Rashtriya Madhyamik Shiksha Abhiyan

Environment Management Framework

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Ministry of Human Resource Development
Government of India, New Delhi

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Abbreviations

ARCS	Audit Reports Compliance Systems
AWP&B	Annual Work Plan and Budget
BoQ	Bill of Quantities
BRC	Block Resource Centre
CSS	Centrally Sponsored Scheme
CWSN	Children with Special Needs
DEO	District Education Office
DFID	Department for International Development (UK)
DIET	District Institute for Education and Training
DISE	District Information System for Education
DPs	Development Partners
DPC	District Program Coordinator
DPO	District Project Office
DPR	Detailed Project Report
DPEP	District Primary Education Program
DSEL	Department of School Education and Literacy
EFA	Education for All
GER	Gross Enrolment Ratio
GIA	Grant in Aid
GoI	Government of India
ICR	Implementation Completion Report
IDA	International Development Association
IFB	Invitation for Bid
IGNOU	Indira Gandhi National Open University
INR	Indian National Rupee
IS	Indian Standards
JRM	Joint Review Mission
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MHRD	Ministry of Human Resource Development
MoU	Memorandum of Understanding

NAS	National Assessment Survey
NCERT	National Council for Educational Research and Training
NCF	National Curriculum Framework
NCTE	National Council for Teacher Education
NER	Net Enrolment Ratio
NGO	Non-Governmental Organization
NIOS	National Institute for Open Schooling
NOC	No-Objection Certificate
NUEPA	National University for Educational Planning and Administration
NSS	National Sample Survey
O&M	Operations and Maintenance
PAB	Project Approval Board
PDO	Project Development Objective
PRI	Panchayati Raj Institutions (local government institutions)
PTA	Parents-Teachers Association
PTR	Pupil Teacher Ratio
PWD	Public Works Department
RI	Regional Institutions
RMSA	Rashtriya Madhyamik Shiksha Abhiyan
SC	Scheduled Caste
SCERT	State Council of Education Research and Training
SEMIS	Secondary Education Management Information System
SFG	Special Focus Group
SIEMAT	State Institute of Educational Management and Training
SIS	State Implementation Society
SMDC	School Management Development Committee
SPO	State Project Office
SSA	Sarva Shiksha Abhiyan
ST	Scheduled Tribe
SWAp	Sector-wide Approach
TA	Technical Assistance
TC	Technical Cooperation
TSG	Technical Support Group
UT	Union Territories
WB	The World Bank

1. Goals of RMSA

A centrally sponsored scheme called as Rashtriya Madhyamik Shiksha Abhiyan (RMSA) was launched in March, 2009 by the Government of India to make secondary education of good quality available, accessible and affordable to all young persons. The objective of the scheme is to enhance access to and improve quality of education at secondary stage, while ensuring equity. The scheme envisages inter-alia, providing a secondary school within a reasonable distance of every habitation, improving quality of education imparted at secondary level through making all secondary schools conform to prescribed norms, removal of gender, socio-economic and disability barriers.

Important **physical facilities** are provided which include, (i) Additional class rooms, (ii) Laboratories, (iii) Libraries, (iv) Art and crafts room, (v) Toilet blocks, (vi) Drinking water provisions, (vii) Electricity/ telephone/ internet connectivity and (viii) Disabled friendly provisions.

Improvement in quality through, (i) Appointment of additional teachers to reduce PTR to 30:1, (ii) In-service training of teachers, (iii) ICT enabled education, (iv) Curriculum reforms and (v) Teaching learning reforms.

Equity aspects addressed through, (i) Special focus in micro planning, (ii) Preference to Ashram schools in upgradation, (iii) Preference to areas with concentration of SC/ST/Minority for opening of schools, (iv) Special enrolment drive for the weaker section, (v) More female teachers in schools and (vi) Separate toilet blocks for girls.

Full details of the RMSA framework, guidelines are available in the public domain. (http://education.nic.in/ secedu/sec_rmsa.asp)

2. Need for Environment Management

The RMSA as it currently stands, particularly in terms of what is specified for financing, is to a large extent designed for expanding access‘ to secondary school education. The program gives priority to creation and strengthening of physical infrastructure.

The new schools are mainly in underserved areas, based on school mapping exercises and data from the Secondary Education Management Information System (SEMIS). SEMIS tracks disadvantaged children for every school in the country and submission of SEMIS data is a requirement for accessing RMSA resources.

While the RMSA framework seeks to bridge the current gap in infrastructure requirements, there is not much emphasis on the need and ways to create and maintain a sustainable/environment friendly school campus. In order to develop and strengthen environment, health and safety practices in planning, design, construction and operation of

secondary schools, a framework is needed that could be used as a ready reference by the concerned decision makers and planners involved in the programme. Such as framework is expected to help in over-coming existing gaps/deficiencies in the schools and will enable comprehensive and holistic planning in case of new schools. More so, the very achievement of the programme/project objectives (particularly indicators related to access and equity) depends directly on the provision of a safe, clean and sustainable surroundings in schools to create a conducive learning and teaching environment.

3. Approach for Improving Environment, Health and Safety Management in Secondary Schools

To avoid and/or minimize adverse impacts related to environment, health and safety aspects, an effort is being made towards introducing and integrating the concept of greener buildings' in the programme. Since safe, clean and sustainable surroundings in schools is recognized as a basic pre-requisite for ensuring a conducive learning and teaching environment, an Environment Assessment (EA) study for secondary school programme has been initiated by the Ministry of Human Resource Development (MHRD). This exercise is intended towards facilitating MHRD in overcoming the deficiencies with regard to environment, health and safety aspects in secondary schools in an incremental manner and in introducing/ implementing the concept of **'greener schools'**.

In order to fulfill these requirements, an environmental assessment was proposed for the project. The purpose has been to use the findings from EA study to: (i) integrate environmental principles during site selection, design and construction; (ii) improve operation and maintenance of the school buildings; and; (iii) expand and augment the current good practices with regard to environment, health and safety aspects.

Currently, this draft Environment Management Framework has been prepared with guidance from World Bank. The EMF provides a set of measures/guidelines, which would help in preventing, minimizing and/or managing various environmental, health and safety concerns faced during planning, design construction and maintenance of secondary schools. The EMF will be strengthened / refined further once the results from the EA study become available.

4. Methodology Adopted

Since safe, clean and sustainable surroundings in schools is recognized as a basic pre-requisite for ensuring a conducive learning and teaching environment, the EA study and the EMF preparation for the programme is intended towards facilitating MHRD and the state agencies in overcoming the deficiencies with regard to environment, health and safety aspects in secondary schools and in introducing/implementing the concept of green schools'.

Accordingly, the methodology to achieve this goal involves the following:

(a) Study and review the various acts, rules and regulations of Govt. of India (including those of MHRD) and some State Governments regarding environment, health and safety provisions/aspects that are required to be followed by the schools.

(b) Detailed review of the nature and extent of compliance of environment, health and

safety aspects in schools (covering both existing secondary schools and those that are proposed for upgrading from upper primary to secondary level).

(c) Identification of good practices, strengths, deficiencies and gaps in the existing system/s with regard to planning, implementation, enforcement and monitoring of environment, health and safety aspects in schools.

(d) Preparation of an Environment Management Framework (EMF) that provides/ recommends a comprehensive set of measures to ensure that school buildings and the over-all campus, covering both new and existing construction, are environment-friendly/sustainable.

(e) Development of a detailed capacity building plan for sensitizing and training various stakeholders, particularly the state directorates to guide them on the implementation of the Environment Management Framework.

The purpose of the Environment Management Framework is to serve as a decision-making tool to ensure that the programme design and implementation are environmentally sound and sustainable. It is intended to serve as a comprehensive and systematic guide towards making secondary schools (both new and existing ones) safe, environment friendly and sustainable. It sets forth the process for integrating the environmental, health and safety aspects in the project / sub-project planning, design and lays out the required/appropriate implementation, monitoring and reporting arrangements.

5. Parameters Assessed

The review and assessment includes, but is not limited to the following aspects:

a. Siting / location of the school
b. Planning and Lay-out of the campus (including orientation of buildings; internal circulation arrangements)
c. Structural safety aspects (application and adherence to building codes; condition of buildings)
d. Building Design (building lay-out; space for various activities; materials used)
e. Class room design (space availability; natural light and ventilation; display arrangements)
f. Library and laboratory design (space availability; natural light and ventilation; display arrangements)
g. Measures for Disaster Risk Management
h. Facilities for Physically Challenged
i. Water management in the school (drinking water arrangements; its usage for other purposes; water supply sources and quality)
j. Drinking water arrangements
k. Drainage arrangements
l. Sanitation arrangements and its condition
m. Energy use and management
n. Waste management (collection and disposal)

o. Exposure to pollution particularly dust, toxic fumes, contaminated water and noise.

p. Fire and Electrical Safety Practices

q. Storage, handling and use of various toxic/hazardous materials (such as chemicals used in laboratories).

r. Specific safety measures/precautions in the laboratories.

s. First aid and emergency response arrangements

t. Over-all operation and maintenance aspects (housekeeping; cleanliness and hygiene)

6. Key Environmental Issues

Based on the results from preliminary assessment (including information from secondary sources), some environmental issues that need to be addressed in the programme/project have been identified. While on the whole, the nature of activities proposed under the project/ programme does not pose significant environmental risks, there are some environmental concerns associated with activities such as civil works (new construction/expansion/repair of buildings) and pressure on already stressed basic facilities in the school campus with introduction of new building blocks/ classrooms. In addition, issues pertaining to health and safety also need attention and are directly related to creation and maintenance of a clean and safe learning and teaching environment, which is ultimately linked to the achievement of the programme objectives. The key issues have been categorized into the following categories:

a) ***Location/site selection related issues:*** Location in or near sensitive and ecologically valuable ecosystems, such as wetlands, coral reefs and endangered species habitats; areas with archaeological and/or historic sites and areas where the groundwater is recognized to be contaminated with high/unsafe levels of arsenic and fluoride. This category also includes issues related to individual school/building sites, including siting of schools on or near areas susceptible to health or other hazards – such as on the banks of a meandering river, along watercourses used for human consumption, near industrial waste disposal sites, municipal landfills, hospital waste disposal sites, slaughter houses, hospitals without systematic bio-medical waste disposal mechanism, cattle-sheds, or any other probable source of infectious diseases.

b) ***Design related impacts:*** Issues pertaining to site planning/lay-out and building designs. These include aspects such as proper and adequate drainage, providing safe site slope, safe excavation, removal of trees; indoor air quality in classrooms/ventilation; daylight factor within the classrooms; provision of safe potable water, particularly in the areas where arsenic and fluoride levels are high/unsafe; sanitation facilities and waste management, provision of toilets, hygiene in the school campus and around; non-use of unsafe building materials such as asbestos and low cost chemical (lead) paints.

c) ***Issues related to Design in the Difficult Sites***: Issues regarding special design considerations for difficult sites – such as safety from landslides in hilly areas; cutting at slopes, erosion, land slip due to building on steep slopes; possible filling or destruction of the forests, swamps, marshes, and other wetland areas

d) ***Issues related to disasters:*** Areas of high vulnerability to natural hazards (landslide, cyclones, floods, earthquake); safe design and construction practices and emergency evacuation in the areas prone to natural hazards.

The key environmental issues are associated with the programme / project have been categorized into the following categories:

i. Issues linked to poor/improper site selection and planning (location/site planning/ accessibility)
ii. Issues linked to poor/improper campus lay-out and building design
iii. Construction related issues (including work site safety issues)
iv. Health related issues (linked to sanitation, potable water availability and hygiene)
v. Disaster/Fire Safety Emergency Response Arrangements
vi. Resource management (energy, water etc.)
vii. Facilities for physically challenged

e) ***Safety Issues:*** Fire and electrical safety and emergency response arrangements, including use fire resistant building materials and **evacuation/assembly areas.**

f) ***Issues related to special purpose designs:*** These include provision of facilities for the physically disadvantaged, provision of rainwater harvesting, possible use of solar power.

g) ***Construction related impacts:*** These are issues that could be addressed effectively by good construction management, and include generation of dust and noise; generation and management of construction wastes; maintaining proper cut slopes and work site safety practices.

h) ***Issues related to Provision and Maintenance of Facilities:*** These arise due to the provision, or lack of provision of the required facilities - drinking water facilities, prevention of infections, site cleanliness, health and hygiene, maintenance of site and off-site drainage, and preventing exposure to chemicals/pesticides.

7. Applicable Regulatory/Legal Requirements

Planning, development and management of the secondary schools involves some important obligations, particularly those related to health and safety aspects. These include fire safety; storage and handling of chemicals in laboratories; disposal of chemical wastes and provision of barrier free environment for the physically challenged.

8. Applicable World Bank Policies

Environmental Assessment (OP/BP 4.01)	● Yes	○ No
Natural Habitats (OP/BP 4.04)	○ Yes	● No
Forests (OP/BP 4.36)	○ Yes	● No
Pest Management (OP 4.09)	○ Yes	● No
Physical Cultural Resources (OP/BP 4.11)	○ Yes	● No
Indigenous Peoples (OP/BP 4.10)	● Yes	○ No
Involuntary Resettlement (OP/BP 4.12)	○ Yes	● No
Safety of Dams (OP/BP 4.37)	○ Yes	● No
Projects on International Waterways (OP/BP 7.50)	○ Yes	● No
Projects in Disputed Areas (OP/BP 7.60)	○ Yes	● No

9. Addressing Environmental Concerns

The Environmental Management Framework focuses on sustainable development principles that can be embedded into whole-school management practices and provide practical guidance to help schools operate in a more sustainable way.

In this context, the broad goals of a safe and environmental friendly school building would be to:

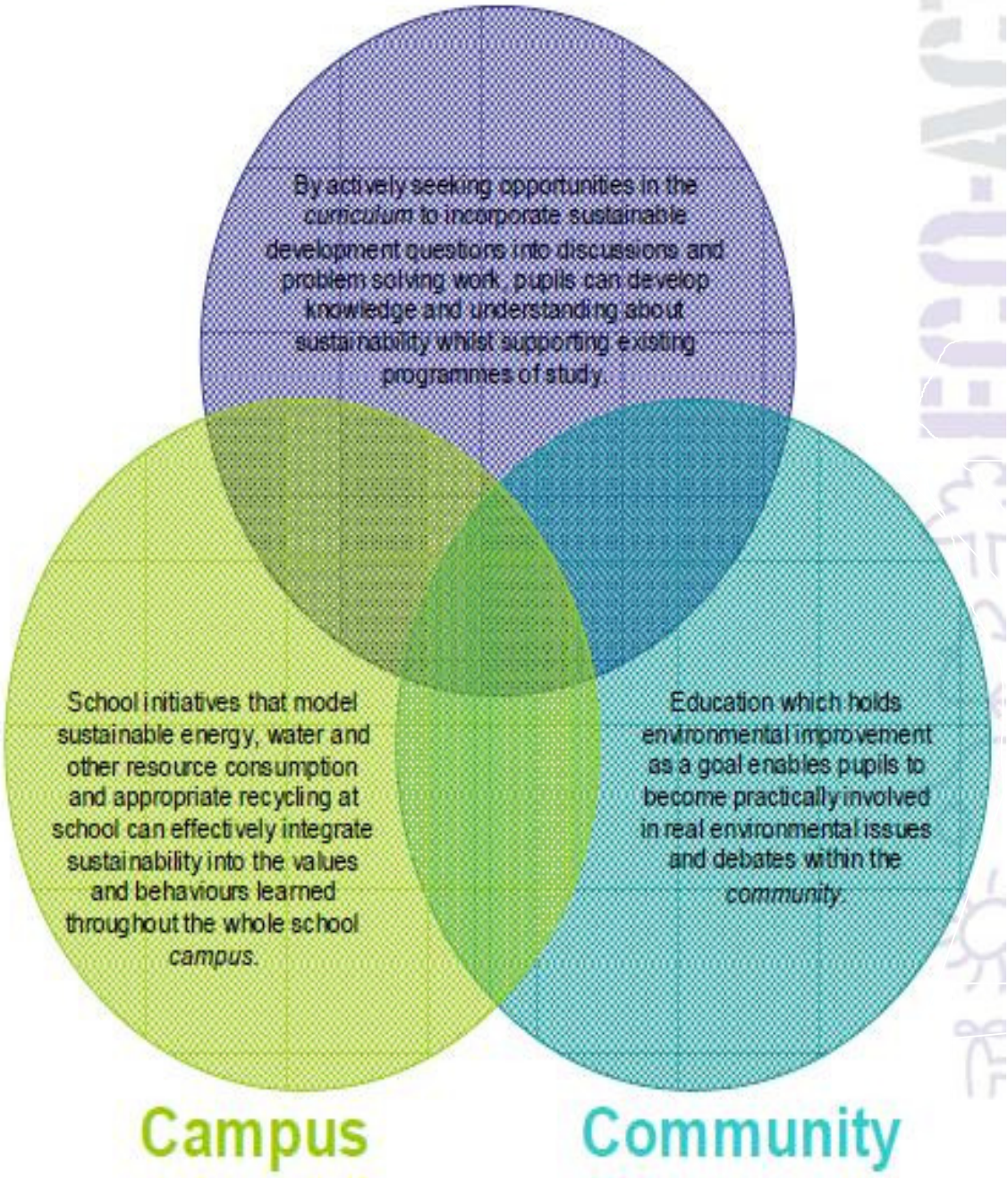
a) Create a safe/hazard free school environment
b) Conserve energy and natural resources
c) Improve indoor air quality and maintain good learning/teaching environment
d) Avoid exposure to toxic materials (by managing appropriately the places where children learn and play)
e) Employ day-lighting strategies
f) Improve classroom acoustics
g) Employ sustainable purchasing and green cleaning practices
h) Decrease the burden on municipal water and wastewater treatment
i) Encourage waste management efforts
j) Conserve fresh drinking water and helps manage storm-water runoff
k) Encourage recycling
l) Promote habitat protection

- **An Overview of Sustainability for Schools**

The Eight Doorways to Sustainability

Doorway	Sustainable Schools...
Energy and water	Understand the importance of energy efficiency, renewable energy and water conservation and model these things at school.
Food and drink	Promote the value of healthy, local and sustainable food and drink and assist understanding of the environmental, social and animal welfare issues of the food we buy.
Travel and traffic	Address school travel issues and encourage sustainable travel. Where possible they provide facilities for healthier, less polluting or less dangerous modes of transport
Purchasing and waste	Are models of waste minimisation and sustainable purchasing, using goods and services of high environmental and ethical standards and reducing, reusing, repairing and recycling as much as possible.
Buildings and grounds	Manage and, where possible, design their buildings in ways that demonstrate sustainable development to everyone who uses the school. Through their grounds, sustainable schools bring pupils closer to the natural world, capture their imaginations in outdoor play, and help them learn about sustainable living.
Taking part	Enable all pupils to participate fully in school life and create opportunities for children to take part Island life though active participation in community projects and debates.
Local environment	Enrich their educational mission with activities that improve the environment and quality of life of local people, wildlife and habitats.
Global dimension	Understand and value their roles as global citizens, learning about the lives of people living in other parts of the world and finding ways to help.

Each doorway can be delivered through the areas of Curriculum, the Campus and the Community to facilitate learning throughout the whole school.



This section provides general guidelines to achieve the above mentioned Objective & goals. But all the goals are interrelated and a building can achieve best results only through a continual process of balancing trade-offs. Given the vast geographical, social, economical and political variation across India it is very difficult to provide absolute solutions to all problems. Thus, certain amount of local decision making is essential. For example increasing ventilation also increases the ingress of heat which can be a problem in hot and dry climate. Another example would be use of energy efficient Compact Florescent Lamps. These lamps provide cheapest energy efficient lighting but are also hazardous as they have highest mercury contain compared to all other lighting fixtures. There cannot be a fixed formula of how to solve such conflicts but in general health and safety should be given priority over choosing environmental friendly material.

It is generally observed that maintenance of schools building is irregular and in some cases absent due to lack of funds. Without maintenance most of the systems and material deteriorate over time resulting in poor educational environment. Thus, given choice, material and systems should be selected based on the maintenance requirement rather than capital cost. The following guidelines are being provided to help create safe and sustainable school buildings and enhance environmental friendliness of existing buildings:

a. Sustainable School Design

Innovative Design is strongly committed to designing schools that not only embrace the concept of sustainability but are, in themselves, teaching tools for sustainability. Studies have shown that schools incorporating passive solar features, such as day lighting, use less energy, and in such schools, student grades have improved, and attendance is also higher.

The school should incorporate environmentally friendly design principles, including:

- Building orientation to increase day lighting and reduce fluorescent lighting
- High-efficiency electric lighting
- Light and motion detectors to monitor energy usage (if viable)
- Solar panels to heat water for the school
- Minimize impervious surface in the landscape
- Rainwater collection to water school lawns
- Native landscaping to reduce water use
- Eco-garden to demonstrate water conservation and aquatic plants and animals (if viable)
- Outdoor teaching spaces
- Use of regionally produced products
- Low-toxic or non-toxic building materials

- Weather station to demonstrate energy and water conservation systems
- Minimized construction waste, and recycling of construction materials, and
- Restoring waterways and vegetation in and around site.

b. Site Selection and Preservation

It is appreciated that from a design perspective, designers are not commonly presented with a choice of sites for a new building to be constructed upon. However, in those situations where a choice is offered it is necessary to consider, again at the earliest possible stage, the wider issues in design terms. The site may be vulnerable due to possibility of flooding, pollution or vehicular accidents. To ensure pupil safety following criteria should be kept in mind while selecting site for school building.

- The site should be at least 5 ft above the 100 years High Flood Level of the nearest water body.
- The site should not be located within 1 km from any industrial estate or any major hazard category industry as per Ministry of Environment and Forest classification.
- The site should not be within 1 km at the downwind side of any red category industry as per the Central Pollution Control Board classification. Wind direction should be taken as annual average wind direction provided by nearest weather station.
- The site should not be abutting National Highways. If unavoidable, then the access. Railway to be the site should not be directly from the highway.
- The site should not be on or within a distance of 500 m from a municipal / hazardous waste dumping ground.
- The site should not be on or within a distance of 500 m from a contaminated area declared by State of Central Pollution Control Board.

It is preferable to choose site which is near to:

- Bus stops
- Developed area where local governmental body is providing water supply, sewage and solid waste facility

c. Social dimension of expanding access to Secondary Education

- **Upgradation of schools**

Participatory micro planning and school mapping exercise is expected to be carried out at the village/habitation level to prepare a need-based plan for improving equitable access and a realistic estimation of resource requirement. Members of local Panchayats, School Management and Development Committees, community leaders, parents, women members and members representing Scheduled Castes and Scheduled Tribes as well as other backward classes as far as possible, are to be engaged in this

intensive micro planning and school mapping exercise. The key objective of this participatory micro planning and school mapping exercise is to ensure that all sections of the society are involved in the planning process and their interests are well served.

A five step approach is generally followed for participatory school mapping:

Step 1

- Each and every habitation may be listed for mapping exercise
- Habitation wise population with availability of schooling facility with distance data may be collected through GIS or Manual Mapping

Step 2

- listing of all habitations/ villages to identify served area through GIS or Manual Mapping
- The available High schools and details of school from SEMIS
- High schools and their catchment area

Step 3

- listing of all habitations/ villages to identify un-served area through GIS or Manual Mapping
- Details of Upper primary schools (UPS) located in the catchment area from DISE
- Distance with other High schools
- Distance Matrix exercise.
- A list of UPS prepared which are eligible for upgrading into secondary level as per the norm.

Step 4

- Actual physical verification of site by a team comprising block and/ district level officers for confirming details of Secondary schools.
- Actual physical verification of site by a team of block and/ district level officers for confirming details of Upper Primary Schools eligible for upgrading into secondary level.

Step 5

- Based on the final verification & prioritization.
- Proposal for filling the year wise existing gap in the existing secondary schools
- Proposal of new schools selected for opening.

Procedure for school site selection

As elaborated above, based on the outcomes of micro planning and school mapping and using the parameters such as road facility, land availability, population density, number of children in the secondary schooling age group, etc., the local Panchayat/competent agency may identify the habitation for the establishment of the proposed Secondary School. Generally, it is appreciated that schools sanctioned under the RMSA Programme have been established through the process of upgradation of existing upper primary schools, or through establishing a new school on land that is already owned by the government and/or

Panchayat adjunct to the existing schools. At the time of appraisal of AWP&B, each State/UT must provide the list of schools proposed for upgradation/new construction with the status of land availability, vetted by competent authorities/officials at various levels such as Panchayat, block or district. Approval and release of funds by GOI for construction of school buildings will be subject to availability of unencumbered land for construction, and it shall be the responsibility of the State/UT to ensure that land parcel identified for construction of school has a clear title and is suitable for seeking funds under the RMSA Programme.

The Collector or the District Magistrate as head of the District Level Implementation Society is responsible for addressing local grievances including those relating to land identified under RMSA. At the level of the community, while there are variations across states, the village and ward based locally elected bodies are responsible for addressing related grievances.

d. Use of site features/site planning and landscape design

The design must make use of existing site features. The site features can be appreciated in the form of existing trees, slope, boulders, water body/channel or even presence of good view of natural landscape. As far as possible, such features should be preserved and used as part of design.

- Develop the site in an environmentally sensitive manner.
- Understand and maximize natural site conditions.
- Design the site for easy pedestrian, bicycle, mass transit, and handicap accessibility.
- Provide site protection during construction.

e. Energy Efficient Building Envelope

- Design shall address all radiant energy flows as well as conductive heat gain and loss.
- Select the optimum glazing for each location on the building.
- Provide proper window treatments to maximize winter solar gain and minimize summer overheating.

f. Construction Material

Major amount of energy is consumed by building construction material in manufacturing and transportation.

Use of Recycled Material: Recycling construction material or use of material with recycled content will reduce demand for new material. Maximum use of fly ash can be a major environmental achievement. As per the Fly Ash Notification September 1999 and amended as on August 23rd 2003 fly ash should be used as building construction material, if the project is located with 100km of Thermal Power Station. This can be achieved through following measures:

- RC (reinforced concrete) (including ready-mix concrete) to make use of fly ash by using PPC (Portland pozzolona cement) containing fly ash. A minimum of 15 percent replacement of cement with fly ash in PPC (by weight of the cement used) in the over-all RC for meeting the equivalent

strength requirements.

- Use fly ash in Plaster/masonry mortar by employing PPC. Use plaster and/or masonry mortar, which utilizes a minimum 30 percent of fly ash in PPC, in 100 percent wall/ceiling finishes and wall construction, meeting the required structural properties.

Other recycled material can be incorporated in the building by adopting the following measures:

- Use of recycled steel for reinforcement.
- Use of construction waste generated during construction for leveling and land filling instead of soil or murom.
- Use of furnace slag in concrete.
- Use of rejected or thrown away furniture.

In case of retrofitting existing building, emphasis should be on preserving all the structural members in their original form and use the shell of the building, as far as possible, to house the new activities.

Local Material: To reduce the energy consumption in material transport, use of local material is essential. Any material, which is processed within 500 km from the construction site should be considered as local material. As mentioned earlier if there is conflict between relatively maintenance free material to be procured from distance against high maintenance required material available locally, the decision maker should choose material with less maintenance requirement. Use of precast beams, slabs and panels greatly reduces construction waste and hence demand for new material.

Wood: Use of material obtained from rapidly growing trees and shrubs will also reduce pressure on new material. Trees or shrubs that complete their life cycle within 10 years should be considered as rapidly renewable material. Example of such building material is composite panel doors with wheat or cork core. Wood whenever used in the building must have certificate from Forest Department. The wood should be directly procured from auction conducted by Forest Department or the chain of custody should be ensured to ascertain that the wood is coming from officially cut wood provided by Forest Department.

g. Indoor Air Quality / VOC free materials

Volatile Organic Compound (VOC) Emissions caused by paints, varnishes, sealants are harmful for occupiers. The building must use paints that emit low or zero VOC.

The VOC limits are specified in the table below.

Material and VOC Limits

Type of Material	VOC Limit
Paints	
Non Flat Paints	150 grams/litre
Flat (Mat) Paints	50 grams/litre
Anti Corrosive/Anti Rust Paint	250 gram/litre
Varnish	350 gram/litre
Adhesives	
Wood Flooring Adhesives	100 gram/litre
Title Adhesives	65 gram/litre
Wood Adhesives	30 gram/litre

- Consider physical, biological, and chemical sources of potentially harmful contaminants and select environmentally friendly alternatives.
- Consider material placement, encapsulation, and the incorporation of barriers as means to ensure good indoor air quality.
- Incorporate standards for air ventilation strategies.
- Implement pollutant sensors and air quality monitoring equipment that controls fresh air make-up.
- Use natural ventilation strategies wherever practical.

h. Lighting

Sufficient lighting is essential in every school building for tasks like reading, writing, art and crafts etc. Insufficient lighting may increase stress and irritation on eyes. The lighting can be divided as Natural Lighting and Artificial Lighting according to its source.

Natural Lighting: In a school building, lighting is most important aspect of design. Use of natural light is most preferable as it is free and provides better colour recognition. At least 75% of the floor area of each classroom should achieve at least 2% day light factor.

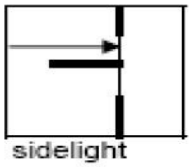
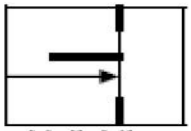
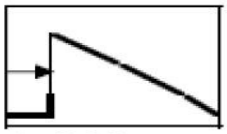
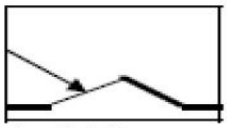
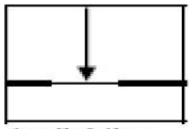
Day light factor can be calculated using various free software that can simulate natural lighting. For manual calculation following method should be adopted.

- Window Area: Area of glass in the window
- Floor Area: Carpet area of the room
- Actual Visible transmittance: Transmittance of glass used for window

For other factors see the following figure. Other considerations include the following:

- Incorporate day lighting as a significant lighting strategy for all main teaching and learning spaces.
- Orient buildings to maximize southern exposure and minimize east-west walls.
- Reduce cost by integrating day lighting components into overall design.
- Account for benefits of day lighting by reducing cooling equipment and electrical lighting.
- In general, the internal colour should by a light shade which will reflect available light

Height Factor

Window Type	Geometry Factor	Minimum Tvis	Height Factor
 sidelight daylighting glazing	0.1	0.7	1.4
 sidelighting vertical monitor	0.1	0.4	0.8
 toplighting vertical monitor	0.2	0.4	1
 toplighting sawtooth monitor	0.33	0.4	1
 toplighting horizontal skylights	0.5	0.4	1

Energy Benefits of Day Lighting

- Drastically reduces energy costs by up to 64%
- Saves on the up-front expense of cooling and electrical equipment, thereby keeping costs within budget
- Cuts the expenses associated with long-term mechanical and lighting equipment maintenance
- Produces superior lighting conditions; and
- Improves health and increases attendance.

Artificial Lighting/ Energy Efficient Lighting and Electrical Systems: Artificial lighting should be used mostly as support to natural lighting during day hours in most of the classrooms. Artificial lighting will be absolutely necessary in cases of laboratories, library, stores and function halls. While selecting lighting bulbs, the following factors should be considered:

- The lighting should be designed using software that can simulate indoor lighting conditions using manufacturer's data about luminaries. Such softwares are freely available on internet.
- Compact Fluorescent Lamps are easily available and provide great efficiency in lighting small spaces. These lamps or T5 tube lights should be used in class rooms.
- To light large areas like play ground or function halls, high pressure sodium vapour lamps should be used. These lamps are the most energy efficient lamps and have long working life.
- Lighting grid should match the working platform grid in laboratories.

- Employ lighting systems that are compatible with the day lighting strategies and use full-spectrum lighting in well-utilized, non-day lit spaces.
- Utilize controls that reduce lighting levels in stages according to the amount of natural daylight in each space.
- Use high-efficiency products that require low maintenance.
- Control key components of lighting, mechanical, and electrical systems with energy management system.

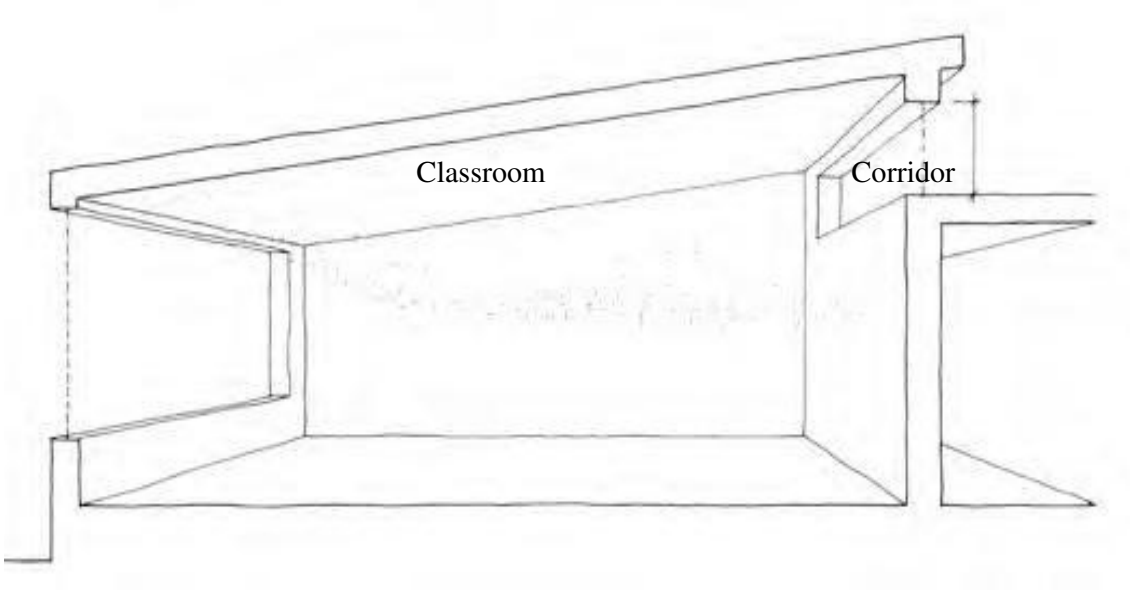
i. Ventilation

Indoor air quality is adversely affected by presence of indoor air pollutants and air changes. In a school building, indoor air pollution can come from following sources: paints, varnishes, solvents that emit volatile organic compounds and carbon dioxide from human breathing. Generally used cleaning agents and cooking also contributes to indoor air pollution. To eliminate the threat of indoor air pollution, good ventilation is essential.

To ensure good ventilation following points should be considered:

- In most of the school building the class rooms are built along a corridor in a row. This arrangement minimizes use of space but eliminates the possibility of cross ventilation. If the school design is single storied then following arrangement can be used to achieve cross ventilation without compromising the use of single corridor by two rows of classrooms. See figure given here.

Cross Ventilation Provision



- At least 3 m. distance should be there between two external surfaces (say, walls) which are facing each other.
- Preferably, the room should have openings on two different walls to ensure cross ventilation.
- After the building construction is complete, including internal colouring and furniture work, the building should not be used for 10 days. During this time, all the doors and windows should be kept open so that all accumulated indoor pollution during construction can be flushed out.
- Laboratories must achieve desired ventilation through exhaust fans.
- If the school building is single storey, wherever possible wall mounted fans should be used instead of ceiling fans. The ceiling of a single storied building absorbs heat of sun radiation and the ceiling fan circulates hot air into the room. A wall mounted fan circulates comparatively cooler air and adds to the comfort of the user.
- Employ energy efficient mechanical system.
- Avoid over sized equipment.
- Utilize waste heat wherever possible.
- Use energy efficient strategies to insure good indoor air quality.

j. Water

Water Conservation: Water conservation in a school building can be achieved by adopting the following measures:

- Providing water efficient landscape.
- Trees that do not require water after first two years should be preferred in the school premises.
- Minimize water consumption for irrigation through the use of native plants and xeriscape principles.
- Design landscapes with drought-resistant, native plants and grasses that support integrated pest management (IPM).
- The garden or trees should be irrigated with drip irrigation system
- Avoid unnecessary water waste by incorporating low-flow and water conserving fixtures.
- Water efficient taps (discharging less than 12 litres/minute under 5 bar pressure) should be installed. The taps should be of self closing type.
- Water efficient duel flushing system should be used in all water closets.
- Harvest rainwater from the building roof and site for irrigation and toilet flushing. Rainwater harvesting can be efficient way of reducing fresh water demand.

Rain water harvesting system should be installed in the school building. The system should include water collecting pipes from the roof top, valves to direct the down coming water, storage tank and ground water recharge pit/ well. The storage tank should be able store at least two days rain water in it. The capacity of the tank can be calculated in the following manner.

Max Rain Fall (as per IMD) occurred in a day in last 10 years for the regions expressed in meters X roof area in square meters X 0.9 X 2 = Storage Capacity of tank in Cubic Meters

The system should allow for the first rainfall water to be directed to storm water drain and then subsequently should be directed into the storage tank. The overflow of the storage tank should be connected to rainwater harvesting pit or well. The overflow of the recharge pit or well should be connected to storm water drainage.

Water Recycling Systems and Waste Management: Water coming out of toilets should be recycled and reused. This process happens in a Sewage Treatment Plant. The process involves three stages:

Primary Treatment essentially is filtering the incoming sewage and settling the particles in it. Secondary Treatment involves reducing the biological oxygen demand of the sewage. There are many technologies available which treat the water efficiently. Most of the technologies require electricity and regular maintenance. Some technologies viz. root zone, trickle filter and constructed wetland use soil and plants to treat the water and therefore not require electricity for operation. It's very difficult to provide single point solution as to which technology would be effective for all buildings. This is because all the technologies work if they are maintained regularly by skilled staff. Thus, a technology should be chosen

for which regular reliable maintenance facility be available. Tertiary Treatment is disinfection of the treated water to make it safe for human touch. For this stage Ultra Violet light treatment should be preferred to chlorination. Thus, treated water can be used for flushing and gardening purposes. Duel plumbing system is essential to use the treated water for flushing.

k. Energy

Reducing the electrical consumption without compromising the users comfort level is the goal of a sustainable building. The energy consumption in a school building would be for lighting and mechanical ventilation. If the day-lighting and ventilation aspects are taken care of, the majority of electrical consumption requirements would be reduced. To enhance energy savings, the following measures should be implemented.

- Consider the wide range of viable passive energy technologies and integrate them into over-all design for maximum effect.
- Use Energy Modelling and Simulation softwares as a decision making tool regards to the Energy Conservation Measures (ECMs) which could be both economical and feasible.
- Use of electrical ballast for all lighting fixtures
- Use of China Mosaic or White Cement Tiles on the roof to reflect the heat radiated by sun.
- Use of energy efficient fans.
- Installation and use of at least 1 kW capacity hybrid system (Solar and Wind) for artificial lighting
- Dove tailing with other GoI initiatives such as the Solar Mission.

l. Solid Waste

Solid waste generated in the school building is considered as Municipal Solid Waste which is largely non-hazardous. Such waste would comprise of biodegradable material, recyclable material and inert material. Segregation at source would be essential to manage the waste efficiently. The biodegradable part of the waste should be composted within the school premises. Various composting techniques are available and can be used as per the requirement of the particular case. Composting would be most suitable technique for rural schools as it requires large areas but can be treated without any cost.

Vermi-composting, on the other hand requires smaller space and requires some maintenance at regular intervals. Organic Waste Converter requires least space but is costliest to maintain. Thus, technique should be selected according to space availability and cost constraints.

The recyclable waste can be sold to authorized vendors and inert waste should be handed over to the local governing body. Some part of waste generated by school may be hazardous waste also. Especially waste coming from laboratories and non-functional electrical bulbs would prove dangerous, if not handled properly. Waste coming from laboratories may contain harmful chemicals and the issue with Compact Florescent Lamps are the sharp glass pieces and mercury. The designer should provide a secluded storage space for such waste which is not easily accessible to any student.

m. Barrier free Environment

The States need to create a barrier free physical environment in the school on following lines:

Children with loco-motor impairment: Includes children with non ambulatory and semi ambulatory disabilities.

- Gates, approach road and steps to allow for smooth movement.
- Ramps with handrails to be provided.
- No major level differences within building.
- Toilets to be provided with adjustable seat, grab rail and ramp.

Children with visual impairment: Includes children with low vision and total blindness.

- Plan of the building should be simple.
- Design of windows and illumination levels to eliminate glare
- Reduce distance between the child and the chalk board
- Use of contrasting colours and textures to aid identification of levels, ramps, passageways, steps, doors etc.
- Minimize risk of injuries - avoid projections, sharp edges etc.
- Provision of embossed eye charts on walls

Children with hearing impairment: Children with hearing deficiency or have difficulty in comprehending words and sounds in noisy environments.

- Reduce distance between teacher and child
- Insulate walls – provision of low cost mats and panels, soft board, charts etc.
- Provision of supplementary visual information – ideograms

Children with intellectual impairment: Children with uncommon social behavior or hyperactive

- Provide for open space and greenery
- Create / in built personal space for the child
- Use of bright colours
- Provision of in built play elements

n. Safety

Safety of the pupil and teaching staff is foremost important issue, which can be addressed through some design interventions as mentioned below:

- Provide sufficient high boundary wall – open access not just to the school grounds but to areas around the buildings will be a safety concern as schools in rural areas may be constructed outside developed areas.
- Provide strong and good quality doors, windows, frames and locking devices;

- Make roofs difficult to access
- Provide sufficient firebreaks in wall, ceiling and roof voids;
- Improper or easily accessible storage of waste could be harmful to pupil
- Provide sufficient and proper storage. Lack of this generally results in piling of equipments, furniture or records in corridor which will hamper movement especially in the case of emergency.

o. Other Environmentally Sensitive Building Products and Systems

- Consider the life-cycle energy and environmental impacts of products, materials, and processes - prefer local, recycled, non-polluting materials.
- Use products that are made from recycled materials.
- Prefer local products, materials, and services.
- Use products/materials that do not pollute
- Use alternative fuel and solar electric service vehicles and buses.
- Discourage single car travel by providing convenient connections to mass transit, safe bicycle paths and pedestrian friendly walkways
- Develop and implement an effective commissioning process that will help ensure proper operation of mechanical and electrical systems.
- Through the design of the building, send a clear message that sustainability matters - design the school as a teaching tool for sustainability.

p. Construction

Construction process plays vital role in protecting the environment around a building. The construction process is divided in following parts.

Contract Document: The following aspects should be included in the bidding/ contract document of the building construction agency/contractor:

- The contractor will ensure that the site will not cause air pollution through:
    - Using only Pollution Under Control Certified Vehicles
    - Regularly maintaining the vehicles/equipment/machinery
    - Providing sufficient parking space and safe, smooth circulation
    - If possible, using electrically operated machinery instead of diesel operated one
    - Sprinkling water twice a day on open or excavated soil in order to arrest the dust pollution.
- The contractor will ensure that the site will not emit noise pollution above the norms specified by CPCB.
- In case the construction work is undergoing in developed area then no construction should be carried out during night time.
- All the workers on site should be provided with sufficient number of toilets and drinking water facility and proper hygiene level should be maintained.
- Water use on the site should be monitored.
- Every opportunity to recycle the used water should be utilized onsite to reduce the requirement of fresh water.
- Work site safety requirements.

Construction: The following actions need to be taken during construction**.**

- The contractor should prepare and implement erosion control and sedimentation plan according to best management practices highlighted in National Building Code of India.
- The top 15-20cm layer of soil should be stripped and stored in piles not higher than 1.5meter in height. This soil should be used for landscaping purpose on the same site afterwards.
- Construction waste should be utilized on the site for filling or manufacturing of construction blocks.
- The contractor should not disturb the complete site and should restrict his movement to 6 meters from the building outline.
- To avoid waste of material, instead of pouring heaps of soil, sand and aggregates, the construction material should be stored in specific lined boxes made of brick work.
- Proper work site safety measures for children and workers are to be implemented.

q. Administration

Some aspects of safe and sustainable building need day-to-day attention and administration during the operation phase. The school administration should make specific provision for following aspects in their maintenance budget:

- Pest control should be carried out every six months/regularly in the building/s.
- Sewage Treatment Plant maintenance contract should be assigned to an experienced agency. Payment of the STP maintenance should be linked with the efficient working of STP and quality of treated sewage.
- Waste management contract should be in place for selling the recyclable waste and dumping inert waste.
- Hazardous waste generated by the school from laboratories, glass equipments and used bulbs should be handed over to authorized contractor approved by State Pollution Control Board.

10. Institutional/Implementation Arrangements

RMSA's institutional and implementation arrangements provide for: (i) program direction and oversight; (ii) decentralized management and implementation; and (iii) technical support and capacity building.

National Level: At the national level, the Ministry of Human Resources Development (MHRD) is the implementing agency for RMSA. The RMSA National Mission, chaired by the Minister, sets overall policy and exercises oversight. An Executive Committee of the National Mission serves as the Project Approval Board (PAB); it is chaired by the Secretary of School Education and Literacy and has representatives from other relevant government institutions. The PAB serves as the primary review mechanism for the financing of States' Annual Work Plans and Budgets (AWPBs).

The PAB is supported by a Technical Support Group (TSG), which helps States to prepare their AWPBs and conducts the appraisal of these AWPBs to ensure their completeness and conformity with the RMSA Framework before they are forwarded to the PAB. The Technical Support Group will also convene an External Review Panel to review proposals

submitted under the RMSA innovations component. Finally, a separate Bureau in the Department for School Education and Literacy (DS&L) is in charge of RMSA on a day-to-day basis.

The Technical Support Group shall include environmental experts (with expertise and experience in environment friendly building design, construction and operation) to guide the PAB regarding appraisal and decisions pertaining to environment, health and safety issues in the programme. The experts will also help/guide the states in integrating the EHS requirements in the planning and decision-making process. An official within Department for School Education and Literacy will also be designated to co-ordinate on all issues related to environment and social safeguards pertaining to the programme/project.

State Level: At the State level, a State RMSA Mission Authority whose governing council is chaired by the Chief Minister operates an autonomous State Implementation Society (SIS), which provides direction and oversight at the State level. The SIS, through the State Project Office (SPO), coordinates with District and sub-District level organizations; supports Districts in preparing annual plans; handles State-level procurement and contracting; conducts monitoring and evaluation activities; serves as a channel for the flow of funds to the lower levels, is responsible for financial management and audit reports. The SPO reports on implementation progress, and submits and negotiates the consolidated AWPBs, at the PAB.

Likewise, one environment expert will be recruited/appointed by the SIS/State Project Office to co-ordinate with the district and sub-district organizations and help them in preparing plans and bids that integrate EHS requirements. In addition, the said expert will guide, assist the state project team in training/capacity building, monitoring and reporting on the EMF aspects.

District Level: At the District level, the implementation and oversight functions are carried out by the RMSA District Programme Coordinator (DPC), located in the District Education Office. (Typically, the DPC is an assistant district education officer.) The DPC works in close collaboration with the SMDCs within the District to prepare the district AWPB, and monitors physical and financial implementation progress of RMSA at the school level on a regular basis. Under the guidance of the state level environment expert, the DPC shall also oversee the application and implementation of EMF for the programme. He/she may also designate a junior level officer to assist in the said task. In districts, where a large quantum of civil works is envisaged, short term services of experts may also be procured to help the DPC.

School Level: All schools are required to establish School Management and Development Committees (SMDCs), which are responsible for all RMSA activities at the school level – planning, data collection, monitoring, and implementation.

In particular, SMDCs will directly manage all civil works under Rs. 10 lakh (about US$2,000), maintain all relevant records, and be subject to the annual external audit process. They also manage the annual school grant, funds for laboratories, textbooks, libraries and other consumables.

States have the flexibility to decide on the specific composition of the SMDC, although MHRD has provided clear guidelines to ensure representation from parents, women, school

officials, the local political authority (Panchayat) and others.

The SMDCs as part of the civil works monitoring will be sensitized towards EMF requirements and the resulting benefits. For this purpose, simple training material/leaflets will be developed by experts at centre and state level, which would then be disseminated as part of the training manuals produced for SMDCs in local language.

Technical Support. At the National level there is a dedicated RMSA Technical Support Group providing assistance to DSE&L and the States in all aspects of RMSA implementation. Apex national institutions, such as NCERT, NUEPA, NIOS, and IGNOU, provide support to the DSE&L and to State institutions in pedagogy, student assessment, teacher training, educational planning, and monitoring and evaluation.

At the State level, State Councils of Educational Research and Training (SCERTs) and State Institutes of Educational Management and Training (SIEMATs), are apex institutions for improving the quality of school education and management. At the District level, District Resource groups will be constituted which, under the guidance of District Institutes of Education and Training (DIETs), provide training school and community level personnel on school management, equity and quality related issues. The Technical Cooperation (TC) Fund financed by the DPs outside of the Project will provide capacity building to a variety of these agencies.

The training and capacity building initiatives for various levels would also cover topics/sensitization sessions pertaining to the implementation of the EMF.

11. Integration of EMF in Planning and Appraisal Process of RMSA

The District Annual Work Plan and Budget (AWP&B) process is at the heart of the RMSA Program Support. Practically, all RMSA expenditures and activities are driven by the AWP&Bs prepared by the approximately 600 districts of the country, endorsed and collated at the State level and appraised and approved and then monitored by MHRD each year. It is within the process of AWP&B development, endorsement, appraisal, approval and monitoring that the RMSA Framework for Implementation becomes operational throughout the country.

The over-all process is guided by MHRD. A ***Planning and Appraisal Manual***, developed in co-operation with the Development Partners, will guide the overall process, based on the experience of the first two years of program implementation. This manual will increase the focus on performance-based outcomes as part of the planning process, by providing guidance to States on data sources, key performance indicators, setting priorities and linking actions to intended outcomes.

Each year at the beginning of the planning process, focal areas for planning are identified by MHRD and communicated to the States. The AWP&B's are prepared in line with these guidelines. For each district, data are aggregated at the village, Block, Cluster, District and State levels for preparation of long-term perspective plans and an AWP&B for each District. The AWP&Bs contain information on: (i) number of children in and out of school; (ii) school and classroom facilities; (ii) teacher requirements and training; (iii) civil works for school building and other facilities; (iv) strategy for marginalized groups; (v) community participation; (vi) convergence with other schemes;

(vii) strategy for quality improvement; and (viii) total cost. The costing is done according to RMSA financial norms to generate the Budget. The AWP&B's also provide information on progress of various RMSA activities during the previous year.

The AWP&Bs will continue to be appraised at the National level. Following receipt of the AWP&Bs. MHRD commissions an appraisal mission to each of the States. The appraisal process reviews progress against targets and commitments, identifies problem areas; examines the quality of data used for planning; interventions suggested for various components; and convergence in implementation with other programs. After the appraisal team has completed its work, MHRD convenes a Project Approval Board (PAB) meeting to review the AWP&Bs on the basis of the appraisal report. The PAB, which is chaired by the Secretary (MHRD), includes senior officials responsible for various aspects of RMSA from the center and states.

The PAB makes decisions regarding the approval and funding of the AWP&B in the light of performance against agreed outcome and output targets and resource availability. Evaluation criteria include: (i) progress made by state in implementing strategies for out of school children; (ii) progress made in terms of meeting input targets; (iii) progress made in reaching agreed upon commitments on quality and learning outcomes. The PAB then discusses the proposed strategies to improve outcomes and sets targets for the state to meet for the forthcoming year, as well as undertakings related to system reforms. Financing is approved based on the state's performance in utilizing funds and meeting outcome targets. The minutes of the PAB for all States reflecting agreements on project targets, outcomes, undertakings, commitments and funding are placed on the MHRD website for wider dissemination and transparency. Those proposals which are rejected by the PAB are also discussed and the details are provided in the minutes of the meeting. The AWP&Bs are monitored quarterly, half-yearly and annually at appraisal by MHRD. There is also independent monitoring carried out by Independent Monitoring Institutions the findings of which form the basis of discussion with the States. Quarterly reviews essentially focus on activities and fund utilization while half-yearly reviews that take place at senior level concentrate on systemic issues. These reviews also serve as an opportunity for infusion of knowledge and good practice inputs within program implementation structures. In addition, the six-monthly JRM, involving the Development Partners, conducts an overall assessment of project activities and reviews the PAB minutes. This periodic monitoring supports the implementing agencies in removing bottlenecks and facilitates capacity building at different levels.

As the implementation of RMSA continues, the AWP&B process will also be strengthened through other processes initiated by the Project. The Planning and Appraisal Manual will be revised further, to sharpen guidance to Districts and States related to quality-enhancing processes at the school and classroom level. The key requirements of the EMF will be inter-linked/referred within the Planning and Appraisal Manual to enable provision of one comprehensive guidance document for the states.

12. Monitoring and Evaluation

RMSA has put in place a rigorous M&E system, which will be used to monitor the Environment and Social Management Framework. Each AWP&B will be reviewed or appraised by a team of experts, which would look into every aspect of the plan and budget including the schools proposed for upgradation, availability of appropriate land, and how this

expansion takes care of equity issues. After the appraisal, the Project Approval Board, the apex approval body chaired by MHRD Secretary will examine the comments, suggestions and recommendations of the appraisal committee before approving the AWP&B.

As with all parts of the RMSA Programme, appropriate monitoring mechanisms are in place. As part of the agreed QA/QC audit, a representative sample of school construction sites will be selected to review every year. A portion of the sites reviewed would be visited before construction is started and make local enquiries to ensure that the above guidelines have been followed. They will also inspect the quality of the documentation maintained. The QA/QC is the responsibility of the State Implementation Society and the SIS will forward a copy of all reports to the RMSA department, MHRD.

The monitoring arrangements proposed for RMSA are embedded in existing mechanisms, using data-based and field–based monitoring mechanisms, reviewed periodically at National, State, District and sub-District levels. As such, incremental costs associated with the project reporting are negligible. Under RMSA, there is an allocation for monitoring, evaluation, research and management.

On a day-to-day basis, MHRD, as the lead implementing agency for RMSA, will provide India's 35 States and UTs the implementation support they need to reach RMSA's development objectives, through the Bureau for Secondary Education and its Technical Support Group, guided by the Operational Manuals for RMSA and through the national institutions NCERT, especially on quality improvements, and NUEPA, especially on planning and appraisal. At the State level, the RMSA SIS will provide implementation support to the District Program Office, which in turn will provide implementation support to the Schools.

MHRD's own M&E system will be the core source of data to monitor physical implementation, particularly the ***Secondary Education MIS*** (SEMIS). The Secondary Education Management Information System (SEMIS) has key information on all public and private secondary schools in the country for the years 2006-2010 and is the basis for preparation and monitoring of the State AWPBs. Data collection is still underway for 2010-2011. NUEPA is responsible for aggregating this State-level data into national ―flash‖ statistics.

SEMIS will be used to generate monitoring information on an annual basis during the project implementation period. The SEMIS data also includes some key information pertaining to class rooms, laboratories etc. and availability of basic facilities such as water supply and sanitation.

MHRD will require all States to contract ***independent Monitoring Institutes*** (MIs) across the country to follow project implementation. MIs may be social science research institutes, Indian Institutes of Management, Foundations, Trusts and NGOs active in the education sector, and have standardized terms of reference for monitoring a sample of RMSA schools in every State. These MIs will conduct a comprehensive review of RMSA program implementation of a sample of the districts allotted to them every six months, such that all districts in the country are covered every three years.

Review will include teacher recruitment and training, civil works, textbook distribution, school grants, performance of technical and fiduciary personnel at all levels, functioning of School Management and Development Committees (SMDCs), and all other aspects of RMSA. MI reports will be discussed with RMSA State Project officers, and then submitted to GoI and DPs, and posted on the RMSA website.

The Terms of Reference for MIs will also include an assessment/review of key environment, health and safety parameters with the results of their findings reflected in their reports. The Terms of reference (TORs) for this review will be agreed with the DPs and posted on the RMSA website.

In addition, implementation support from the DPs is provided through the ***Joint Review Missions*** (JRMs) conducted every six months, in collaboration with MHRD. These JRMs will include field visits to at least 6 States and a minimum of two districts in each State, chosen in consultation between DPs and MHRD. Within the districts, JRM teams have the freedom to visit any schools they choose, and may visit additional districts if time permits. JRMs provide the DPs with extensive information regarding project implementation submitted by all States prior to the JRM, and discussions during the JRM lead to the identification of key implementation issues and bottlenecks as well as the necessary corrective measures agreed between the DPs and MHRD. All reports from the JRMs are made publicly available on a dedicated website. A sub-set of indicators, including information on over-all EMF compliance/ performance will be used for the Bank‘s internal monitoring system.

For the civil works, particularly, given the size and scope of this component under RMSA, MHRD has agreed to fund from its own budget on an annual basis an ***ex-post review of civil works*** in a sample of States. This review would cover 800-1,000 construction contracts at State, District and school levels, and assess compliance with the RMSA FMP Manual, engineering and construction norms, compliance to EMF norms (to specifically assess/review the programme/project performance on environment, health and safety aspects), technical oversight by the District Program Office, and payments made. The TORs for this ex-post procurement review will be agreed with the DPs. However, the EMF audit will be conducted by qualified/experienced (environmental) professionals.