultry ate leaves from planted leucaenia trees, chicken manure was used to fertilize the vegetable garden, and both the vegetables and the poultry are used to improve the diet of the community.

Community Sustainable Development: The Sea Defense Project

Banjul's Muslim community reduced coastal erosion around the community's cemetery. Rallied

More than 1,000 students, teachers, and parents worked together to maintain a school garden and compost pile, and plant fruit trees and flowers.

by a committee led by the Imam, thousands of Muslims filled in a cliff face with boulders and wire reinforcement. Community members donated money to purchase materials and volunteered their time. Men, women, and children worked side by side over a period of seven weeks depositing roughly 1944 cubic meters of boulders. The magnitude of the initiative was so great that the government agreed to maintain the cliffs.

Appropriate Technology: New Horizons Technologies

Another project related to coastal erosion took a very different approach. Sand mining to make construction blocks has depleted many beaches. New Horizons Technologies, a family-owned company, began experimenting with making blocks out of laterite dust and cement. The company has purchased two presses and is manufacturing and promoting the blocks.

Clean, Safe Business/Industry: Shell Marketing Gambia Ltd.

This unusual entry came from one of Gambia's few large companies. The project consisted of building a new airplane fuel depot at Yundum airport to increase the storage capacity. The facility, which was in the last stages of construction, is impressive because of the many human and environmental protection measures that were incorporated in its design. Among these are: (1) a drainage system for the collection of all possible leakage and spillage which could occur during operations, (2) warning equipment, (3) emergency shutdown devices, (4) an effective communication system, (5) a fire-fighting system, (6) staff training for safety. The sub-committee of the National Environmental Awards Steering Committee which visited these premises had no idea that such modern environmental-protection measures were operating within the country. The Award Scheme helped to publicize this worthy endeavor which can serve as a model for other industries and businesses.

Clean Enterprise: Awa Camara

This woman is a market vendor who sells vegetables in a large, congested market. Awa ensures that her stall has a container (usually a used cardboard box) for disposal of old vegetable leaves and other such waste. She also has a plastic bucket, which she used to fetch water from the faucet to wash her vegetables. She then discards the water in the nearest drain. As a result, her stall is clean, dry, and attractive.

Advocacy and Promotion: Njogu Touray

Njogu Touray is a well-known Gambian artist, whose concern about environmental protection grew out of his appreciation for the beauty of nature. Increasingly, his vivid, bold paintings have focused on pointing out environmental degradation caused through human activity. He also became concerned about lead paint and other environmentally degrading materials used by artists and, thus, has spent the last five years experimenting with natural resins, instead of plastic sprays, and using natural pigments for his paintings. He is hoping to produce a booklet on natural art materials of The Gambia for one of the next Award Schemes.

BRINGING PEOPLE TOGETHER: THE PRIZE CEREMONIES

The Steering Committee awarded in-kind prizes, not cash, to regional and national winners as visible incentives to others to participate in the future. Prizes such as wheelbarrows, rubbish bins, tools, sports equipment, and other items will help contestants continue their activities. NEA purchased these items, as well as certificates, plaques, and trophies.

Each Division organized and conducted a large, public celebration to award the prizes to winners, with people often traveling long distances to take part. A team from the NEA, including one or two members from the National Steering Committee, delivered the prizes to the Divisions and participated in the awards ceremonies. (See Box 14.2 for a typical ceremony agenda.) The NEA Media Offi-

Banjul's Muslim community reduced coastal erosion around the community's cemetery.

cer telephoned a report to radio and newspapers in Banjul at the end of each ceremony. However, the agency could not provide funds for the ceremonies themselves.

These ceremonies provided a way for different groups to come together to support a common cause. For example, the event in the Western Division brought together all the Division's chiefs for the first time since the District Commissioner had taken office.

The participants included regional authorities, traditional and religious leaders, prizewinners, friends, school children, and music and drumming groups. The regional leaders were involved in presenting the prizes and making the presentations. There was much rejoicing, dancing, and drumming, and the prizes were well appreciated. As the truck loaded with the prizes went along the road, or stopped to wait at a ferry crossing, people would approach it, cheer, and clap.

The National Awards Ceremony took place jointly with the opening of a workshop to launch the National Environmental Education Strategy. The Minister of Agriculture served as master of ceremonies, and the Minister of Education read a message on behalf of the Head of State. Two other cabinet Ministers also attended. The country representatives of both USAID and UNDP made presentations. Most of the Divisional Commissioners were present, and so were many dignitaries and members of the business community and NGOs. At this event, the prizes for the Greater Banjul winners and for the three national winners were presented.

A broad cross-section of people engaged both in formal and non-formal environmental education, including the members of the National Environmental Awards Steering Committee, remained at the site for a two-day workshop to review and approve the proposed National Environmental Education Strategy.

WRAPPING IT UP: LESSONS LEARNED

As noted earlier, several factors contributed meaningfully to the success of the National Environ-

BOX 14.2

Lower River Division Awards Ceremony

- ◆ Arrival of Guests and Winners
- ◆ Introduction by Task Force Chairman
- ◆ Welcome by District Commissioner
- ◆ Remarks by USAID Representative
- ◆ Keynote by NEA Executive Director
- ◆ Presentation of Prizes
- ◆ Vote of Thanks by a Chief
- ◆ Drumming and Dancing
- ◆ Departure

mental Awards Scheme: widespread mobilization, decentralization of decision making and authority, feasibility in terms of expectations and resources, open communication, and sufficient time.

Additional strong points include the following:

- ◆ *The planning and steering of the Scheme was done collaboratively.* Through the National Steering Committee, representatives from government (the Ministries of Education, Health, Natural Resources, Agriculture, and Interior) and non-governmental organizations helped plan, steer, and monitor the Scheme.
- ◆ *There was strong support from the public media.* The newspapers and radio reported the process. A series of interactive radio programs provided information and maintained public interest during the implementation phase of the Scheme.
- ◆ *There was full involvement of the National Environment Agency.* From the Director to the typists, the entire staff had a stake in the success of the Scheme. All had different roles to play; each performed his or her role with a high level of commitment and enthusiasm.
- ◆ *NEA played a facilitating and coordinating role.* The Agency has good credibility, and the various Ministries, NGOs, and Division authorities fully accepted NEA's role as the facilitator and coordinator of the Scheme.

Each Division organized and conducted a large, public celebration to award the prizes to winners, with people often traveling long distances to take part.

- ◆ *Divisional Task Forces had the responsibility for implementing the Award Scheme regionally.* These Task Forces, headed by the Divisional Commissioner, were composed of government extension officers, regional representatives of NGOs, and traditional leaders. Because these people live and work in the regions, they knew the specific environmental problems and were in positions to influence others.
- ◆ *There was strong cooperation and support from government, donor agencies, and the community.* The members of the Divisional Task Forces, in particular, gave of their time, voluntarily, adding arduous tasks to an already full schedule. In addition, they shared other limited resources. NEA, as noted, supported the process, and USAID and UNDP funded purchases of prizes.
- ◆ *Winners received in-kind prizes.* Providing wheelbarrows, tools, equipment, fencing, and even a well for the top prizewinner was better than giving cash prizes. It resulted in the distribution of vital tools and equipment to groups that could use them, and it provided visual incentive to others to enter future competitions.

A Few Difficulties

There were several challenges in the development of this particular awards scheme. Though not all would be present in other situations, other concerns will need to be overcome.

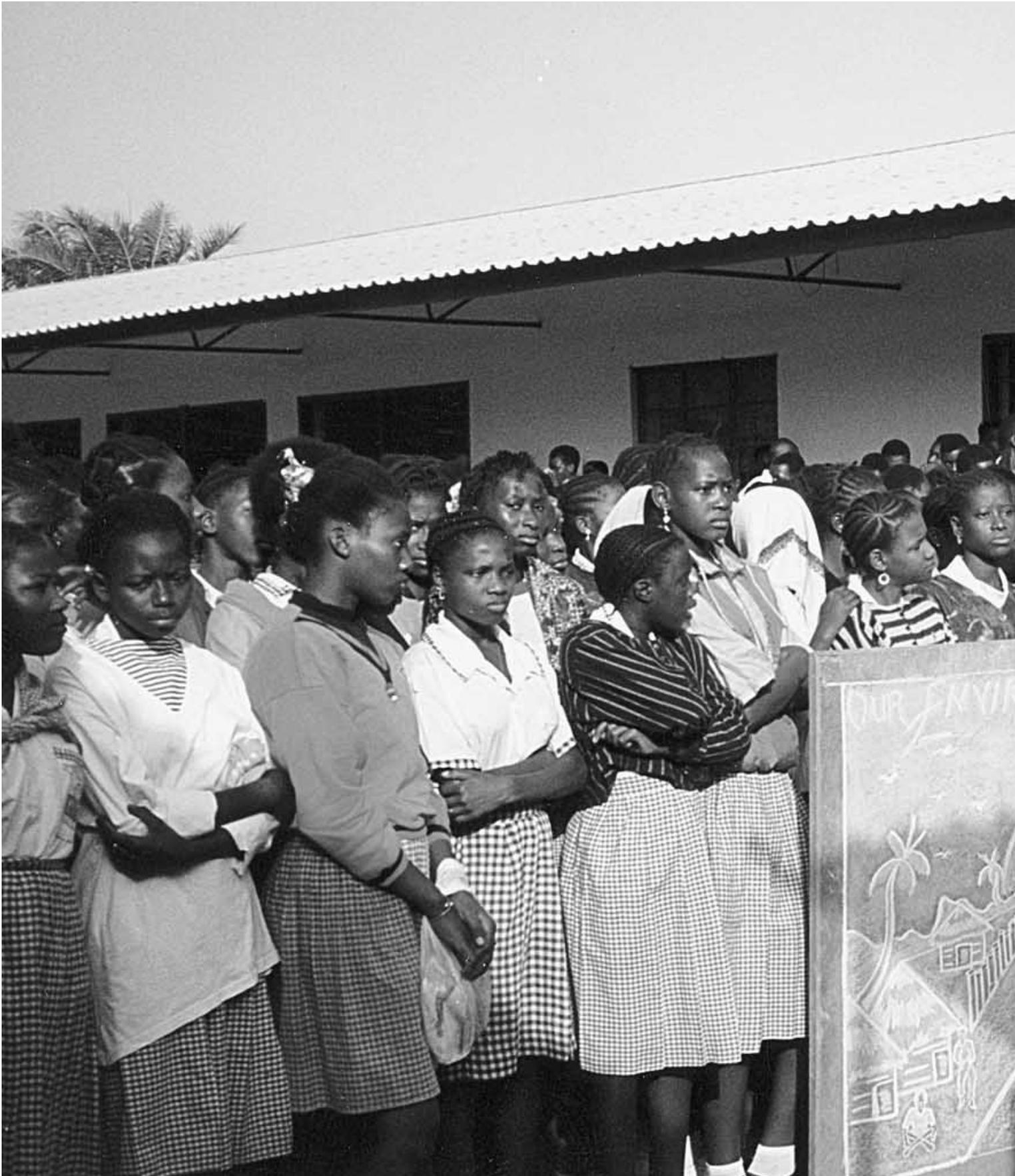
- ◆ *Coup d'état:* Without a doubt, the greatest problem encountered was the coup d'état which took place about four months into the development of the awards program. An attempted counter-coup took place immediately after. This transition caused great political uncertainty and, therefore, a delay of several months as some donor-funded projects closed. Funds and equipment that were to come through USAID's GreenCOM Project were no longer available. In addition, the

Divisional Commissioners (the heads of the Divisional Task Forces) were replaced. It was thus necessary to repeat the process of consultations with the Commissioners to gain their support and commitment to continue to lead their Task Force.

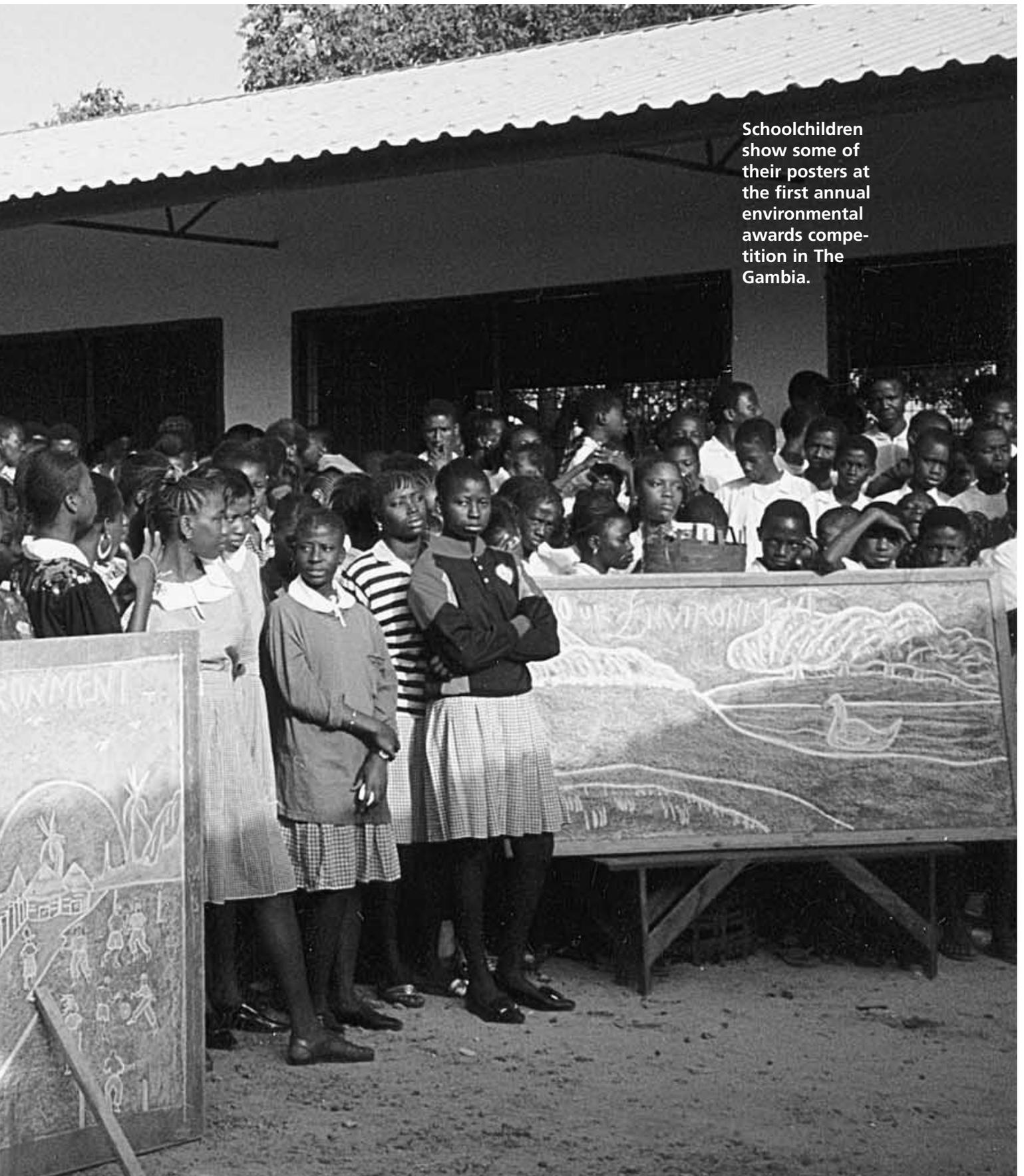
- ◆ *Transportation:* Although The Gambia is a small country, transportation is difficult. The roads are very poor in places, and ferry crossings are inevitable. Crossing small rivers and creeks was arduous at best, and sometimes dangerous, particularly when carrying prizes to the recipients.
- ◆ *Limited regional facilities:* The Divisional Headquarters had very limited facilities. Thus, entry forms, certificates, assessment forms, etc. had to be produced in Banjul at the National Environment Agency and taken to the Divisions. Every opportunity was taken to "catch" people who were going "up-country" and use them as messengers.
- ◆ *Limited financial resources:* Although the aim was to implement the campaign through existing infrastructure and resources, funds to assist with transportation and pay for more radio time would have increased publicity. The Divisions placed a great deal of importance on the prize-giving ceremonies, but no funds were available through the secretariat. In spite of this, the Task Forces went ahead, utilizing existing resources and events, and organized large ceremonies with full representation of the people and dignitaries in each region. These ceremonies became important support-building occasions, which in the future should be included in the budget.

Spin-offs and Extensions

- ◆ Several additional programs and projects have resulted from the Awards Scheme.
- ◆ An infrastructure (the Environmental Task Forces) was created at the regional level, which is now being used for the decentralization of environmental management.



Schoolchildren show some of their posters at the first annual environmental awards competition in The Gambia.





At the podium, USAID and The Gambian officials launch the awards scheme in April 1995 (above). Members of The Gambian National Environmental Agency's Award Scheme Task Force, Lower River Division, were proud to participate (right).



Without a doubt, the greatest problem encountered was the coup d'état.

- ◆ The Awards Scheme created an opportunity for staff from NEA and other Ministries to be closely involved with “grassroots” environmental concerns and endeavors. This resulted in stronger links and goodwill for NEA and other institutions in the Steering Committee.
- ◆ Many of the participants in the Divisions actually requested visits from extension agents to enlist help with their projects. This provided opportunities for extension officers to meet the expressed needs, rather than the more typical case of planning workshops around topics they think will be useful to residents.
- ◆ The lessons learned from the Awards Scheme are being applied to other social-mobilization activities, such as the Participatory Rural Appraisals being carried out to develop regional and local action plans.

NEXT STEPS

Perhaps the greatest impact of the scheme is what will happen to future environmental activities. Will the individuals and groups who entered the scheme sustain their projects? Will they be joined by others? Or will interest decline? To date, several events have occurred that bode well:

- ◆ NEA secured funding and successfully completed the second Environmental Awards Scheme. Over 300 entries were received (a third more than in the first Scheme). At this printing, the third Awards Scheme has been launched with great enthusiasm.
- ◆ Shell Oil Company, a winner in the first competition, contributed to the prizes in the second awards scheme.
- ◆ An additional category is being created for ecotourism to encourage environmental activities among hotels and tourist organizations.
- ◆ The National Environmental Award Scheme is now a yearly event, culminating on World Environment Day. It is an accepted strategy to encourage environmental awareness and participation.
- ◆ NEA staff all agree that the scheme is becoming easier to implement because the infras-

tructure is in place and the facilitators have learned from past experience.

- ◆ NEA has used the publicity-campaign strategies developed for the scheme in subsequent endeavors. For example, in informing importers and others in the agricultural sector about a newly passed pesticide-registration law, NEA embarked on a media campaign that included interactive radio programs and community meetings.
- ◆ The National Awards Steering Committee and the Divisional Task Forces, which were formed to guide and facilitate the Awards Scheme, did not end after the first prize giving. Instead, they began implementing the National Environmental Education Strategy and have agreed to continue to facilitate the Environmental Award Scheme on a yearly basis at the regional level. The National Steering Committee was given a few new members and converted into the National Environmental Education Steering Committee. The Divisional Task Forces work with NEA and, after training some of its members in Participatory Rural Appraisal (PRA) techniques, assist in designing local environmental action plans. (One of the first PRAs carried out was in Tabu Taffsir Community, one of the national winners, to help it determine what assistance it needed as its prize.)

The National Environmental Awards Scheme in The Gambia is not a perfect model. Like all successful programs, it worked well in the context in which it was planned and implemented. For example, the country is small, and although transportation is scarce, a few media vehicles can cover much of it. Leadership, flexibility, and a commitment to a better environment, however—commodities which exist in countries large and small—can create the conditions for an awards scheme to engage people in environmental improvement.

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Chapter 15

Water Conservation in Jordan: A Novel Approach to Curriculum Development

Mona Grieser, Barbara Rawlins, and Khulood Tubaishat

Paramount among Jordan's national concerns is the scarcity of water. Water scarcity is so serious that the peace treaty between Israel and Jordan, signed in 1994, included Jordanian water rights. This landmark initiative addressed longstanding political tensions between the two countries, and the terms of the water section are still being argued today. Extensive mass-media coverage highlighting the agreement served to further focus the nation's attention on the water-shortage issue. Water is scarce across all of Jordan. The whole country is arid, or semi-arid, with a dearth of water for farming, grass, and even trees.

Like other tropical countries, Jordan has only two seasons, a rainy season and a dry season. The rainy season from October through April produces 85 percent of the nation's total annual rainfall. Precipitation is the predominant source of fresh water, feeding the Jordan and Zarqa Rivers and replenishing natural springs and underground pockets of water.

All known sources of water across the country are already being utilized, and those are drastically reduced by four factors. First, 92 percent of the rainfall is lost to evaporation. Second, Jordan's neighbors, Syria and Israel, have diminished water flow by building hydroelectric dams further upstream on the Jordan River. Subsequently, Jordan has become highly dependent on these countries for its water needs. Third, Jordan's population has expanded enormously due in part to successive waves of refugees from Israel and Palestine and to the fact that Jordan has one of the highest population-growth rates in the world (3.3 percent); the increased population increases demand for agricultural water as well as domestic water. Fourth, mod-

ernization and increasing expectations about quality of life have also changed domestic water behaviors.

Because the supply of water no longer meets the demand for water, conservation has become Jordan's focus. Rationing of water has become a way of life. Recently, legislation was passed that requires newly constructed homes and apartment buildings to have water-storage tanks fed by runoff rainwater in addition to piped water. But regulation and municipal management alone will not suffice to resolve Jordan's water deficit. Individual citizens need to do their part, and although Jordanians are now fairly efficient water users, additional voluntary reductions of water use are needed at the household level.

This chapter describes how GreenCOM worked with a Jordanian NGO to address this need through a tailored curriculum within Jordan's schools. The starting point was to understand, through research, popular perceptions about water scarcity: how do Jordanians perceive the water problem? Next came the design of an educational curriculum targeted on knowledge gaps revealed by this research. Importantly, the design of this strategy was carried out in an interactive way, in contrast to what most Jordanian educators had experienced before, and it was this participation that significantly contributed to increased environmental learning. Key to the strategy as well was gender sensitivity—the curriculum addressed boys and girls differently based on what the research told us about their varying perceptions about water scarcity and their different roles in domestic water use. The result has been a major increase in environmental knowledge and the development of a research-based, interactive, and gender-sensitive

Although students generally were knowledgeable and aware of water problems in Jordan, they did not feel that they could contribute to their solutions.

process that can be used throughout Jordan and the Middle East.

HOW DO JORDANIANS PERCEIVE THE WATER PROBLEM?

To answer this question, the Royal Society for the Conservation of Nature (RSCN), a local non-profit environmental organization supported with technical assistance from the GreenCOM Project, held a series of discussions with students, teachers, and school principals in 1994. RSCN found that both boys and girls were well aware that water was an issue in the country. However, there was relatively little understanding that water scarcity was not a new issue, indeed had been a problem for centuries. In addition, there was remarkably little understanding that water scarcity was an endemic feature of a climate that is essentially arid or semi-arid.

Furthermore, men and women perceived their roles in conserving water very differently. While men and boys saw their roles as promoters of water conservation, women and girls saw their roles as implementors of conservation measures. Men more often mentioned the need for government responsibility for the issue; women were more apt to personalize conservation measures. For example, when asked for specifics, males could only state one or two ways to reduce water use in the home, often linking water reduction and conservation to those tasks that women were most likely to do anyway (e.g., washing dishes and doing laundry) and less likely to talk about their own uses of water (e.g., the garden, washing cars, shaving, taking showers). Few men talked about water loss through old and corroded pipes and leaking water tanks, one of the principal ways in which water is lost and which would normally be a man's or a boy's job to repair. In contrast, females generally offered several ways to reduce domestic water consumption linked to their own household tasks and personal use. In spite of the high rates of literacy, women's roles in Jordanian society, among both Islamic and Christian families, are largely tra-

ditional and revolve around domestic work, children and the extended family.

In general, Jordanians of both sexes believe that women care more about the environment and that women are more responsible for safeguarding the environment than men. This attitude may stem from traditional Jordanian society when women are responsible for fetching water from the wells and allocating it for household use. Women and girls also indicated a more refined sense of the kinds of water available for domestic use: grey water, which many knew could be recycled; rainwater, preferred for cooking and drinking; spring water, purchased in times of rainwater shortages for cooking and drinking; and tap water, used for washing laundry and watering the garden. It is not unusual in Jordan for women to have three separate sources of water (tap, spring, and rain), each with its own specific usage.

Many of the students, teachers, and school principals—of both sexes—believed that they have no control over the country's water supply. While they do see themselves as part of the problem, they don't see themselves as able to contribute to the solution. We found that most people believe that the national water shortage is a problem caused by a combination of government mismanagement, industry dumping, and domestic abuse; but that the solution had to come from government or industry. The students did not see themselves in the role of concerned consumer or environmental advocate, even though they belonged to environmental clubs. Although students generally were knowledgeable and aware of water problems in Jordan, *they did not feel that they could contribute to their solutions.*

A WATER CONSERVATION CURRICULUM

RSCN decided to help tackle the water-scarcity problem at the household level. In an effort to instill a sense of personal control over water usage and spur Jordanian citizens to action, RSCN developed a water-conservation curriculum for its net-

work of secondary-school environmental youth clubs (eco-clubs) with assistance from GreenCOM.

RSCN had started its loosely structured school-based eco-club system several years before, and it the system had grown to include over 300 clubs. Although the clubs' initial focus was on biodiversity, RSCN became increasingly concerned about the growing urgency of the water-scarcity problem in Jordan. RSCN further recognized that its eco-club system provided a good avenue for testing new approaches to environmental education. Schools, which are single-sex in Jordan, volunteer to join the eco-club system and most students volunteer to participate in the club's activities. As a result, eco-club students and teachers are generally highly motivated, and consistently express strong interest in improving their clubs. Most participating schools are girls' schools, further highlighting the link between environment and gender by reflecting the traditionally greater interest and involvement of women and girls in environmental issues.

The curriculum RSCN developed for its eco-clubs focused on persuading students and, through the students, their family members about the need to conserve water at home. The curriculum provided examples of specific actions that households could take to reduce their personal water use. On the basis of the earlier discussions with boys and girls and their teachers, RSCN made a particular effort to highlight things that boys and men could do to personalize their commitment to water conservation. The curriculum consisted of the following five units:

1. The water cycle in nature and water sources in Jordan
2. Reduction of household water use
3. Ground and surface water
4. Ground and surface water pollution
5. Home gardens and irrigation

Because the goal of RSCN's efforts was active participation in water conservation by students and their families, the curriculum stressed interactive learning activities. Each unit included an information section with facts about the topic under study, questions to facilitate discussion, activities

for the club, and a student test to be administered before and after the unit.

Activities conducted by the clubs were then linked to a number of specific actions recommended for students and their families to perform independently at home, including:

- ◆ Placing a one-liter bottle in the toilet tank to reduce the amount of water needed to flush
- ◆ Watering the home garden in the morning or evening, not in the daytime, to reduce evaporation
- ◆ Taking showers instead of a bath
- ◆ Turning taps off while brushing teeth, washing dishes, and shaving
- ◆ Washing clothes in one large load instead of many small loads and reusing the grey water
- ◆ Repairing old water tanks and covering and cleaning cisterns, replacing corroded and leaky pipes

How Was the Curriculum Developed? How Were Teachers Trained?

RSCN staff, several teachers, officials from the Ministry of Education, GreenCOM staff, and other experts in education, water, the environment, and administration came together in a participatory workshop in October 1994 to develop the water-conservation curriculum in Arabic. Although a few of the participating teachers had science backgrounds, others were trained in Arabic language, religion, and other specialties. But the contributions of the non-science teachers were vital because eco-club teachers' backgrounds vary as well—from science, to language arts, to mathematics, to religious instruction, to art.

Our approach to curriculum design placed importance on interactive discussions, hands-on experiments, and discovery processes in student learning, and the need to make topics relevant to teenagers' lives. Although these methods are widely used in many Western nations, they constituted a dramatic departure from the traditional way of teaching in Jordanian schools, where lectures are the main format.

The new curriculum had a significant impact on students' knowledge, attitudes, beliefs, and behaviors regarding conserving water at home.

The content of the curriculum was based on information gathered from original interviews with students, teachers, and administrators, as well as from existing curricula from the United States and elsewhere that incorporated interactive teaching techniques. In particular, the curriculum drew on activities used in science curricula in Arizona and New Mexico, which are similar in climate and topology to Jordan.

During the curriculum-development workshop, teachers demonstrated the activities they expected students to be able to perform. In this way organizers monitored the availability of materials for the exercises, how long a given task would take, the ability of teachers to understand the curriculum concepts, and the ability of the students to perform these tasks at their grade level.

The degree of academic difficulty was pitched to a 9th grade level so that younger students would not find it too difficult nor would older students find it boring. Students in grades 8–11 could participate in the clubs.

Sensitivity to the different gender roles was emphasized throughout the design process. For example, a deliberate effort was made to include exercises and activities that would affect both genders. When advocating behavior change in the home, the curriculum included illustrations of men closing faucets while they shaved, men using drip irrigation instead of hoses in family gardens, and men washing cars with buckets rather than a hose—in addition to women washing dishes and clothing. To tailor the curriculum to both rural and urban schools, we included activities that addressed both home garden watering (urban or rural) and irrigation of agricultural land (rural).

During this same two-week curriculum-development period, all the materials, exercises, and teacher's guides were pretested with eco-clubs and their teachers. Revisions made were again pretested. Next, at two-day workshops held in January 1995, RSCN and other curriculum-development-team members trained eco-club teachers on how to use the curriculum. At the training, we gave teachers the new curriculum and a self-instruc-

tional teachers' manual that stressed the new interactive teaching methods. The participants "walked through" the teachers' manual, following the instructions step-by-step to ensure a thorough understanding of the lesson.

The Curriculum Worked!

At semester's end, we compared students and teachers from a sample of eco-clubs using the new curriculum with a sample of eco-clubs not using the new curriculum. The results: the new curriculum had a significant impact on students' knowledge, attitudes, beliefs, and behaviors regarding conserving water at home. Of particular interest is the stronger effect the curriculum had on boys than on girls; boys made more suggestions to their parents about ways to reduce water consumption, such as shutting off the tap while brushing their teeth. This finding suggests that when the practice of water conservation is presented as an issue within the male domain, boys are receptive to the subject matter and can become advocates for change.

And, in general, students appear to have served as effective conduits for changing their family's water-conservation behaviors at home as well. They reported influencing the clothes-washing behavior of their mothers as well as their households' garden-watering practices.

The curriculum also appears to have influenced teachers. We found that teachers changed how they conducted their eco-clubs in terms of the content and format of the activities they carried out. Most teachers who were provided with the curriculum (60 percent) implemented a majority of the recommended activities. The curriculum seemed to motivate female teachers more strongly than male teachers: they increased both the total number of activities on water and the number of *interactive* water activities (e.g., field trips, experiments, drama presentations) used in their eco-clubs. Male teachers who got the curriculum also increased the number of *interactive* water activities they used, but did not devote more activities in their eco-clubs to water issues overall.

...students appear to have served as effective conduits for changing their family's water-conservation behaviors at home as well.

Also of note were teachers' overwhelmingly positive reactions to the new curriculum. The vast majority (90 percent) indicated they would like to use the curriculum again in the future with new eco-club students.

LOOKING TO THE FUTURE

What does the success of this curriculum mean for future environmental-education efforts in Jordan and elsewhere in the Middle East? We think it shows that when you develop programs on the basis of research, develop curricula in a participatory way, use interactive learning techniques, and are sensitive to gender differences, increased learning and behavior change are very likely. The extensive knowledge that RSCN gained in their interviews with students and teachers, being responsive to teachers' needs, and the implementation of an ecology-club program with gender-based considerations proved useful in improving the school-based environmental programs in a number of ways.

This process can serve as a model for new educational projects by other organizations in Jordan. Appropriate in both formal and non-formal settings, the methods used here can also be replicated and adapted to other subject areas with relative ease.

In fact, the diffusion of ideas has already begun. Even before this project ended, other divi-

sions within RSCN had used these methods to develop materials to promote tourism at park sites. RSCN education staff used the participatory-workshop model to develop a curriculum on biodiversity and conservation of species in Jordan. The participatory model was much appreciated by USAID, which recommended it to all its projects in Jordan. Subsequently, it has become a standard for other programs and projects across the country. RSCN went on to develop a series of TV spots based on the recommendations in the curriculum—one spot a month for six months highlighting a specific way citizens could conserve water. These spots were shown on prime time national TV and were widely and well received, not only in Jordan but also in neighboring countries where reception of Jordan TV was available.

Most importantly to Jordan, the curriculum represents a vital contribution to creation of a gender-sensitive dialogue about water conservation at home, empowering students and their families to recognize their roles in solving the serious water-shortage faced by their nation.

Beyond Jordan, neighboring Middle Eastern countries with similar water shortages may look to Jordan in the future for fresh ideas on water conservation. This curriculum is already in select schools in Gaza and the West Bank, and Egypt has requested and received copies of the materials.

BOX 15.1

Curriculum Summary

Unit 1-The Water Cycle

This unit highlights the importance of water in nature, its role in the Koran, and its many uses. Background information is provided about water sources in Jordan, the water cycle, dams, and the concept of water as a publicly owned commodity. Collection and use of water over time is outlined. The impact of population growth and urbanization on the water supply is described.

Activity 1: Exploring How Water Evaporates

Summary: Put equal amounts of water in two bowls or glasses and cover. Place one bowl in the sun and another in the shade and compare what happens.

Activity 2: Constructing a Small Replica of the Water Cycle

Summary: Put soil, water, and seeds into a covered jar to see if and how the plants grow. In each case, first write down what you expect to see, then perform the experiment and record and

discuss what you actually observed.

Unit 2-Household Water Use

This unit reinforces the importance of water and its scarcity in Jordan and throughout the Middle East. These concepts are then brought into the home environment by presenting several ideas for saving water in the bathroom, kitchen, and elsewhere in the house.

Activity 1: Water-Use Survey

Summary: Conduct a survey at home with your parents to measure how much water your family uses. Record how much water you and your family use for brushing teeth and bathing. Next, determine how much water is used for “female” household tasks such as washing the dishes and the clothes. Determine the amount of water used for “male” tasks such as washing the car and shaving. Discuss with your family ways they could decrease water consumption.

Activity 2: Water-Meter Reading

Summary: Observe the teacher’s demonstration of how to read a water meter. Next, check your water meter at home, or look at your family’s water bills if they purchase water, to calculate the cost of water to the family each month. Compare and contrast the water bill from the month prior to implementing the water-saving measures you have learned at home, and the month after implementing these measures.

Activity 3: Saving Water When Brushing Your Teeth

Summary: Calculate how much water can be saved when the tap is not left running while you brush your teeth. Multiply this amount by the number of people in your family to determine the total savings for your household.

Unit 3-Aquifers and Surface Water

This unit introduces the concept of underground (aquifer)

and surface water. Student discussion centers on the issues raised by a hypothetical conversation between two friends—Hamid and Hamed—from different parts of Jordan. They talk about their surrounding areas, both of which have become drier in recent years, and how they have seen birds and wildlife disappear. They talk about their fears that water might not be available in the future and discuss the difference between renewable and non-renewable water sources. The importance of ground cover is also stressed in this exercise. In Jordan, ground cover is often removed through gleaning activities, which allows water to evaporate faster and removes habitats of small animals.

Activity 1: Function of Ground Cover in Retaining Moisture
Summary: Put seeds and wood chips in a nylon sock, place it on a wet plate, and observe what happens over the course of two days.

Unit 4-Pollution

This unit addresses surface-water and aquifer pollution: the role that humans play in causing pollution and ways to stop it. Particular emphasis is placed on pollution in the Gulf of Aqaba and its effect on coral reefs. Six suggestions to decrease water pollution, such as minimizing the use of chemical fertilizer and controlling garbage disposal, are offered.

Activity 1: Simulating Water Pollution

Summary: Fill a glass with water, sand, and pebbles. Put ink, red dye, and oil into the glass and observe what happens.

Unit 5-Home Gardens and Irrigation

This unit explores ways to reduce water use in home gardens. Water-efficient plants that can be used in gardens are identified, how compost can slow evaporation of water is demonstrated, and the effects of fertilizer on evaporation levels is examined. The unit shows how

to collect rainwater at home for use in home gardens. The advantages of drip-versus canal-irrigation methods for agriculture are also covered.

Activity 1: Comparing Water Use by Three Different Plants

Summary: Obtain three different plants with different-size leaves. Observe how much water is used by each plant over time.

Activity 2: Comparing Waxy Versus Non-waxy Leaves

Summary: Identify two plants, one with waxy and one with non-waxy leaves. Compare transpiration between the two plants over time.

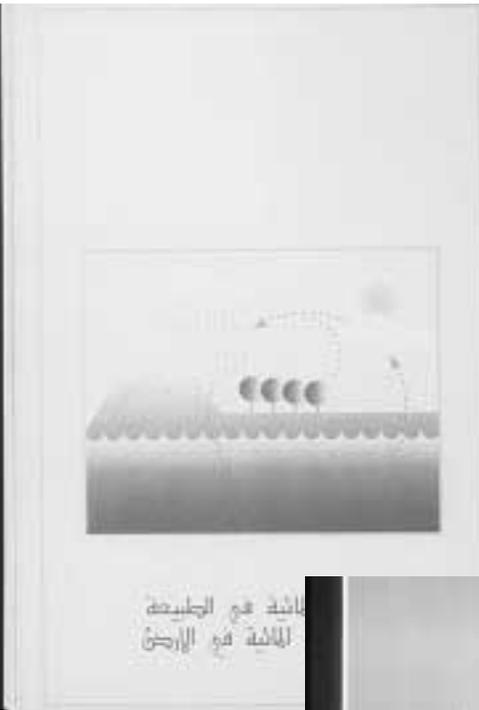
Activity 3: Simulating Canal and Drip Irrigation Techniques

Summary: Water one group of plants with a pitcher of water (canal method) and another group of plants with a water dropper (drip method). Observe over two weeks to see how much water is used by each. Take notes and present your final results.



GreenCOM's approach to curriculum design promoted interactive discussions, hands on experiments. Jordan's Royal Society for the Conservation of Nature developed secondary school environmental youth clubs (eco-clubs) with the help of GreenCOM to introduce students to environmental activities.





The Royal Society's teacher's guides were designed to be colorful and easy to use. (At left) "Water Cycle in Nature," (below) "Water Conservation at Home," and "Teachers Guide to Water Conservation Curriculum."



At the ceremonial opening to the Royal Society for Nature's Curriculum Development Workshop, the USAID/Amman mission director Tom Oliver, gave a talk (left) and panelists discussed the importance of environmental education (above).

