

Impacts of the National Green Corps Program (Eco-Clubs) on students in India and their participation in environmental education activities

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India's National Green Corps (NGC) Eco-Clubs are a unique opportunity to educate youth about environmental issues. NGC objectives include: (1) educate children about their immediate environment by increasing awareness; (2) impart knowledge about eco-systems, their interdependence and need for survival, through visits and demonstrations; (3) mobilize youth by instilling a spirit of scientific inquiry into environmental problems; and (4) involve youth in active environmental preservation efforts. In 2005–2006, Eco-Clubs existed in nearly 68,000 schools across India representing 150 Eco-Clubs per district. During the 2007–2008 school year, the number of Eco-Clubs increased to approximately 97,000 in 519 districts. The purpose of the study reported here was to document and evaluate the effectiveness of Eco-Clubs and assess their organizational framework. An extensive document review of secondary data was employed and focus group interviews were conducted in two locations. Findings show that the partnership programs developed by schools with non-governmental organizations to propel the Eco-Club concept forward have contributed greatly to their ability to provide ongoing, quality programs for students. Recommendations include directing different agencies to work cohesively towards program success, clarifying the future NGC vision, and addressing existing operational shortcomings.

Keywords: environmental education; India; Eco-Clubs; youth; evaluation

Introduction

The National Green Corps (NGC) is a national program across India conceptualized and initiated by the Ministry of Environment and Forests (MoEF), Government of India. The MoEF is 'the nodal agency in the administrative structure of the central government, for planning, promotion, co-ordination and overseeing the implementation of environmental and forestry programs' (www.envfor.nic.in). The four major objectives for Eco-Clubs are to: (1) educate children about their immediate environment by increasing awareness; (2) impart knowledge about eco-systems, their interdependence and need for survival, through visits and demonstrations; (3) mobilize youth by instilling a spirit of scientific inquiry into environmental problems; and (4) involve youth in active environmental preservation efforts.

Eco-Clubs exist in each district of every state/union territory (UT) and are implemented through a four-tier system: national (MoEF, national steering committee),

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state (state steering committee, resource agency, state nodal agency), district (district implementation and monitoring committee [DIMC]), and Eco-Clubs at the school level. Official responsibility for the implementation of the NGC at the district level rests with the state education departments.

Five years after the NGC program's launch in 2001, during the academic year 2005–2006 (inclusive of the present study), Eco-Clubs existed in nearly 68,000 schools across India, representing 150 Eco-Clubs per district. Data collection for the current study occurred during the spring of 2006. The goal for the MoEF in subsequent years was to reach an even higher participation level of 90,000 schools. This goal was reached in 2007, when the NGC Eco-Clubs operated in 91,447 schools, engaging thousands of committed teachers and more than three million students in conservation efforts, making this one of the MoEF's most successful programs (MoEF Annual Report 2007). As of the school year 2008–2009, this figure has reached over 96,000 schools participating in the program, including more than 619 districts giving a participation rate of approximately 156 schools per district (personal email communication, Uday Shanker, 30 October 2008).

While India is fortunate in its sheer beauty, it is also replete with natural resource issues across the country. Ranging from a rapidly growing population and deforestation to soil erosion and water pollution, overall environmental degradation continues to worsen and is hindering economic and community development in rural India. Rapid industrialization and urbanization in India is booming, however, as the middle classes also expand. Urban communities are draining the limits of municipal services and causing severe air pollution problems. All this, and more, has placed significant pressure on India's infrastructure and natural resources contributing to ongoing efforts towards education and seeking overall pro-environmental behaviors (see *India Together – Environment*, www.indiatogether.org/environment).

The general rationale for providing environmental education programs in India includes helping school children develop environmental awareness such that they grow up to be citizens who are conscious and sensitive to threats to the environment (Dhavse 2003). Across Indian society, there is widespread recognition that the country faces a range of environmental challenges, particularly in contexts where environmental degradation, poverty and illiteracy, as well as an ever-increasing population, impede pathways to economic growth. According to DevelopedNation.org:

... these challenges are intrinsically connected with the state of environmental resources, such as land, water, air, and their flora and fauna. The proximate drivers of environmental degradation are population growth, inappropriate technology and consumption choices, and poverty, leading to changes in relations between people and ecosystems, and development activities such as intensive agriculture, polluting industry, and unplanned urbanisation. (www.developednation.org/home.asp)

Thus, environmental degradation is not only an economic issue in India, it is also a cultural one. A cleaner earth is a richer earth – not only for its own sake, but also for the benefit and well-being of the people who live and rely on it for income and sustenance.

In examining the links between poverty and environmental degradation, recent research has focused on governance, environment and population growth, in relation to deprivation. According to Reed and Rosa (1999), the intended benefits of governmental policies are now being distributed more broadly such that environmental resources in various countries are being managed with enhanced sustainability

outcomes. Arguably, an underlying necessity for attaining poverty reduction, positive equity and desired environmental outcomes, is the reinforced participation of the poor vis-à-vis groups who have greater access and influence over political and economic systems. Furthermore, successfully integrating the poor into such 'systems' (e.g., via community empowerment) can contribute to the creation of wealth, spur growth, and spark social and environmental change (Adato and Meinzen 2007; MoEF 2002).

Hence, it has become increasingly important to focus research and debate on governance, policies and education with respect to the enhancement of environmental protection and conservation. Additionally, a focus includes providing people with greater education about, and access to, environmental resources and technologies. In India, a key approach is to start this process by first teaching key environmental concepts to children. By instilling awareness of and respect for the environment in the minds of the young, it is argued, the government of India is investing in a better, more economically sound future. It can thus be observed that the value of the NGOs is fundamentally bound to the country's culture of change as well as economic progress.

While the effects of globalization, the caste system, and the increase of 'slum' populations in India are important, particularly given issues of inequality in relation to poverty, at local, national, and global levels, they are not, however, the focus of this article. Rather, this paper provides an introduction to the background and history of Eco-Clubs in India as an example of an environmental education program, documents, illustrates and assesses their work and framework, as well as their impact on youth. While there is benefit in comparing environmental education in India with that in other countries, it should be stressed that a formal comparison falls beyond the scope of the study discussed here.

Environmental education in India: history and evolution

India has always been rich in its biodiversity and recognized the beneficial effects of environmentally-focused instructional programs as an essential part of education. According to Sarabhai, Shivani and Raghunathan (n.d.):

With over a billion people and at least 17 major languages, the diversity of India in terms of culture and biological wealth is enormous. In spite of rapidly changing lifestyles, the traditions of living in harmony with nature and of environmentally sound practices underpin the lives of most people. It is against this backdrop that the country's environmental education strategy has evolved.

For over a century, India has had a large number of active NGOs involved in a variety of environmentally-focused activities, from school programs and natural resource management efforts, to policy analysis and activism. The oldest NGO working in this area is the Bombay Natural History Society, started in 1883 in Mumbai (www.bnhs.org), which from 1889 onwards, created and developed the science club concept. (Other nineteenth century education efforts include bird watching, national parks conservation, and wildlife sanctuary protection.)

Into the twentieth century, numerous organizations and programs began to surface. The Assam Science Society was created in 1953 to disseminate science knowledge and impart environmental education and training through camps for teachers and students, as well as conducting environmental surveys (www.vichar.nic.in/Allinthegame/ngo_2.asp). The World Wildlife Fund (WWF) was incorporated in 1961, and in 1976 it started 'Nature Clubs' for youth (Atroley 2006). The Madras Naturalist Society was

founded in 1978 with the primary aim of 'creating awareness among the general public in nature and environmental conservation' (www.blackbuck.org.in). In 1984, the Centre for Environmental Education (CEE) was established to spread awareness of environmental issues and contribute to finding solutions. Of its many achievements, CEE developed a well-known book of activities printed in approximately 14 different languages (Directory of NGOs 1999).

Many enabling and empowering activities, with various positive impacts, have been carried out in the form of coordinated nationwide projects. One such major project has been the Bharat Jan Vigyan Jatha (BJVJ) of 1987, known as the 'People's Science Movement'. This was a predominantly rural-based program, through which people accomplished important environmental tasks without funding; indeed, they did not operate under any formal or regimented system, but were rather an organized force within the community.

India also has a rich and inspiring history of environmental activism. NGOs have been a part of this and engaged in a variety of activities to influence political affairs. Environmental NGOs have lobbied states, put pressure on economic decision-makers, and sought to alter the cultural frames to shape widespread attitudes and behavior (Wapner 2002). The Chipko movement, for instance, started in the 1970s. Its aims have been to foster non-violent resistance to the destruction of trees and forests including protection and conservation (www.ecoindia.com/education/chipko-movement.html). Additionally, Barefoot College was established as an experiential ('learning by doing') institution in 1972 'to address the problems of drinking water, girls education, health and sanitation, rural unemployment, income generation, electricity and power, as well as social awareness and the conservation of ecological systems in rural communities' (www.barefootcollege.org). Sustainable agriculture, and its wide-ranging projects, has been known for generations as a pathway out of poverty for India's rural poor communities.

In contrast, at the formal level, schools, colleges and universities have only recently taken up environmental education. Teacher training with an environmental orientation began to emerge across India in the early 1990s, under the aegis of the Ministry of Human Resources Development. The concept and substance of environmental education, as well as the need for revised curricula and teaching methodologies, was the subject of a study conducted by the Pune-based Bharati Vidyapeeth Institute for Environmental Education (BVIEER 1999). The two-year long study led to observations on the efficacy of the then school environment education curricula at the state and national level. Another focus of the study was the issue of motivating students to care about environmental preservation. Once existing environmental concepts in school curricula were identified and major gaps found, a pilot study was launched with textbook revisions made in 800 schools in eight states, to ensure that the concept of the environment and its preservation were taught to students. BVIEER's recommended program was subsequently implemented in 100 schools in Maharashtra, Goa, Andhra Pradesh, Assam, Jammu and Kashmir, Punjab, Orissa and Uttaranchal.

In 2003, the Supreme Court of India set forth the directive that environmental education 'should be taught as a compulsory subject at all levels of education' (CPREEC 2007). Despite this order, environmental education as part of formal education remains in its infant stages. According to the CPR Environmental Education Centre, environmental education could be much more effective if more teachers shifted their instructional paradigm. Wider progress would occur when teachers: are

properly trained and motivated to integrate environmental education into the formal curricula; teach environmental education on a multi-disciplinary basis rather than as a separate subject; and, put a greater emphasis on practical experience related to the environment rather than predominantly classroom learning.

Significance of environmental education theory and practice

Many theoretical frameworks have been developed which seek to understand the fostering and development of environmental attitudes and behaviors, over several decades of research. In particular, as most relevant to this study and to implications for other settings, Kollmuss and Agyeman (2002) have explored the models and gaps in having environmental knowledge and environmental awareness, and displaying pro-environmental behavior. They conclude that what forms and creates pro-environmental behavior is so complex that 'it cannot be visualized through one single framework or diagram' (239). Instead, they analyze factors having some influence on behavior, whether positive or negative; including: demographics; external factors including the institutional, economic, social and cultural, as well as internal factors, such as motivation, knowledge, awareness, values, attitudes, emotion, responsibilities and priorities.

Based on the investigations of Kollmuss and Agyeman (2002), environmental knowledge, values, and attitudes, combined with emotional involvement, are argued to make up a multifaceted attribute known as '*pro-environmental consciousness*'. They note this is all rooted in a broader value system and shaped by personality traits as well as both internal and external factors. Social and cultural factors can, conceptually, be identified as a separate category, yet there remains debate on how these may tie in regarding overlap with internal/external components as well. These are all important considerations for practice and program delivery regardless of country of origin.

The study reported here included exploring how youth increase their environmental awareness and offers examples of the relationship to their self-reported behavior changes and attitudes developed based on their knowledge gained through their involvement and participation in Eco-Clubs. The next section describes the origin and funding of the NGC in India, before discussing the methods of the empirical work in the project, and its findings.

Origin and funding of National Green Corps in India

To return to the historical outline above, the Indian Ministry of the Environment and Forests (MoEF) developed their environmental education programs from the nature club model in the 1980s. The model provided a structure, logistics and program consolidation, and its previous success helped the MoEF raise the standards and visibility of environmental education across India through this new and distinctive national initiative.

This chapter in the history of environmental education in India began informally with the concept of the 'Eco-Club' arising in 1986, first known as a 'Scheme'. Financial assistance was provided on a case-by-case basis with no institutional framework. In 2001, the National Green Corps (NGC) program was developed and provided the framework needed for the Eco-Clubs to succeed. The NGC is implemented country-wide with an overall goal of 'spreading environmental awareness among school children'. More specifically, the aim of the NGC is: 'To impart environmental education

and to encourage and mobilize participation of school children in various environment education activities in their localities' (MoEF Annual Report 2005).

Furthermore, pursuant to this purpose, the following statement provides support for the MoEF initiatives for strengthening non-formal environmental education to:

... educate children about their immediate environment and impart knowledge about the eco-systems, their inter-dependence and their need for survival, through visits and demonstrations and to mobilise youngsters by instilling in them the spirit of scientific inquiry into environmental problems and involving them in the efforts of environmental preservation. (envfor.nic.in/divisions/ee/ngc/index_ngc.html)

This goal is being achieved by establishing Eco-Clubs in every district across India with an emphasis on action-oriented environmental programs. The respective governments are free to set up as many Eco-Clubs as desired, yet financial assistance is only provided by the MoEF to a certain number of Clubs per district.

The scheme (envfor.nic.in/divisions/ee/ngc/ngc_brochure.html#1) as originally developed, operated through Eco-Clubs formed in participating schools as follows:

- Each Eco-Club has 30–50 children expressing interest in environment-related issues.
- Each Eco-Club is supervised by a teacher-in-charge (TIC), who is selected from among the teachers of the member school, based on interest in environment-related issues (or through appointment by the school principal).
- Each Eco-Club should be provided with resource material in the preferred language apart from a small monetary grant (seed allocation) of 2500 Rupees (Rs. 2500/-) per annum beginning in school year 2005–2006 at the time of the present study (formerly Rs. 1000/- per annum), for organizing different activities.
- A district implementation and monitoring committee (DIMC) supervises the program, organizes training for TIC's, and periodically monitors the implementation of the scheme at district level. There are one or two master trainers in each district to assist TICs for smooth functioning of the Eco-Club activities.
- A state steering committee oversees the implementation of the scheme.
- The state nodal agency coordinates the scheme's implementation in the state and organizes related activities (e.g., training for master trainers).
- The national steering committee gives overall direction to the program and ensures linkages at all levels.

Table 1 reflects a basic depiction of funding history since the program's inception.

Table 1. Financial allocation via start up funds per Eco-Club.

School year	No. of Eco-Clubs per district	No. of Eco-Clubs supported	Amount of funding from MoEF (per yr/per club)	Financial assistance provided
2001–2002	100	57600	Rs. 1000/-	Rs. 5,39,09,392/-
2002–2003	100	37206	1000/-	4,46,11,499
2003–2004	150	78250	1000/-	7,74,06,708
2004–2005	150	68125	1000/-	7,31,10,540
2005–2006	150	67943	2500/-	17,55,90,728
2006–2007	250	87353	2500/-	17 to 20 crore
2007–2008	250	91447	2500/-	17 to 20 crore

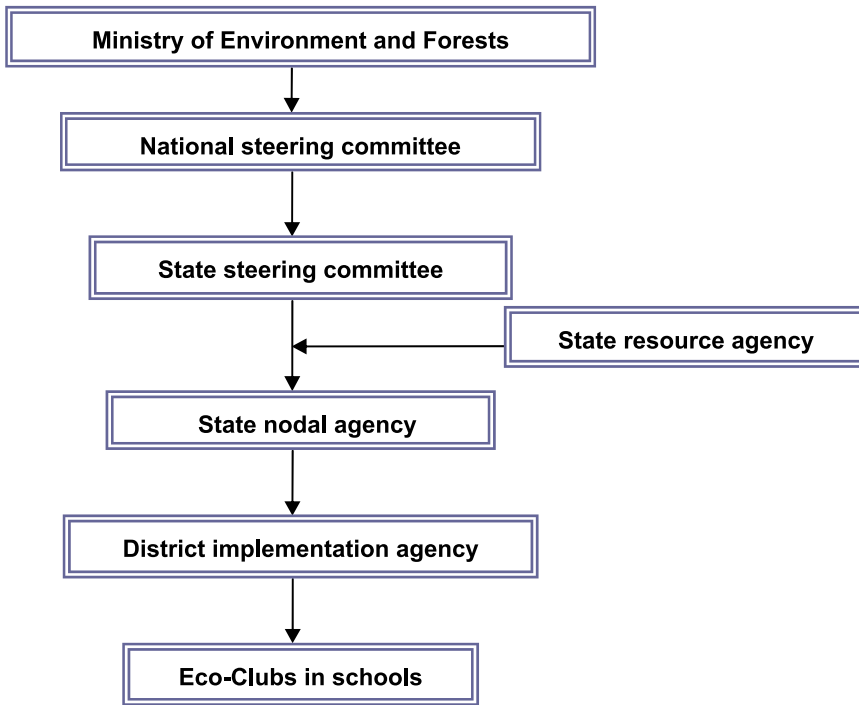


Figure 1. Current structure of the NGC Eco-Club management.

Figure 1 demonstrates Eco-Club administration through the 2005–2006 institutional framework.

Eco-Clubs provide children and youth exposure to the environment necessary to mitigate an often-sedentary indoor lifestyle. Hence, the purpose of the present study was to evaluate these programs to determine if current efforts are successful and, if so, how. If not, why, and what corrective measures are essential for further consideration.

Methods

The empirical phase of the research in this study involved a two stage evaluation design (Creswell 2003) consisting of two phases:

- (1) Document review of four previously completed evaluations (i.e., 12 states studied) and activity highlights from all 35 states/UTs.
- (2) Semi-structured interviews and focus groups with youth.

Other documents reviewed include a sample of annual progress reports from selected Eco-Clubs, a small sample selection of related internet sites, and the 'education and awareness' section of the MoEF Annual Report for 2004–2005.

The project's first phase consisted of a secondary data analysis and an objective document review procedure. This involved primarily reviewing four evaluation reports completed in 2005 by four separate non-governmental organizations in India. Second, a variety of materials and documents about the NGC were reviewed including exploration of website content relating to various sample programs. Activities

conducted by Eco-Clubs in all 35 states/UTs were captured from a random sample of annual reports submitted by state nodal agencies. After compiling all the information, the document review included the following:

- (1) Contextual information about the evaluations as a whole.
- (2) A detailed explanation of key successes, failures and challenges faced by Eco-Clubs and managing agencies.
- (3) Program implementing procedures since NGC inception in 2001.

Next, at a different timeframe and location, for purposes of inter-rater reliability, the project research associate first reviewed the 'at-a-glance' matrix that was initially designed and completed by the senior researcher (the author). The four evaluation documents were then examined for content based on Eco-Club objectives, and feedback was provided for modifications and/or additions to the matrix. Content validity was achieved as each research team member compared outcomes, and through an analytic induction process, determined the meaning of the responses to formulate logical items used for the final list as provided in the final matrix.

Document review

In 2004–2005, the MoEF identified and contracted four organizations to conduct evaluations based on the previous experience of these entities. These organizations responded to a request for proposals. Those reports were completed by the following New Delhi-based organizations:

- (1) Centre for Media Studies (CMS).
- (2) Development Alternatives (DA).
- (3) The Energy Resources Institute (TERI).
- (4) World Wildlife Fund (WWF).

The agencies were required to collaborate in order to be successful. Together they determined, in conjunction with the MoEF, that the overall goal of their evaluation process was to assess and understand the effectiveness of the NGC Eco-Club programs in relation to the MoEF's set objectives and the program impact on school children. Hence, gaps could be suitably addressed and any best practices successfully replicated during future countrywide implementation phases.

These four evaluation reports were released to the research team by the Ministry for review and analysis. The Eco-Club sample size was either 50 or 100 per state and care was taken to ensure a representative sample. Each evaluating agency explored the following seven factors:

- (1) Role of teacher-in-charge (i.e., strengths and weaknesses).
- (2) Eco-Club impact on student members in terms of sensitization towards the environment (to clarify, 'environmental sensitization' is a term utilized in India to signify 'environmental awareness' – i.e., students become more *sensitized* to how environmental issues affect their environment as their awareness increases).
- (3) Usefulness of resource materials.

- (4) Coordination between nodal and resource agency.
- (5) Role of resource agency.
- (6) Overall implementation and monitoring mechanisms.
- (7) Suggestions for improvement.

The four evaluation teams came together, in advance of their respective studies, to discuss a common strategy. A meeting convened in December 2004 to discuss the collective purpose and determine content of questionnaires used for consistency purposes across the country.

Major tasks were discussed and agreed upon, based on arrangements with the MoEF. Components of each study were to include all items making up the '34 points' of the Eco-Club criteria (e.g., activities, resource materials, capacity building initiatives). Furthermore, each agency was supposed to follow a mutually agreed upon procedure for obtaining sample size and design, selection of districts and Eco-Clubs, and collectively developing the content of data acquisition tools. Each agency agreed to interact with the same category of NGC agencies, officials, personnel, etc, a common reporting format was to be adhered to, and all deliverables were to be consistent based on the terms and plan of evaluation activities.

To ensure consistency of research design and data collection, questionnaires were handed out to each entity participating in their evaluation for administration to intended audiences. The goal was to gauge the efficacy of the program and obtain firsthand information from the students, teacher coordinators, other school teachers, principals, management, district and state level coordinators of the program and members of the various committees, and Panchayat Sarpanchs (assembly of elders). Suggestions and recommendations based on overall findings were provided in each report.

Interviews

During Phase 2 of the project, two primary qualitative methods were employed: Semi-structured interviews with key informants, and focus groups with student members of three Eco-Clubs in two states. Interviews were conducted by the senior researcher and, in Himachal Pradesh and Jaipur, the NGC staff assistant from the Ministry assisted by translating questions and comments between interviewer and respondents. Similarly, the project research associate assisted during interviews in New Delhi. Conversations were audio-taped and notes taken during the interview process; a few exceptions occurred and informal interviews took place in English using handwritten notes taken in lieu of audio-taping. During a six-week period, 23 professionals and 45 students were interviewed (lasting anywhere from one hour to 90 minutes).

As decided by the deputy director of the MoEF, focus groups were held at the Government High School, Moginand, Sirmour District in Himachal Pradesh, Arvind Shri Vidya Mandir Secondary School and Shri Mahavir Digamber Jain Senior Secondary School in Jaipur. Only results of these focus groups, along with the Phase 1 document review, are reported in this article.

Data analysis

Focus group data were analyzed using a constant comparative technique (Creswell 2003) and analytic induction as tools for analysis. First, after the data were organized,

similarities between groups were established (e.g., exploration of common themes). Second, each group of individuals was subdivided into similarities and differences to obtain within-group commonalities and variations.

Interview transcripts were first organized systematically using descriptive codes derived from the questions. Emerging patterns, themes and categories were then coded as part of the movement from data description to conceptual clarification. This analytic procedure involved each researcher independently reading and re-reading transcripts to ensure familiarity with the data. That is, keyword associations and patterns emerging from the aggregated data responses were grouped into categories that relate, to some extent, to the NGC '34 points' for discussion and potential decision-making. Based on the structure of this study, no effort was made to tease out the relative effects of gender, school type or year in school.

Document review

At the end of Phase 1 of the present study, all four agency reports were extensively reviewed and synthesized, then comparatively analyzed. This process provided details about the individual programs and collective effects of the NGC on youth participating in Eco-Clubs. Results assisted with providing overall recommendations for enhancing program operations and management.

The final reports submitted by each agency did not follow the same standard reporting format as indicated in preliminary agreements during the evaluation planning process. Additionally, type of content reported also varied. For instance, categories and subheadings differed across reports, making comparative analyses challenging.

Table 2 is an at-a-glance matrix of the 12 states evaluated by four agencies, including comparative highlights.

Findings and discussion

Findings, overall, show the concept and outreach of the NGC program is mostly well organized. The program functions very well in some districts, moderately in some others, and is deemed poor or unsatisfactory in others. In general, while a few good recommendations were provided, the emphasis among the four reports was on the results of the survey content and program operations versus what solutions they would suggest based on their findings.

Table 3 summarizes key conclusions reached by the four evaluating agencies with respect to operations, monitoring, capacity building and fund allocation.

With respect to the effectiveness of Eco-Clubs, there were some discrepancies within the four reports which suggested where barriers impede program effectiveness. For example, the suggested minimum membership per Eco-Club is 30 members, yet in certain areas, such as Andhra Pradesh, the fixed number was 20 students at the time of the study. The cost of training teachers can also be immense, and government financial assistance to Eco-Clubs may not be adequate. Because of this fact, India's government has endeavored to allocate more monetary resources for the sustainability of Eco-Clubs over the years.

On the local environment level, a primary positive impact has been observed within the school buildings and physical property boundaries. Some of the most popular activities across India included outdoor activities such as tree plantation and cleanliness

Table 2. At-a-glance matrix of 12 states evaluated by four agencies.

	CMS environment	Development alternatives	TERI	WWF
States surveyed and <i>n</i> districts	<ul style="list-style-type: none"> Madhya Pradesh (<i>n</i> = 5) Andhra Pradesh (<i>n</i> = 5) Uttaranchal (<i>n</i> = 3) 	<ul style="list-style-type: none"> Punjab (<i>n</i> = 3) Rajasthan (<i>n</i> = 5) Chhattisgarh (<i>n</i> = 3) 	<ul style="list-style-type: none"> Assam (<i>n</i> = 5) Mizoram (<i>n</i> = 5) West Bengal (<i>n</i> = 3) 	<ul style="list-style-type: none"> Maharashtra (<i>n</i> = 5) Orissa (<i>n</i> = 5) Tamil Nadu (<i>n</i> = 5)
Study objectives	<ul style="list-style-type: none"> Appraise activities/performance Evaluate relevance and quality of resource materials provided Understand capacity building process, its significance, quality and usage Assess role of agencies and other stakeholders in strengthening clubs Review effectiveness of reporting, feedback/monitoring followed by agencies involved 	<ul style="list-style-type: none"> Assess coordination: state nodal agency, district implementation & monitoring committee (DIMC), and schools Study activities/actions (schools) Evaluate distribution of financial assistance and resource material (quality, variety, and relevance). Understand capacity building: process, significance, quality, usage Review effectiveness of reporting, feedback, monitoring 	<p><i>Background to the NGC scheme provided as well as the status of schemes across each state; however, no study objectives were stated for the evaluation (it can be assumed this is the same as the other 3 evaluations)</i></p> <ul style="list-style-type: none"> Appraise activities and performance of the Eco-Clubs Evaluate relevance and quality of resource material provided Understand capacity building process, significance, and quality Assess the role of various agencies and stakeholders in strengthening the Eco-Clubs Review effectiveness of reporting, feedback, & monitoring 	<p><i>Note: All 34 points were listed in this section as components of the study:</i></p> <ul style="list-style-type: none"> Activities of Eco-Clubs Resource material Capacity building initiatives Role of various agencies Monitoring and feedback mechanisms
Study components	<ul style="list-style-type: none"> NGC overview in each state Activities of Eco-Clubs in schools Resource materials Capacity building initiatives Role of various agencies involved Monitoring/feedback mechanism 	<ul style="list-style-type: none"> Activities, outreach, and impact at all levels of program State nodal and resource agencies and DIMC Resource materials Functioning of program in schools Awareness and attitude changes of student members Trainings and reporting aspects 	<ul style="list-style-type: none"> Activities, involvement of and impact on students Role of teacher-in-charge Training programs Recognition/awards Resource materials Capacity building, administration, facilities Role of various agencies Monitoring/feedback/barriers Financial/budget issues 	<p><i>Note: All 34 points were listed in this section as components of the study:</i></p> <ul style="list-style-type: none"> Activities of Eco-Clubs Resource material Capacity building initiatives Role of various agencies Monitoring and feedback mechanisms

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Methodology	<p>2 senior researchers/4 field investigators; program visits in Feb/Mar 2005; mixed method (quantitative and qualitative); 5 months to complete study</p> <p>Interviews (<i>n</i> = 519 total)</p> <ul style="list-style-type: none"> Officials: First official at state nodal agency, state steering committee, resource agency Districts: Officials in charge of NGC Schools: Principals, teachers-in-charge, other teachers not directly associated with NGC or student members, Eco-Club members and non-EC students at the schools <p>Observation: Facilities, infrastructure in the school, and eco-friendly practices</p>	<p><i>Did not mention how many researchers or evaluators conducted the study</i></p> <p>Initial meetings: With state level agencies (both nodal & resource). All pertinent information and materials were gathered at this level</p> <p>Interviews (<i>total number unknown</i>)</p> <ul style="list-style-type: none"> Officials: state nodal and resource agency, steering committee Districts: DIMC, coordinator Schools: Principals, teacher coordinator, non-teachers-in-charge, Eco-Club members <p>Focus groups with student members (<i>total unknown</i>)</p> <p>Visit around schools: Status of structure, amenities, eco-friendly initiatives & actions</p>	<p><i>Did not mention how many researchers or evaluators conducted the study</i></p> <p>Interviews: (<i>n</i> = 603, incl. focus group)</p> <ul style="list-style-type: none"> State: Nodal agency, steering committee, resource agency Districts: DIMC Schools: Principal, teacher-in-charge, student members, two other teachers not in charge <p>Focus groups: Five focus groups for each district were organized with minimum of eight student members</p>	<p><i>Did not mention how many researchers or evaluators conducted the study</i></p> <p>In addition to mention of the 'structured questionnaire', participatory research is also noted and included: focus group discussions, observations, and interactions</p> <p>Secondary information was utilized: Examples:</p> <ul style="list-style-type: none"> Various reports Resource materials produced by Eco-Clubs, DIMCs, resource agencies, state nodal agencies, forest departments, Government of Maharashtra and NGOs
Data acquisition tools used	<p>Questionnaire</p> <ul style="list-style-type: none"> Members (school profiles), Students (35 items) Teachers-in-charge (45 items) Non Eco-Club teacher (13 items) Principal (5 items) <p>Observation checklist</p>	<p>→ SAME INSTRUMENTS USED</p>	<p>→ SAME INSTRUMENTS USED</p>	<p>→ SAME INSTRUMENTS USED</p>

drives, and indoor events such as competitions (e.g., debates and quizzes). Unfortunately, the same effect was not observed within the community-at-large, such as the communities of Assam and Mezoram. The findings do not yield very positive results in this respect, except, according to the reports, in West Bengal and Maharashtra. The question here is whether the impact is being assessed in terms of changing the attitudes of the community or public, or resolving some local environmental problems. If the former is the case, the researchers of this study believe it is unrealistic to expect a change in the community attitudes so early in the program inception without adequate measures in place. If mitigating environmental problems is the target, then some Eco-Clubs have made an impact on the local environment by taking up specific issues and campaigning activities, as discussed in the section below. The reason for this shortcoming, again, could be attributed to flaws in management and lack of funding.

One of the key findings of the study was the recognition of the need to halt program expansion in order to first streamline the present organizational structure and hierarchy of program management and implementation. The current system is considered 'too top heavy, too cumbersome' and is plagued with a serious lack of accountability and breakdown of communication. Leaders must have a sense of both commitment and time in order to make the program work. It was also found that there is a sore need for more reliable and ongoing financial assistance in order to implement the program effectively over the long-term. From the participants' perspective, the focus groups resulted in essential feedback and discoveries on the value of the process and helped determine where improvements need to be made.

Focus groups

Kollmus and Agyeman support the view that solving environmental problems must often include addressing one's attitude towards the environment. The opportunity to talk with high school students in India was both extraordinary and powerful for the senior researcher. Whether based on awareness to keep surroundings clean or the need to conserve natural resources by reusing and recycling wherever possible, these young people had learned that awareness and attitude are related. Moreover, few would disagree the best way to attempt to bring about a change in attitudes in society is through work with children and youth.

A content analysis procedure was completed using focus group interview transcripts with Eco-Club members. Commonly held themes resulting from these interviews, as well as the outcomes and overall interpretation of six context-based themes, are noted in this section and shown in Table 4.

First, level of personal awareness of the environment was identified. This domain was multifaceted in that students displayed a level of awareness regarding, how they learn they are not separate from nature but rather are an integral part of it. For instance, this was evident in their recognition that maintaining positive well-being is not possible without clean air and clean water. This category also included the students' awareness with respect to the effects of degradation, benefits of trees, dangers of dump sites, hazards of smoking, need for habitat protection, and recycling. They also learned and understood that being part of nature means the environment must be protected to effectively deal with health issues, such as sanitation and disease.

Second, an interest in providing environmental awareness and education to their local communities was identified. Such campaigns included education on the use of jute bags rather than plastic, 'do not litter' campaigns, the use of rain tanks for water

Table 4. Themes commonly held by Eco-Club members participating in the focus groups¹.

Outcome	Context (examples)
Personal awareness of environmental issues	Effects of degradation, benefits of trees, need for habitat protection, need for recycling, dangers of dumpsites, environmental connection to health issues (sanitation, illness, disease, etc), dangers of smoking
Interest in providing public awareness	Desire to create awareness among others (family, friends, general public), conduct rallies, informing others about use of jute bags instead of plastic, 'do not litter' campaigns, educate about making rain tanks for water accumulation, impacts of noise pollution, vehicle over-use & emissions, environmental messages/slogans
Knowledge gain about the environment	Ecosystem information. How to conduct rain water harvesting, comprehension of and benefits relating to planting trees (for humans and all life forms), paper production, detrimental effects of polythene, concepts related to global warming, habitat loss, importance of salt testing, consequences of soil erosion, why and how to test water
Attitude change	Motivation to help find solutions to environmental issues, aspire to make a difference in local community, modified opinion of sanitation issues.
Behaviour change	Turning light switches off, conserving water (broad), use of rain water, community service (e.g., serving water to passengers at rail station, clothes distribution to the poor), improvement in personal hygiene, ongoing use of compost at school and home, reduced littering
Barriers (in some instances, not others)	Inability to do more activities based on limited funds, fear that adults won't listen to them, resource materials not received, not enough Eco-Club meetings

Note: ¹Government High School, Moginand, Sirmour District in HP, Arvind Shri Vidya Mandir Secondary School and Shri Mahavir Digamber Jain Senior Secondary School in Jaipur.

accumulation, impacts of noise pollution, and vehicle over-use and emissions. Environmental messages and slogans are used to promote these concepts. As communities continue to become more 'eco-conscious', students expressed a desire to contribute to this progress by sharing what they are learning as well.

Third, providing awareness to others was also explored through imparting or gaining specific knowledge about the environment. According to students, this included learning how to conduct rain water harvesting, tree planting, paper production, and saline and water testing. It also involved learning about factors that are detrimental to the ecosystem, such as polythene, habitat loss, and soil erosion. Students learn and communicate how they can improve their own environment by exploring the consequences of their actions. Students understood that keeping the environment clean is not only a personal responsibility, it is a moral obligation.

Fourth, awareness and new knowledge sparked an attitude change providing the impetus to help find solutions to environmental issues, help change public opinion on sanitation issues, and make a difference within their local community. Although not part of the study objectives, nor explicitly verbalized by the youth, these could be indicators of perceived 'activism' at an early age. Analyses, however, are directed to their interest and desire to 'make a difference', and as a means of building community pride. As these young people begin to realize India has representation from almost every

major category of ecosystem in the world, they want to find innovative ways of connecting the remarkable diversity of human cultures in their local environment to help resolve problems so everyone benefits.

Fifth, results show the natural progression from an attitude change to a distinct behavior change among these youth, such as proactive action towards the conservation of power and water, increased community service, recycling, reduced littering and efficient use of rain water and compost. This is a reflection of the Eco-Club activities, teachers and peer mentors/friends, and they expressed pride in how they had changed through their self-reported, pro-environmental actions when at home and through community-based opportunities, both within and beyond their neighborhoods.

Last, some youth made references to barriers to participation, which may be present in Eco-Clubs across the country. Sample contexts of these barriers included the inability to do more activities based on limited funds, fear that adults would not listen to them, non-receipt of resource materials from the assigned supervising agency, and insufficient Eco-Club meetings to assist with carrying out individual project demands. Students were savvy in comprehending the need for capacity building, discussed their desire for more trips away from their school setting, and some felt that if teachers and other adults involved in the program had better training, some might be able to provide more guidance. Standards are viewed as so high in India's schools that the students know they must fit into the present order and need to cooperate effortlessly. The present system creates youth who are easily influenced and who often fit into the educational machine without friction, and can be swayed by nationalism, religion, or caste. They are often bound by authority and separated by gender, yet in this area, they report their excitement comes from grasping new aspects about the natural world intellectually, emotionally and artistically. Consequently, certain fears emerged that adults 'might not listen' regarding their interest in learning and doing more beyond what they were sometimes permitted to do, considering programmatic constraints (e.g., limited funds, inability to meet more frequently). Finally, based on information obtained from various adults involved and at different organizational functions of Eco-Clubs, students began to learn they, at times, did not receive resource materials (e.g., books, field science manuals) when they should have been distributed, and they uttered frustration, wishing they understood why this was the case.

Recommendations from the project team

The findings of this study bring into focus several important points for the field in a number of key areas of the Eco-Clubs work. The first relates to the conceptual framework of Eco-Clubs. It has been found that the spirit behind NGC is alive in India and has received positive overall support among actively involved Eco-Club teachers and NGC leaders. However, the need to reorganize the NGC management structure and consider a new program design for implementation has also been established. The necessity for all management and implementation levels involved to focus less on quantitative output and more on qualitative outcomes and program impacts was also evident.

Overall, the NGC has been generally successful in enriching the school curriculum with supplemental student activities and tasks, such as tree plantation and cleanliness drives (the most popular activities in Eco-Clubs across India). At the same time, however, the NGC has presently a mere 'peripheral presence', which is reflected in the whole system and operation of the program. Commitment among some leaders can be questioned and seriousness of outcomes is vague. To make an Eco-Club an integral

part of the school and remove it from its peripheral status, it is recommended that management and implementation be improved at all (state and district) levels. A system of periodic performance reviews could also strengthen the NGC.

At present, fundraising – immensely important for recommended improvements to take place – is lacking. Schools may need assistance regarding how and where to look into alternative funding avenues to fulfill Eco-Club objectives. Moreover, an education officer highly qualified in environmental education should be dedicated to the Eco-Clubs within the State Department of Environment and Forests.

Financial considerations are not the only concern. Findings show the majority of school teachers, or ‘teachers-in-charge’ (TIC), are overloaded with other teaching assignments and school-related tasks, so they report a lack of free time to dedicate to Eco-Club projects. This is also due to the availability of trained teachers and lack of quality training, which demonstrated a pattern of inconsistencies with program supervision and delivery. Mandatory, across-the-board training is non-existent, and the lecture format dominates. More innovative, hands-on techniques were requested and are recommended for the future as an integral component of adequate learning and professional development.

Other suggestions for program improvement include: developing an effective publicity campaign for Eco-Clubs at the national level; establishing a required standard reporting format for each program encouraging the involvement of parents or guardians and the community; and, holding agencies accountable in adherence to fiscal responsibility. Enhancements such as acquiring needed resource materials, focusing on peer mentoring, and creating new opportunities for students and youth, should be addressed more efficiently through attentiveness to present and future needs.

Improving the scheme for future

An acute awareness exists of both the successes and challenges of India’s Eco-Clubs. One of the first key actions recommended to the MoEF was to suspend program expansion. The issues investigated have provided significant findings to recommend a moratorium on Eco-Club expansion until some of the problems are mitigated. This relates to communication breakdowns, reporting problems, funding issues, training deficiencies and inconsistencies, lack of follow through by several managing agencies in the hierarchy and NGC structure, and problems and inconsistencies with resource materials.

The organizational structure and hierarchy of program management and implementation could also be streamlined. As previously stated, the current system is considered ‘too top heavy, too cumbersome’, plagued with a lack of accountability and breakdown of communication. A suggested structure for managing the program to increase efficiency and enhance more targeted results – to meet NGC goals – is reflected in Figure 2. There are currently too many levels in the program management and implementation hierarchy; therefore, as reflected in findings, too many people are involved in attempting to manage India’s Eco-Clubs. This has created conflicts, communication challenges, and a disconnection ultimately affecting this unique program’s intended beneficiaries: the students.

Rationale for structure change

Education at the state level is a state subject; environment is concurrent with education so these must operate hand-in-hand. State level operations for both environment and

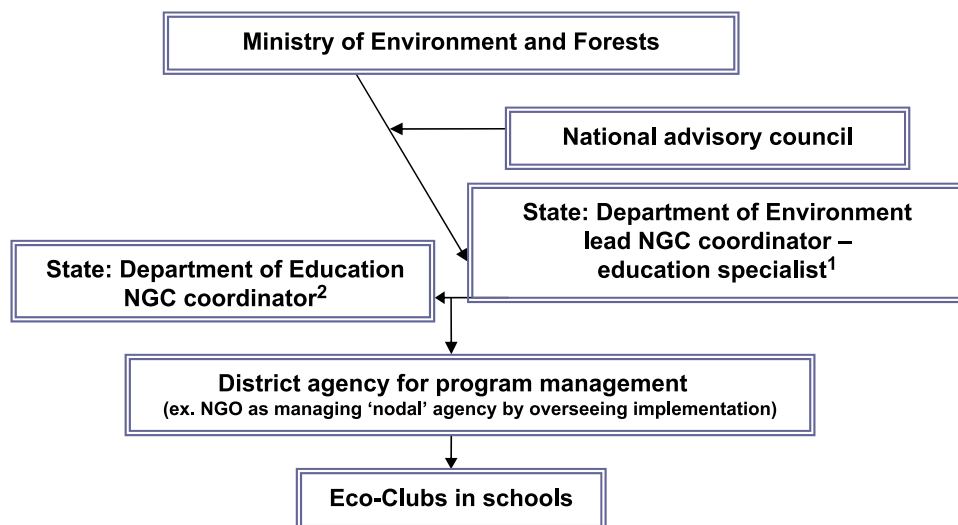


Figure 2. Suggested framework for program implementation.

Notes: ¹Coordination at this level can also be completed by the Tribal Department for tribal districts (in tandem with Department of Environment or in lieu of). ²Department of Education coordinator could be responsible for overseeing resource materials in consultation with the environmental education specialist (see description that follows).

education departments are vital. The NGC needs specialized professionals working at the state level within the education department because the Eco-Clubs operate in schools, and the most direct agents are the teachers-in-charge. Training typically occurs at universities under the stream of the Department of Education. The Pollution Control Board (PCB) or Department of Environment is also a state level operation. According to the current Eco-Club structure, the State Department of Education does not have direct link (e.g., chain of command) to the PCB or the Department of the Environment.

The current NGC structure provides many channels for implementation, but they do not actually link based on reporting and hierarchy. Different entities involved do not report to each other so communication is reported as 'inadequate'. For example, in many cases, results of both phases of this study show meetings do not occur, reports do not get submitted, follow through is lacking, and more. Many decisions are made yet, too often, are not followed up with for implementation. Thus, there is little accountability given the distinct government operations and NGO involvement. MoEF only has official communication with the PCB and Department of Environment.

Design for re-organization elaborated

At the state level, the Department of the Environment should have a dedicated 'education coordinator' (or 'officer') position. This would ideally be parallel to the qualifications of certain education personnel at the state Department of Education (e.g., college degree qualifications for education with background in environment). The Department of Education should also have a person dedicated as the NGC coordinator. The Department of Environment's education officer would be the primary lead reporting to the MoEF with responsibilities that include ongoing communication with the NGC education official at the Department of Education.

Although primary operations for NGOs occur at the state level, a variety of NGOs could be invited to help manage the overall responsibility of Eco-Clubs at the district level. An important recommendation is the NGO must be active and want to work with Eco-Clubs, and would therefore be the district level implementing agency, for instance allowing for greater innovation of presentation, ideas, and implementation of the scheme. The NGOs have the knowledge and imagination; the state agency as the current 'nodal' managing body does not necessarily have the wherewithal or creativity needed for developing environmental education programs for school-age youth.

Within the fiscal structure of the Eco-Clubs, the MoEF could provide a level allocation directly to the NGO to oversee Eco-Clubs at the district level. The MoEF is encouraged to omit the full district *committee* as results show this may be 'unnecessary and excessive'. Continuation of the NGO as the implementing agency could depend on periodic performance review to supplement the annual report already being submitted by state agency officials. This would also help alleviate the problems for inactive NGOs that *do* want to be involved but receive no remuneration for their efforts. A suggestion for such process would be for the interested NGO to submit a proposal to be the managing 'nodal' agency at the district level.

The MoEF does not need a separate resource agency to be involved or an entire district committee with multiple officials. The two state coordinators could be responsible for all facets of managing the process and distribution of resource materials. Outsourcing for resource materials could be also carried out based on the needs and discretion of the states. If state agencies function well, this may be unnecessary. Where state agencies are not functioning well, this plan could be executed. Another suggestion for re-organizing was for the MoEF to consider omitting all committees, except at the national level, and this group would operate as an 'advisory council'.

MoEF can act as the program's patron, yet involvement in operations should be reduced or removed. Regardless of how implementation of the scheme is re-worked, a strong recommendation based on all findings from this study is the placement of a dedicated education officer at the state level, as mentioned above.

For program sustainability, the following components ought to be addressed to avoid further bottlenecks and breakdowns of the system: Teacher trainings, distribution of adequate funds, availability of resource materials for direct use by the Eco-Clubs in schools (including production in the local language), and decisions on appropriateness and benefits of integrating Eco-Clubs into the curriculum. For instance, complete infusion is one mode; another is remaining external as a 'club', while maintaining this program as a stand-alone extracurricular opportunity for students is a third idea.

A report card system (e.g., for evaluation) and development of a program timeline could be considered as an efficient monitoring and tracking tool. Finally, the MoEF should also consider focusing on national publicity of Eco-Clubs by creating a program promotion campaign for advertising the mission and vision, existence, and overall activities being accomplished by students involved in these Clubs. A tagline or program slogan could also help generate more consciousness towards growing environmental problems.

Enhancing the role of NGOs

NGOs clearly have an important role to play in assisting with the successful integration of environmental education through Eco-Clubs. While recommendations resulting from this study focused on offering suggestions to the MoEF regarding how best to restructure the government side to be more efficient, consideration for how other

organizations can also play a stronger role is also important. First, non-governmental organizations offer the community a public voice in the policy process and, through their involvement with the schools, NGOs should find new ways to advocate for improved policies more strongly on behalf of the Eco-Clubs. Many provide students with resource materials and environmental education equipment, for example, yet they can also consider how best to influence policy decisions with the MoEF in how they operate the Eco-Clubs.

Second, the current state resource agency should be a state-based NGO. It would be more aware of the local issues and will have a strong presence in the state. Their support can take on varied forms, as determined by the needs of the schools, students, and the MoEF. It can assist the state nodal agency and DIMC in developing and selecting resource materials, identifying master trainers, and in conducting trainings for teachers-in-charge. Objectives of the NGOs should be promoted with the broader community with messaging that the Eco-Clubs foster healthy, productive, environmentally-aware young adults. Funds for NGO assistance can be raised through local corporations, Panchayats, and other agencies to procure public and private grants. NGOs should become even more involved with Eco-Clubs over time as a necessity to ensure the environmental movement in India continues.

Conclusions

The strengths and weaknesses of the NGC Eco-Clubs in India were determined based on a concurrence of conclusions made by the four evaluation agencies, as well as conclusions based on transcriptions of focus group interviews and various meetings with NGC officials in the two states visited during the study period. Finally, this section contextualizes sample possibilities for future research.

Four organizations were selected by the MoEF to conduct the original evaluations that were used as secondary data sources (i.e., Centre for Media Studies, Development Alternatives, The Energy Resources Institute, World Wildlife Fund). The current study illustrates a document review process of their four evaluations only; analyzing these organizations that completed the original independent reports was not part of this effort. Future research using these methods should consider how these entities differed, what their role is (generally) in environmental education in India, and perhaps how they work together (if at all), e.g., relationship with the government, and with the schools. Additional studies could explore if their backgrounds, ideology, and practices approaches are similar or different, and whether or not this is essential in terms of any given study objectives.

Between an extensive document review, focus groups and interviews, it was found that the partnership programs developed by schools with other organizations, such as committed NGOs, to push the Eco-Club concept forward, have contributed greatly to their ability to provide ongoing and quality programs for students. Despite facing many challenges, the NGC program has proven to be a sufficient consolidation method bringing numerous national level environment-based programs and youth organizations together. The program helps unite students with genuine interest in learning about the environment and find connections with others who want to participate in action-based programs and activities. Eco-Clubs provide a forum educating students who lack awareness or knowledge of environmental issues. Leadership and direct oversight for students and activities are provided by active teachers-in-charge, and those who are extremely committed and motivated often provide their own resources due to the dearth of funds.

Moreover, results of this study also show 'environmental awareness' can have multiple interpretations while also leading youth in a variety of possible behavior changes once a level of awareness and cognizance of issues are gained. While not integral to the study objectives, activism has been mentioned minimally because of the history in India and its overall value to the focus of this article. This did not surface in the analyses, however, revealing an either unrelated part of student learning or a facet that could be considered a latent variable. Because this construct was also not part of the document review process, it was not possible to make any concrete inferences as to its connection or meaning to student experiences or interests. Future research, however, could benefit from exploring how environmental education in the schools can lead to youth becoming activists in their community and/or in pursuit of an NGO career. Understanding what variables and indicators contribute to such possibilities would have potential usefulness in community development and be a factor in emergent youth leadership.

Consequently, there are also several weaknesses to NGC programs that must be addressed. For instance, to maintain the strength of the programs, the system and structure of operating the Eco-Clubs from upper level management functions requires re-examination. At present, the involvement from upper management levels has been reported as 'overwhelming'. Because of this factor, it has been shown that the benefits and desired outcomes of the youth program can be potentially stifled or hindered. The different agencies must work cohesively to ensure program success.

Furthermore, operational shortcomings have been identified, such as the need for better trained, specialist teachers and teachers who have an interest in the environmental field. This may be due to the scarcity of adequate financial backing for these programs. There is also no specialist agency or directorate at the state or district level overseeing implementation, which have collectively resulted in the NGC having only a peripheral presence in the school.

Based on the current study objectives, results from the four major documents reviewed and findings from both focus groups and supplemental interviews, it was surmised that the NGC does not appear to have a clear vision. The broad goal is apparent, however, and as stated this is to raise environmental awareness among students. Yet beyond this, how does the Ministry visualize and see the Eco-Clubs in terms of their significance, and what role do they play in achieving this vision? Such vision must guide all program functions and be carried out through commitment and dedication at all levels.

Additionally, while there were extensive environmental science principles and practices taught to students involved, this appears to be one of the greatest rewards for the teachers-in-charge who were predominantly science teachers at the various schools. Eco-Clubs equally benefit from activities and group discussions that engage students in a deeper understanding of the inseparability of humans and nature. They realize their connection to the ecosystem; future program promotion could include these important aspects as well. As reflected in their basic command of a deeper meaning of the land, and their relationship to it, students benefited greatly from knowing that natural resources not only impart the basis for material existence providing sustenance, but that nature is also a well-spring of spiritual insight and well-being from a holistic vantage point.

Last, from a social science standpoint, future Eco-Club evaluation studies should include comprehensive data collection and analyses (e.g., survey design) to also allow for completion of statistical significance tests. Qualitative data will continue to be

equally essential. Hence a mixed method evaluation study (Cresswell 2003) built on a strong conceptual and methodological foundation, rigorous research techniques and subsequent analyses are encouraged. The Eco-Club scheme has achieved notable success in its brief existence and sustainability is possible if the managing agencies are open to change. In light of this – although, as previously mentioned, comparing these programs with others across the world is beyond the scope of this paper – future research would benefit from comparisons with other countries.

The concept and outreach of the National Green Corps Eco-Clubs is well laid-out. The focused objective of bringing about attitudinal change through greater environmental awareness has been favorable. In the long run, however, lack of coordination, poor feedback mechanisms and inadequate monitoring has resulted in the objectives being mostly unmet. Lack of efficiency at all levels of operation and, in some cases lack of interest and enthusiasm for the program, has led to ineffective implementation. As recommended, a revamping and rejuvenation of the Eco-Club program will require systemic change in how it functions. Working more closely, at all levels, with NGOs showing success based on past experiences in managing and implementing such programs would indisputably yield desired impacts.

If efforts should be directed towards strengthening institutions, training leaders, exchanging information, and integrating knowledge of complementary efforts of multiple agencies dealing with the environment, evaluation needs to be ongoing and a vital tool for making effective decisions. With these essential points in mind, the Eco-Club concept is a viable opportunity for all who desire to educate children and youth about natural resources.

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References

- Adato, M., and R. Meinzen-Dick. 2007. *Agricultural research, livelihoods, and poverty: Studies of economic and social impacts in six countries*. Baltimore, MD: John Hopkins University Press.
- Atroley, A. 2006. *World Wildlife Fund in India: 37 years of wildlife conservation*. www.wfindia.org/about_wwf/who_we_are/history/index.cfm.
- Bharati Vidyapeeth Institute of Environment Education and Research (BVIEER). 1999. *Evaluation of the environment education in the school system program*. www.environment.bharatividyapeeth.edu/html/research.shtml.

- Bombay Natural History Society. www.bnhs.org.
- CPR Environmental Education Centre. 2007. *Environmental education: A tool to make this world a better place to live*. A Centre of Excellence of the Ministry of Environment and Forests, Government of India. <http://cpreec.org/environmentaleducation.htm>.
- Creswell, J. 2003. *Research design: Qualitative, quantitative and mixed method approaches*. Thousand Oaks, CA: Sage.
- Developednation.org. *Key environmental challenges*. www.developednation.org/home.asp.
- Dhavse, R. 2003. Environmental education-revised curricula. *India Together*. www.indiatogether.org/2003/nov/edu-curricula.htm.
- Directory of NGOs. 1999. *Edugreen*. www.edugreen.teri.res.in/explore/ngos.htm.
- Government of India, Ministry of Environment and Forests. www.envfor.nic.in.
- Kollmuss, A., and J. Agyeman. 2002. Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research* 8, no. 3: 239–60.
- Madras Naturalists' Society. www.blackbuck.org.in.
- Ministry of Environment and Forests. 2002. *Empowering people for sustainable development*. Government of India, New Delhi. <http://envfor.nic.in/divisions/ic/wssd/doc1/home.htm>
- Ministry of Environment and Forests. 2005. *Annual report*. Government of India, New Delhi. www.envfor.nic.in/report/main.html.
- Ministry of Environment and Forests. 2007. *Annual report*. Government of India, New Delhi. www.envfor.nic.in/report/report.html.
- National Council for Science and Technology Communication. 1990. www.vichar.nic.in/Allinthegame/ngo_2.asp.
- Reed, D., and H. Rosa. 1999. *Economic reforms, globalization, poverty and the environment*. New York: United Nations Development Programme (UNDP).
- Sarabhai, Kartikeya V., J. Shivani, and M. Raghunathan. n.d. *Environmental education: Challenge for India*. www.developednation.org/issue/environment/resources/articles_cee.htm.
- Wapner, P. 2002. Horizontal politics: Transnational environmental activism and global cultural change. *Global Environmental Politics* 2, no. 2: 37–62.