

26. Education Sector

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Abbreviations

ADB	Asian Development Bank
BME	Benefit and Monitoring Evaluation
BODA	British Overseas Development Administration
BOQ	Bill of Quantities
BPEP	Basic and Primary Education Project
CDO	Chief District Officer
CGI	Corrugated Galvanised Iron
CIDA	Canadian International Development Agency
CTEVT	Council for Technical Education and Vocational Training
DANIDA	Danish International Development Association
DEC	District Education Committee
DEO	District Education Offices
DFID	United Kingdom Department of International Development
DOE	Department of Education
DPC	Damp Proof Concrete
EB	Earthen Building
EIMS	Education Information Management System
EPP	Education Prospective Plan
EU	Eastern University
FAR	Financial Administration Regulation
FINIDA	Finish International Development Agency
GTZ	German Technical Cooperation
HMGN	His Majesty's Government
HSEB	Higher Secondary Education Board
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
ILO	International Labour Organisation
JBIC	Japan Bureau for International Cooperation
JICA	Japan International Cooperation Agency
KU	Kathmandu University

MOF	Ministry of Finance
MOH	Ministry of Home
MSU	Mahendra Sanskrit University
NBC	National Building Code
NGO	Non Government Organisation
PEP	Primary Education Project
PMIS	Project Management Information System
PU	Pokhara University
PWD	Public Work Directives
RCC	Reinforced Cement Concrete
RDE	Regional Directorate of Education
RED	Regional Education Directorate
SBD	Standard Bidding Document
SDC	Swiss Development Cooperation
SEDU	Secondary Education Development Unit
SEPP	Secondary Education Perspective Plan
SIP	School Improvement Plan
SMC	School Management Committee
SPIP	School Physical Improvement Programme
TU	Tribhuvan University
UGC	University Grant Commission
UNDP	United Nations Development Program
UNESCO	United Nations Education, Social and Cultural Organisation
USAID	United States Aid
VAT	Value Added Tax
VDC	Village Development Committee
VEC	Village Education Committee

26. Education

26.1 Introduction

26.1.1 General

Education plays a prominent role in creating disciplined and productive manpower. Educated manpower is precious assets as well as agents for advancing the country. Multi-dimensional development and progress of a country depend upon the educational policy adopted by the country. In the past, various attempts have been made to move educational programmes forward and make them comprehensive in a planned way, in line with domestic norms and values, based on the demand of time and aspiration of people.

Education has remained a main policy for utilizing education as an effective means to poverty alleviation and all round development. Moreover, special emphasis will be given to availability of equal opportunity in education; improvement in qualitative standard; enhancement in internal and external capability; and making education development oriented.

26.1.2 Institutional Arrangement

To establish and operate educational institutes and provide education starting from pre-primary to research level, His Majesty Government of Nepal (HMGN) has an organisation structure under the Ministry of Education for implementing the various activities for the development of education throughout the country.

HMGN has promulgated various Acts and Regulations to establish and operate educational institutions in the country in the public and private sectors.

The following organisations are the principal institutions responsible for achieving national educational goals :

- Ministry of Education (MOE)
- Department of Education (DOE)
- Regional Directorate of Education (RDE)
- District Education Offices (DEO)
- Higher Secondary Education Board (HSEB)
- Council for Technical Education and Vocational Training (CTEVT)
- University Grant Commission (UGC)
- Tribhuvan University (TU)
- Mahendra Sanskrit University (MSU)
- Kathmandu University (KU)
- Eastern University (EU)
- Pokhara University (PU)

The role of central public agencies such as MOE, DOE has been confined to policy formulation, technical support, monitoring and evaluation. Local agencies such as Regional Directorates of Education (DEO), non-governmental organisations and social organisations will be made responsible for the construction and operational aspects of projects. The role of constructing schools and campuses is given to concerned line agencies down to the concerned schools or campuses respectively.

Legal and Administrative reform : The highest priority to use local sources for school or campus development projects and carry out the construction, maintenance and operation of the

institutes by all concerned stakeholders, management committee in school or campus shall be more effective.

26.1.3 Donors

The majority of large development projects are funded by loans/credits/grants from foreign donors. Technical assistance components in some of donor-financed projects are funded by grants from foreign governments or international organisations.

Multi-lateral agencies :

- International Bank for Reconstruction and Development (IBRD). Most credits to HMGN are through the Bank's International Development Association (IDA)
- Asian Development Bank (ADB)
- United Nations Development Program (UNDP)
- International Labour Organisation (ILO)
- United Nations Education, Social and Cultural Organisation (UNESCO)

Bilateral Agencies :

- Canadian International Development Agency (CIDA)
- Danish International Development Association (DANIDA)
- Finnish International Development Agency (FINIDA)
- German Technical Cooperation (GTZ)
- Japan Bureau for International Cooperation (JBIC)
- Japan International Cooperation Agency (JICA)
- United Kingdom Department of International Development (DFID)
- Swiss Development Cooperation (SDC)
- United States Aid (USAID)
- Norwegian Aid (NORAD)

Each donor has established its own guidelines, rules and procedures for implementing projects. It is normal practice to follow the donor's procedures in accordance to the agreements signed between HMGN and donors. Donor's procedures will take precedence over HMGN rules and regulations. This provision is allowed in Clause 96 of FAR 2056.

Project staff involved with donor-assisted projects must study, understand and follow the rules and regulations of the donor, if these are prescribed in the loan/credit/grant agreement.

26.2 National Policy and Legislation

26.2.1 General Policy

Policies will be adopted to develop education as a fundamental means of alleviating poverty and bringing substantial improvement in the standard of living through socio-economic well-being, and achieve national progress through the proper development of human resources. The education sector policies will aim to prepare patriotic citizen conscious and loyal to democratic values, capable, productive, disciplined, responsible to human right and social values; make primary education gradually compulsory; conduct literacy programme as a national campaign; emphasise qualitative development of secondary education; fulfil the shortage in the supply of basic and medium level skilled manpower through comprehensive extension of technical education and vocational training facilities; extend higher level technical education to supply

high level technical manpower; upgrade the quality of education; increase women's participation in education by extending and making women's education accessible; and provide education to disabled backward and weaker sections for bringing them into the national mainstream.

While focusing on the long-term objective of education to make primary education easily available to all children of primary schooling age and to make all people literate at the end of twelfth plan period, special emphasis will be given to the development and extension of basic and primary education. Education in the past has made substantial progress; however, the quality of education has not been developed as expected. In this context, it is essential to give emphasis to such factors that play an effective role in enhancing the quality of education, such as teacher's training, reform in facilities of schools, timely revision of syllabus and textbooks, regular and effective supervision systems, and regular and effective examinations.

Thus, a long term policy underlying the Education Prospective Plan is embodied in a strategy consisting of four main elements :

- Enhancement of quality through reform and retraining
- Decentralisation of planning, management and finance
- Cooperation and partnership with the private sector
- Reform of the structure, gradually to include Grades 11 and 12.

Six priority areas for intervention and investment are identified :

- Physical facilities
- Management reform
- Curriculum reform
- Teacher education
- Examination reform
- Gender equity.

26.2.2 Legislation

To achieve the objectives of the policies in the education sector, HMGN has promulgated Acts and Regulations for the establishment and operation of executing and implementing agencies at district, regional and national levels.

The list of legislations promulgated by HMGN are as follows :

- Education Act, 2028; fifth amendment 2049/7/12
- Education Regulation, 2049; Sixth amendment 2053/9/26
- National Education Committee Act, 2028
- National Education Committee Regulation, 2029
- Higher Secondary Education Act, 2046; (Second amendment, 2050/2/22)
- Higher Secondary Education Regulation, 2053
- Tribhuvan University Act, 2049
- Mahendra Sanskrit University Act, 2043, (First amendment, 2049/7/21)
- Kathmandu University Act, 2048
- Purwanchal University Act, 2050
- Pokhara University Act, 2053
- Council for Technical Education and Vocational Training Act, 2045

- Council for Technical Education and Vocational Training Regulations, 2051.

The Ministry of Education and the Department of Education are responsible for :

- Project identification
- Pre-feasibility
- Feasibility
- Population survey
- Detail survey
- Design
- Drawings
- Quantity estimate and cost estimate
- Project construction
- Quality control
- Operation
- Maintenance of the project, and
- Monitoring and evaluation of the project.

26.3 Guidelines and Standards

26.3.1 Guidelines

The Ministry of Education with support from Asian Development Bank (ADB) and the British Overseas Development Administration (BODA) and wide participation of the stakeholders of the secondary education system has prepared the Secondary Education Perspective Plan (SEPP). The SEPP is an indicative strategic plan offering strategies and proposals designed to achieve the goals of promoting quality, equity, efficiency and relevance of the secondary education system within the next fifteen years.

Likewise MOE with support from IDA and wide participation of the stakeholders from basic and primary education system has prepared the Basic and Primary Education Master Plan.

In the sector of higher education, Tribhuvan University with support from IDA and wide participation of the stakeholders of higher education system has prepared Twenty Year Strategies Plan.

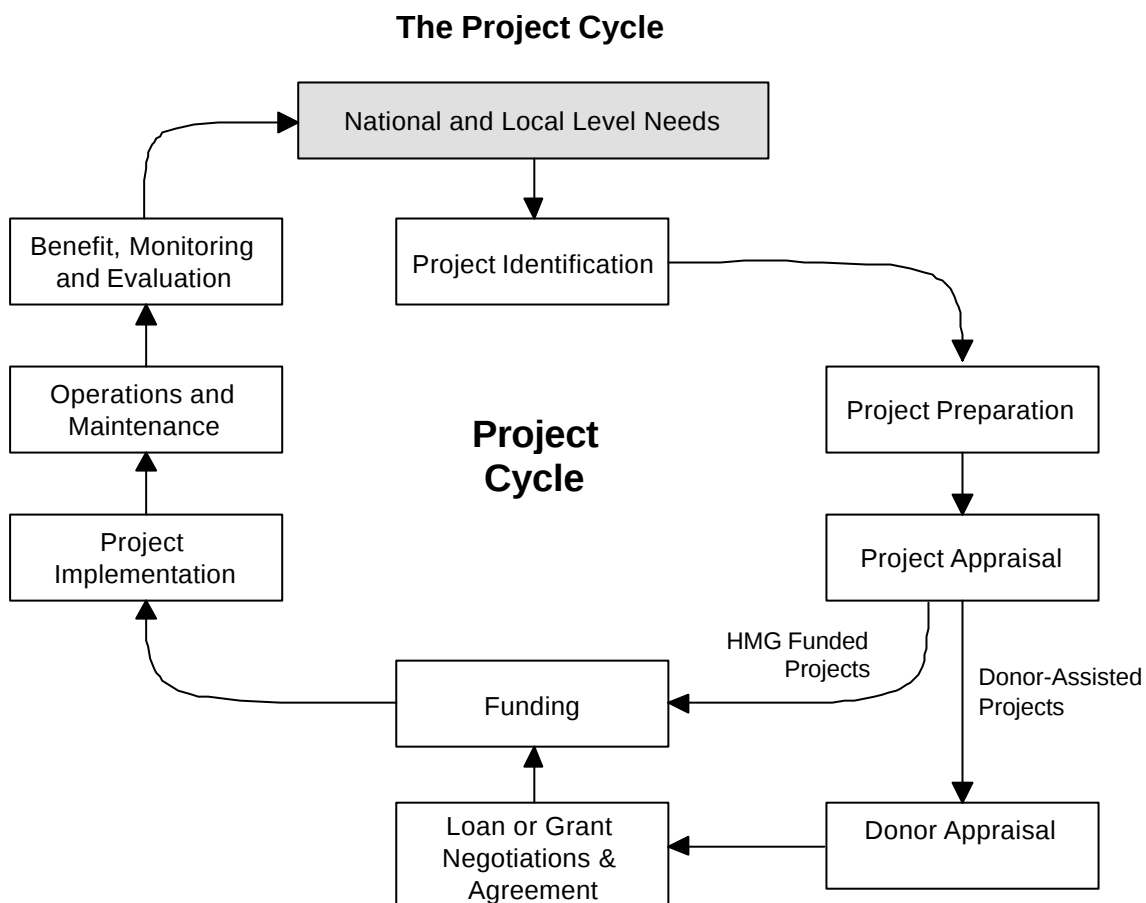
Guidelines and Standard

Area	Published Document	Key Foreign Sources
Policies and Procedures	• The Basic and Primary Education Master Plan 1997 - 2002. • Secondary Education Perspective Plan January 1997. • Basic and Primary Education Program 1999 – 2002. • Education Information of Nepal, 2000. • Nepal: Education Indicators, 1999.	IDA, the World Bank

Area	Published Document	Key Foreign Sources
Legislations	As described in 26.2.2 above.	
Standards + Specifications	• Building Act, 2055 • Environment Protection Act, 2053 • Environment Protection Regulation, 2054 • Nepal National Building Code, 1994 NBC 100 : Requirement for State of the Art Design 101 : Material Specification 102 : Unit Weight of Materials 103 : Occupancy Load 104 : Wind Load 105 : Seismic Design of Buildings in Nepal 106 : Snow Load 107 : Fire Safety 108 : Site Consideration 109 : Masonry, unreinforced 110 : Plain and Reinforced Concrete 111 : Steel 112 : Timber 113 : Aluminium 114 : Construction Safety 201 : Mandatory Rules for Thumb Reinforced Concrete Buildings with Masonry Infill 202 : Mandatory Rules for Thumbs Load Bearing Masonry. 203 : Guidelines for Earthquake Resistant Building Construction. 204 : Guidelines for Earthquake Resistant Building Construction, Earthen Building (EB) 205 : Mandatory Rules for Thumb Reinforced Concrete Buildings with Masonry Infill - HMGN, MHPP, Department of Buildings, 1995.	
Planning	• Decentralised Planning Guidelines • Guidelines for Operating District Planning - Basic and Primary Education Plan	
Design + Control	• Nepal National Building Code, 1994 • Building Act, 2055	
Operation + Maintenance	• Guidelines for Operating School Improvement Plan (SIPs) - BPEP II	

26.4 Key Processes in the Project Cycle

A project has various stages each with different activities which lead to the next stage until the project is completed.



26.5 Planning

26.5.1 General

The main functions of the Ministry of Education (MOE) are to formulate :

- Policies and plans
- Serve as entry point for donors
- Co-ordinate the various institutions within the education sector and across the line ministries
- Provide directives and guidelines, and
- Carry out monitoring and evaluation of the programme.

The MOE has full responsibility for the planning of the projects in the educational sector. But in a country like Nepal, with mountain and rivers presenting major obstacles to transport and communication, it is impossible for the educational services to be properly planned and managed entirely by the MOE only. The difficulties of communication and the need for local situations to be taken into account necessitate local planning and management in education as in other sectors. The five regions and seventy five districts of Nepal already provide a good framework for decentralised planning, management and finance. The Regional Education

Directorates (RED) and District Education Offices (DEO) already have significant number of staff for the purpose. The staff of the DEO, members of District Education Committees (DEC) Secondary Education Development Unit (SEDU) and School Management Committees (SMCs) shall be involved in local education planning.

Like-wise the staff of the VEC, members of the VEC and BPEDU and SMCs shall be involved in local education planning for basic and primary schools.

26.5.2 National Project

For national projects, responsibility lies with the MOE and DOE, the planning process is primarily a "top down" process, although the need of target groups must be carefully considered.

26.5.3 Identification/Pre-feasibility

The project identification process of national projects are implemented by MOE and DOE and local body projects are implemented by DEO and VEC involving the SMC. After identification pre-feasibility study is carried without incurring higher cost as per the requirement of the project.

Normally DEO with the co-ordination of DEC scrutinises the requests and undertake the pre-feasibility study. The objective of the pre-feasibility study is to assess the felt need and prioritise the plans.

26.5.4 Feasibility Study

The process of preparing a project is often time consuming and complex. It entails developing an idea (identify project) into a detailed proposal that considers all aspects of the projects: technical, economic, financial, environmental, social and institutional. The goal is to come up with best method to achieve the project's objectives by comparing alternatives on the basis of their relative cost and benefits.

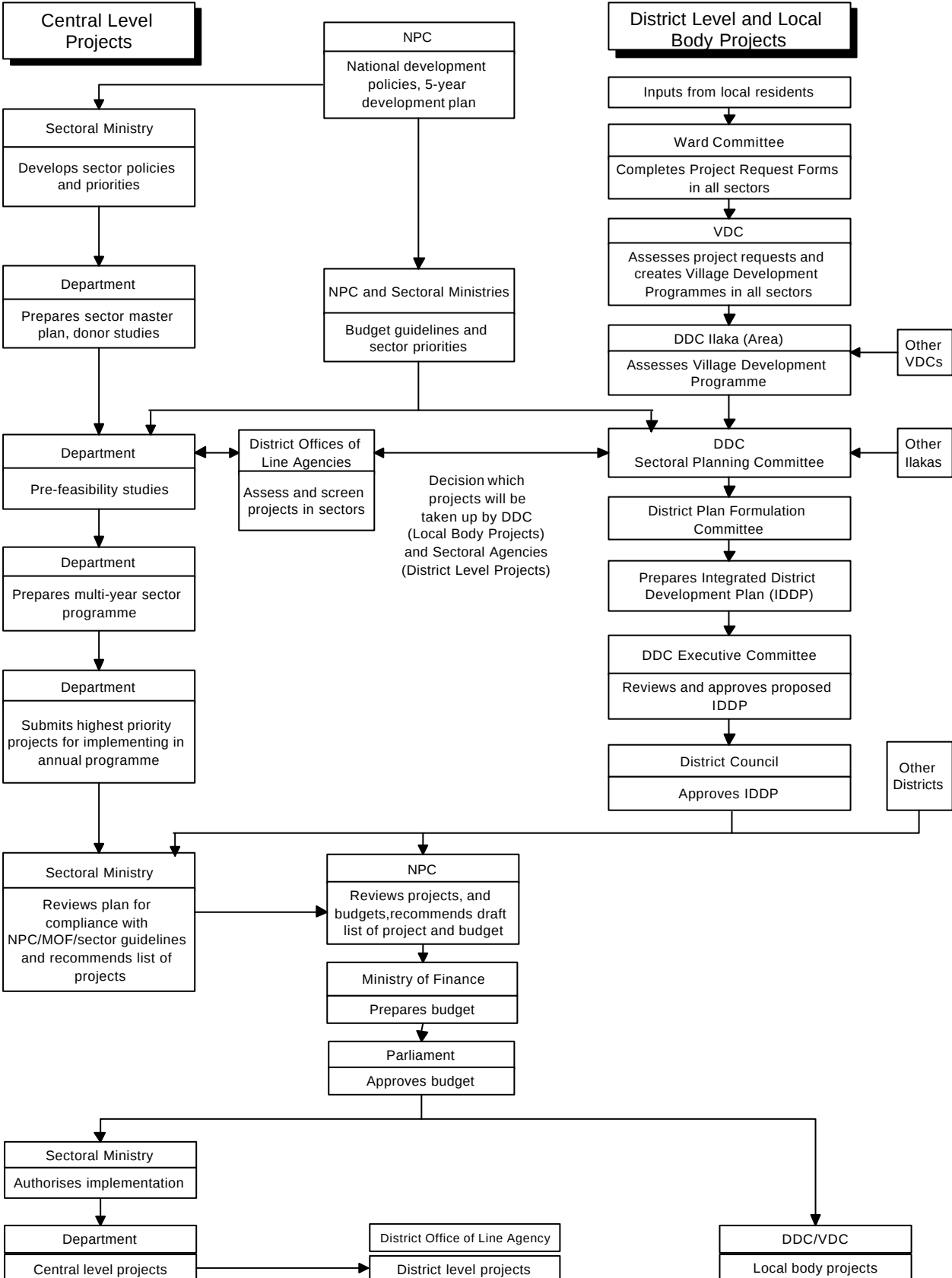
A critical element of preparation is identifying and comparing technical and institutional alternatives for achieving the project's objectives. Preparation thus requires feasibility studies to compare the respective costs and benefits of the alternatives and develop a satisfactory solution for the project design with the involvement of all stakeholders at the local, district or national level and the staff of the implementing and executing agencies.

Planning of procurement arrangement and actions necessary to ensure timely implementation of the project is also undertaken during feasibility study.

26.5.5 Technical Assessment

Technical assessment ensures that : the project is soundly designed, appropriately engineered and follows accepted standards for development; technical alternatives considered and solutions proposed are appropriate to local conditions; adequate support services are available and provided; and a realistic timetable is established for project implementation. An essential part of the technical assessment is also to prepare cost estimates and the engineering or other data on which they are based to determine whether they are accurate within acceptable margins; and that allowances for physical contingencies and projected price increases during implementation are adequate. In addition the, availability of raw materials or other inputs, the cost estimates for operating project facilities, and the need for technical services are established.

Figure 1.1 Project Identification Process



26.5.6 Institutional Assessment

The ability of a country to implement and manage a project depends largely on its institutional capability. The development of a viable local institution to cover its organisation, management, staffing, policies and procedures, but also the whole array of ministry's policies that condition the environment in which the institution operates is essential. Accordingly, a great deal of attention is given to identifying the personnel and the institutional relationships necessary to implement the project. The assessment identifies the project entity within the national administrative framework that will be responsible for project administration and management. This unit has to develop an effective relationship with all internal and external parties involved to minimise constraints and delays in project implementation.

26.5.7 Economic Assessment

During economic assessment, the project is studied in its sectoral setting. The project is verified through cost benefit analysis of alternative project designs to ensure that the design selected contributes most to the educational development objectives of the country. The investment programme for the sector, the strengths and weaknesses of public and private sectoral institutions, and key government policies are examined. Whenever possible, projects are subjected to a detailed analysis of their costs and benefits to the country. The result is usually expressed as an economic rate of return. It has to be shown that the project will make a satisfactory contribution to the economic development of the country.

26.5.8 Financial Assessment

Financial assessment examines the financial plan to ensure that the cost estimates are accurate and that sufficient funds are available to complete the project. Financial projections are closely analysed in the balance sheet, income statement and cash-flow table. Attention is given to the ability of the Ministry/Department to provide the required funds for project implementation. The assessment is also concerned with the operating costs of the project.

In addition, co-financing may be provided by bilateral aid agencies or other donor agencies. Availability of co-financing for a particular project depends upon timing, constraints imposed on its use, and the packaging of items to be procured. When other co-financiers are involved particular attention has to be given to procurement, planning and packaging.

26.5.9 Environment Assessment

Environment assessment (EA) is part of project preparation. Close integration of EA in project preparation ensures that (a) the environmental considerations are given adequate weight in site selection for the school and designing decisions and (b) the EA does not delay project possessing. Educational EA should normally cover :

- existing environmental baseline conditions,
- potential environmental impacts direct and indirect including opportunities for environmental enhancement,
- systematic environmental comparison of alternative investments, sites, technologies and designs,
- preventative, migratory, and compensatory measures generally in the form of an environmental mitigation or management plan,
- environmental management and training,
- environmental monitoring.

In a small project, only few environmental impacts may be studied. Most of the above mentioned factors should be assessed if a very large institution such as a teaching hospital, engineering college or new university is to be established.

26.5.10 Social Assessment

It has been observed that the communities by and large are willing to contribute in some measure to their school but there are limits to such willingness and are determined by locally variable factors. The community participatory approach should be studied during the social assessment for the implementation of physical improvement of the schools or campuses limiting the participation ratio to the extent depending on the locality and the economic conditions of the stakeholders for each physical improvement activities. The percentage of community participation will be anticipated in external development activities. Cost sharing with local communities will help to ensure the quality of construction. The community will be responsible for site preparation, execution for foundation, local material collection, flooring, door/windows shutters, painting, white washing, transportation of construction materials and overall management of school physical improvement programme.

26.5.11 Feasibility Report

The feasibility study report shall contain all the outputs of the feasibility analyses including environmental and social assessments. For compatibility with the FAR, the report shall provide all information necessary to fulfil the requirements of schedule 4 "Basis for and Method of Project Approval" relating to FAR section 23 (I).

26.5.12 Project Implementation Plan

After the project has been approved, the implementing agency takes out responsibility for the project. No matter how well a project is prepared and appraised its development benefits can only be realised when it is properly executed. Therefore, the implementing agency shall develop a detailed implementation plan. Guidelines for the preparation of detail plan are contained in Part II of PWDs Chapter 6, Project Implementation Plan.

The important steps for implementation are as follows :

- receive project proposal from VEC through DEC,
- carry out pre-feasibility study,
- get priority of DEO for feasibility study,
- carry out initial preparation with cost estimates of different alternatives if possible,
- get selection of plan by DEO for construction,
- carry out detail survey,
- finally assess the resources,
- prepare design and cost estimate,
- let SMC and VEC agree on the education level, the design and cost estimates of the plan,
- obtain agreement of SMC and VEC,
- procure construction materials and transport to site,
- start construction activities,
- take over the constructed property,
- carry out operation and maintenance activities,
- carry out monitoring and evaluation.

26.6 Engineering Design

26.6.1 General

The architects' efforts must be directed to the creation of a school or campus which actively and attractively suits the educational functions it serves. The school should accommodate and contribute a very special environmental qualities, evidenced by many characteristics of a building's design.

The physical aspects of the environment relating to the bodily senses of temperature, vision and hearing may be relatively well controlled by known engineering methods. The environment of a school or campus should be one which should actively stimulates the development of human beings socially, intellectually, physically and emotionally. Therefore, creating an environment, not just a space, should not be a bonus but rather a minimum essential feature.

The minimum requirements for physical facilities should be identified for different regions and socio-economic groups. Nevertheless, regardless of such variations, minimum physical facilities should cover the following aspects :

- School building
 - classrooms
 - offices
 - staff room
 - storage space
 - toilets
- Library
- Science Laboratory
- Drinking Water Supply
- Playground (and out door assembling area)
- Electricity Supply.

The designer must emphasise (i) optimal use of the available resources and (ii) detailing of designs to minimise operation and maintenance requirements.

If the given scheme is not feasible then alternatives should be investigated. Any design suitable in the Terai may not be suitable in hilly or mountainous regions, because of the variation in weather, temperature, rain and wind conditions. Therefore, before finalising any prototype of design for a school, alternative designs shall also be considered taking the above mentioned factors and the resources (materials, labour and the fund) and the technology available.

26.6.2 Desk Study

Public participation and investment is inadequate in education development. Therefore, investment from HMGN and Donor agencies should be increased for the development of education sector which is the minimum basic need of the growing number of children. Basically main objectives of a desk study are as follows:

- By developing the standard and facility of various levels of schools in a phase-wise manner, educational facilities will be delivered to 90 and 45 % of primary and secondary level of students respectively by the end of ninth plan period.
- By increasing public awareness and developing proper educational facilities in rural and urban areas, educational facilities will be provided to the growing population.
- By strengthening decentralised planning system, stakeholders committees, VEC, DEC and local institutions will be mobilised in the planning process at the local level.

- By increasing the facilities and the quality of education in a phase wise manner, more people will get employment opportunities and economic and social conditions will improve.
- For the proper development of educational facilities in urban and rural areas, private sector will be involved and special responsibility will be assigned to local government in order to activate them in developing and extending the education facilities.

During desk study period all the plan related standard drawings shall be thoroughly checked as per Nepal Standard Code and the Guidelines issued by MOE. Thereafter quality estimate of different items should be calculated.

26.6.3 Survey

The detail design of a school or campus requires information on many physical aspects of the area such as :

- Topography for the selection of site
- Soil conditions
- Availability of construction materials
- Geo-climatic conditions
- Means of communication
- Population centre
- Cost of materials and labour

Detail surveys should be conducted of all important features which affect the construction of building, playground and the required services such as water supply, electrical supply, approach road, etc.

A layout plans of the site should be prepared accurately showing the location of the school building, office building, library, playground, toilets, laboratory building, etc. This master plan will help the designer to decide how the site is allocated to meet various purposes of education activities. The survey shall contain the following information :

- Surveyor's name status
- Main measurement
- Area of the site
- Access to the site
- Number of families to be served
- Name of the participants (stakeholders) during detail survey
- Distance, where the construction materials are available.

26.6.4 Design

In the past, educational projects developed designs of schools or campus buildings with different standards. Some of them focused on the use of local materials while other required imported materials. In the past there was no standards for the provision of classroom space. The Basic and Primary Education Project (BPEP) in its present phase has developed standard designs for school classrooms and resource centres by drawing on the past experiences of the completed project such as: SERDP, PEP and EAARRP.

The present standard design has classrooms rectangular in shape and single story. The main structural system is load-bearing wall. Since the project could have different geographical regions, two types of designs have been designed to address the availability of local materials and geographical conditions. The structure system incorporates earthquake features such as DPC, lintel bands of reinforced concrete and piers on the wall.

The hill type design uses stones for the wall and timber for roof structure whereas the terai type design makes use of bricks and tubular trusses for roof structure. Similarly the design of resource centre buildings has been standardized. Roofing material for school and resource buildings is CGI sheet. BPEP has also developed a design for DEO buildings. The design follows standard design criteria for government buildings in the district headquarters. The structure system is load-bearing wall with RCC roof slab. It has to be a two-story building with floor area of approximately 6,100 sq. ft.

Since school construction involves the participation of the community, the design and construction details should be simple and technically sound.

The present design of the roof structure does not include the detailing of the ceiling. This should be provided in areas with extreme weather conditions to insulate against hot and cold weather. Since the roofing material is CGI sheet which easily transfer heat or cold from the outside environment, the ceiling can be constructed with locally available materials. However, the School Physical Improvement Programme (SPIP) under the Ministry of Education has adopted certain basis guidelines for classroom construction as mentioned below :

- Schools at primary level should have 0.75 sq.m. sitting area per student (UNESCO 11 sq.ft.).
- New classroom design for the terai region should accommodate a maximum of 55 students.
- For the hilly region minor modifications shall be adopted to design the classroom for 45 students, and for mountain region the classrooms are designed for a maximum of 35 students.
- Multi-mix grade teaching classrooms are designed especially for the mountain region and less populated areas in the hilly region.
- Multi-story reinforced concrete buildings are designed for urban and densely populated areas.
- Black tubular pipe, cold rolled channel and wire girder are incorporated in the design as a frame structure.
- CGI sheet will be common roof covering material.

Advantages of New Design:

- Light weight steel framed structure guaranteed for earthquake and cyclone resistance.
- Light weight portable sections easy for transportation.
- Per student space 8 sq.ft. (still below UNESCO Norms).
- Enough space for group works in the classroom.
- Minimum use of timber (d/w shutters, eaves boards).
- Quick erection (within 7 days) if materials on site.
- No risk of construction damages due to rain (foundation wall protected by rain).
- Possibility in continuation of construction work even in rainy season.
- Dissemination of earthquake resistance technologies to the remote and very remote areas.
- Utilisation of school blocks as emergency relief centres in case of disasters.
- Durable structure and maintenance cost minimum.

Risks:

- Necessary of high skilled trained manpower.
- Requirement of large space for storing of construction materials.
- Well planned construction schedule.

- May delay the supply of materials due to external factors.
- May delay the construction part to be accomplished by local community.
- Transportation cost high (remote and very remote areas).
- Unfamiliar technology for local communities.
- Light weight steel materials not easily available at local level.
- Light weight structural components need to be procured by the project, and stored at the district depot centres up to the implementation year.

Designs Variants:

- Alternative class-rooms design models for terai, hill and mountain covering the varieties of conditions across the country are developed.
- Variety of structure design and recommendations on structural component appropriate to various topo climatic regions are developed.
- The structural members shall be designed and detailed into sections making easier for transportation and erection.
- Each primary school should have at least 1,500 sq.m. of land (3 ropani/5 kattha) for the provision of toilet, water supply, class rooms and playground.
- Classroom load (no. of students/no. of class rooms) $\geq$ MOE norms (terai 55, hill 45 and mountain 35).
- A secondary school should have at least four classrooms devoted to primary sections.
- A lower secondary school should have at least three classrooms devoted to primary section.

With respect to school building design, HMGN has been recommended to follow the following guidelines :

- Ministry of Education (MOE) should issue and disseminate detailed design guidelines for low cost furniture school buildings, outdoor teaching space, play areas, landscaping and boundary walls. These should respect the existing standards for classroom size and future standards of net area per place. The stress should be on quality improvement to learning environments within severe resource constraints.
- The design guidelines should be based on ergonomic factors including illumination, body sizes and thermal comfort.
- Building design should aim to utilize Nepalese resources (particularly labour) and encourage growth of local industry.
- MOE should sponsor and carefully monitor the construction of prototype buildings and furniture evaluating the results against the design guidelines.
- Earthquake resistance particularly avoidance of loss of life should be incorporated into the building designs in a way that is sensitive to Nepalese traditions realistic as regards its resources.
- Security against wind, flood, fire and accidents should also be taken into account in a design.
- Design should consider reduction in maintenance and repair and the need to conserve on timber.
- Communities should remain responsible for maintenance. Pilot projects to develop workable procedures should be supported. Maintenance manuals should be made available. Maintenance workshops should be held at regular intervals at the central and regional levels.

Architectural Specifications:

- Area per student : 9.3 sq.ft.
- Minimum distance of the first desk from blackboard : 2 m
- Maximum distance of the student from teacher should not be more than : 7 m
- Preferable shape of a class room : square
- Preferable number of students in a class room : 40
- Opening in the wall : Should be at least one-third of the wall length of longer side of the wall.
- Sill height for windows : 75 cm or height of desk, whichever is less.
- Opening should not be of more than 1.2 m in width.
- Transparent roofing materials may be used if necessary (maximum 10% of floor area).
- Classroom should be white washed annually.
- Classroom height should not be less than 8 ft. in any place.

Ventilation:

Thorough ventilation to be provided, but special care to be given in the terai and hot hilly areas, where ridge, gable and eaves ventilation should be considered.

- Because of the climatic conditions, care should be taken to provide enough ventilation facility in the terai region,
- Special consideration should be given for roof insulation in the Terai and Himalayan regions.

Foundation : should be 75 cm x 75 cm.

Wall:

- Stone wall in mud mortar building to be 40-45 cm thick,
- Brick wall in mud mortar buildings to be 35 cm thick,
- Stone wall lime mortar building to be 40 - 45 cm thick,
- Brick wall in cavity wall should be 30 cm thick,
- Provide buttresses where structure members come.

Damp Proof Concrete (DPC):

- 5 cm with reinforcement adding waterproof compound (1:2:4)
- 2 layers of plastic sheets
- 2 layers of slates in cement mortar.

From ground level to DPC : Minimum 30 cm high
Maximum 60 cm high (may be more if required)

Flooring : Flagstone, slate, flat brick with cement mortar, 2 layers of plastic sheets and 5 cm concrete flooring (1:2:4)

Lintel Ring Band : 10 cm thick with 4 bars of 10 mm dia. (minimum).

Minimum height from floor to lintel level : 2.1 m for hilly areas
2.75 m for the Tarai areas.

Insulation to be provided in the tarai and mountain regions in floor and roof.

Finishing

- Outside pointing : Cement sand, the ratio should be 1:4.
: In case of lime sand, the ratio should be 1:2
- Inside plastering : Cement sand, the ratio should be 1:4 - 1:6 up to sill level.

Furniture

- Layout of furniture in class rooms should be done in such a way so that the teacher can reach each and every student in the class,
- Blackboard not less than 1.6 sq. m. in area should be provided in each classroom.

Drainage and Sanitation

- Enough care should be taken to provide a good facility of drinking water and sanitation in schools
- There should be at least one toilet per 50 students
- Slopping apron may be provided all round in a school building.

Kathmandu Valley

His Majesty's Government, Kathmandu Valley Urban Development Committee has developed standards for construction works to be done within Kathmandu and Lalitpur Municipalities Areas and Kathmandu Valley Urban Extension Area.

Except for the nursery schools, standards and norms have been specified for the construction of buildings for educational purposes. Clear provisions are laid in regards to height of the room, staircase and its details, chimney, clearance around the building for height and ventilation, total height of the building, parking area, compound wall and the height, built up area and open space, minimum area required to build school or other educational building, standards for kitchen, dining hall, chimney, bathroom and toilet, garage, electric installation and measures to control lightening etc.

It is mandatory for projects undertaking the construction of schools or campuses in Kathmandu Valley Urban Development Area and within the Municipalities of the twin cities of Kathmandu and Lalitpur to follow the standards, the codes and procedures laid down in the manual during the designing, approving and the construction period.

26.6.5 Preparation of Drawing, Specification and Bill of Quantities

Project drawings shall be based on detailed design studies prepared after detailed investigation and surveys and adopted design criteria and standards.

Project drawings shall show the proposed work in relation to the existing features and other information necessary for easy and accurate translation of the proposals in the field. For convenience, it is desirable that the drawings should have uniform size, scales and details.

The normal drawing sheet size are as follows :

- A0 (841 x 1189 mm) : for manually prepared drawing.
- A1 (594 x 841 mm) : for manually prepared drawing
- A2 (420 x 594 mm) : for most computer aided drawings

Drawings in A1 and A2 size are original drawings showing details to the scale shown and allowing components to be measured. Drawings to be included in the bidding documents and as-built drawings, shall be produced on these sheet sizes.

A3 (297 x 420 mm) : half-size copies of original drawings, while still readable, are a convenient size for binding all the drawings in appendix to the design report and for wide distribution.

A4 (210 x 297 mm) : for showing sketches of design details in the design report.

26.6.5.1 Major Types of Drawings

The drawings usually required for an educational project include the following :

- Location map (sometimes called a "key map") showing the location of the works in relating to the region/district/municipality/VDC commonly at a scale of 1:2,500,000.
- Site plan (sometimes called "index map") showing the project site and its immediate neighbourhood including the important physical features such as hills, rivers, track etc. It may be to a scale of 1:50,000 or 1:25,000. The location map and the site plan are commonly drawn on a single sheet.
- Land acquisition plan if required should be prepared on available village maps or settlement maps to a scale of 1:2,500 to 1:10,000 (preferably in the scale of available cadastral map) showing the relevant details.
- Roads : 1:2,500 horizontal and 1:250 vertical
- Buildings : 1:250
- Typical details : 1:50 to 1:100
- Foundations : 1:100 to 1:200
- Drainage : 1:50 to 1: 100
- Other utilities depending on nature and extent.

26.6.5.2 Specification

The standard specifications for the works shall be adopted from the prevailing specifications approved by the respective sectoral agencies such as Project Implementation Unit of Department of Education.

The special specifications will be developed for specific project requirement as proposed by the consultant or project staff and approved by the concerned Department or appropriate authority. Special specifications are needed where the corresponding clauses of the general specifications are not suitable to ensure the quality required in the project and in areas where the standard specifications are silent.

26.6.5.3 Bill of Quantities (BOQ)

The BOQ will be developed following common practices in the concerned sectoral agency. Each item should be clearly described and corresponding clauses of the standard and special specifications should be referred to allow the contractor to easily find the corresponding specification. The BOQ may be broken down into different types of works and should clearly provide for VAT and contingencies.

26.6.7 Cost

In an ordinary type of building the cost of materials comes to about 60% and labour about 40% of the total cost of the whole building. This may be further divided as percentage of the total cost:

Material:

Brick : 25%; Cement : 13%; Steel : 10%; Timber : 10%.

Labour:

Excavation : 1%; Masons : 25%; Carpenters : 12%; Smith : 2%

The costs for separate items of works may be roughly as follows, as percentage of total cost of building, for a single storey house:

Excavation and concrete in foundation	:	3%
Brickwork up to plinth	:	5%
Superstructure - brickwork	:	25%
Roofing	:	20%
Flooring	:	6%
Woodwork - doors and windows	:	15%
Internal finishes	:	6%
External Finishes	:	3%
Water Supply	:	4%
Sanitary work	:	8%
Electrical	:	5%

		100%

For large projects, realistic market prices of materials and labours and the other factors such as transportation and handling are taken into account while estimating the cost. The following guidelines shall apply to the engineering design level cost estimate :

- The quantities of the civil works should be computed on the basis of the detailed plan, design profiles and cross-sections following the standard methods of measurement.
- The quantities of metal work, electrical and mechanical parts will be as per the schedule contained in the design drawings, plans and their specifications.
- The rate analysis for the civil engineering items will be made following the unified norms and market prices of construction materials, labour and equipment hiring rates.
- The rates for civil engineering items shall be verified with the mean rates of prevailing contract prices of the last 5 years in the sector and geographical region.
- The rates of metal parts, electrical and mechanical parts will be based on the quotations from reputed prospective suppliers as per detailed specifications.
- The costs will be broken down into local and foreign currency components. It will also be further broken down into direct cost, taxes, physical and price contingencies.
- Detailed schedules of rates of labour and material, analysed equipment hiring rates, analysed item rates, quoted equipment prices etc. shall be properly documented as the engineer's cost estimate. These shall be kept confidential during the procurement of works and goods.
- The engineer's cost estimate shall be approved by the responsible authority under FAR before proceeding with procurement of works and goods.
- The engineer's rate analysis shall be kept confidential during tender evaluation process. However, total estimated cost may be disclosed to bidders.

26.7 Pre-construction

26.7.1 Cost Estimate

The completion of cost estimate of various activities such as civil construction will be followed by processes as mentioned below before the bids are invited :

- Preparation of contract packages
- Acquisition of land wherever required
- Selection of procurement methods and form of bidding
- Selection and preparation of bidding document
- Approvals from the executing agency and donor agency if required.

For details, please refer chapter 7, Engineering Design of PWDs Part II Procedural Directives.

26.7.2 Pre-construction Activities

For the timely completion of the project, the following important pre-construction activities should be carried out simultaneously. These activities requires cooperation from different agencies and these concerned agencies should provide support to the project manager in accomplishing scheduled objectives on time.

Principal Pre-construction Activities

No.	Activities	Responsibility	
1	Land Acquisition	Preparation and Follow up Approval Acquisition Action	Project Manager DEO, DOE CDO, Project Manager, MOH and others
2	Coordination with other Government agencies and utilities	Coordination	Project Manager
3	Management of construction material	Proposal Recommendation Approval	Contractor Consultant Project Manager
4	Approval of other government agencies and donor agency	Assistance Coordination	Project Staff Project Manager
5	Information programme	Project Manager	

For detail, please refer to chapter 8, Preconstruction Activities of PWDs Part II Procedural Directives.

26.8 Implementation Modalities/Procurement

26.8.1 Selection of Modality

Depending on the nature, complexity and size of the contract, implementation modalities should be decided with the consent of the concerned executing agency and the donor agency.

Projects financed by donor agency usually provide the implementation/procurement modalities of most of important activities in the Project Appraisal Documents and Loan/Credit Agreement with HMGN. These briefs become the mandatory guidelines for selecting modalities and implementing them in practice.

For details on procurement of construction and goods, please refer chapters 9 and 10 of PWDs Part II, Procedural Directives.

Clause 80 of Financial Administration Regulations (FAR), 2056 shall be made applicable, while undertaking the construction of the school buildings following the principle of cost sharing with the stakeholders. In such cases, the materials and technical expertise will be provided by HMGN and the construction will be done by the users' committee.

26.8.2 Standard Bidding Document

The selection of Standard Bidding Documents depends on the size and complexity of the construction works to be undertaken. For works costing less than Rs 5 million, SBD : Works - Small contract should be used. For works costing more than Rs 5 million and less than Rs 60 million, SBD : Works-Medium contract should be used.

For details, please refer Table 9.1 in chapter 9 of PWDs Part II, Procedural Directives.

26.9 Construction

Project management activities in relation to construction are described in chapter 11. Construction of Works of PWDs Part II, Procedural Directives. The procedures outlined in this chapter should be followed while undertaking the construction works.

HMGN has enacted "Building Act, 2055" to develop the necessary management for regularising building construction work and protect them as far as possible from earthquakes, fire and other natural hazards or disaster. The following provisions provided in Building Act, 2055 should be complied with before or during the construction period of the building.

Definitions

In accordance to clause 2 the term defined shall have the following meanings assigned to them, except where the context requires otherwise:

"Building" is defined as a complete or part of a physical structure to be used for residential, industrial, commercial, official, conference, hospital, cold storage, storage or for any other use or utilization.

"Building Construction" means construction of new building, re-construction of old building, addition of story, changes in the facade or adding or reducing of windows, doors, blockade, rooftop, sundeck etc. or works related to above mentioned construction.

Clauses 8-16 are applicable to the construction of buildings in any municipality area for all types of classified buildings. Buildings falling under class A and B of clause 8 require approval of the concerned municipality even if constructed in area out of its jurisdiction.

In accordance to clause 8, the buildings are classified into four different categories as follows:

1. A class : Most modern buildings to be constructed in accordance with the building codes adopted in the developed countries and following international state of art.
2. B class : Joint residential building, conference hall, hospital, cold storage, large storage building, industrial and commercial buildings having more than four stories.
3. C class : Simple residential buildings with length, breadth and height as specified in the regulations under this Act.
4. D class : Small house or cottage built out of bricks or sun baked bricks, stones, soil, bamboos, straw (wheat or rice).

The following provisions shall be met while constructing buildings:

- Buildings need to be constructed in accordance with Building Codes and Standards.
- The drawings of the buildings falling under A and B classes within the municipality area shall be approved by the concerned office of the Urban Development and Housing prior to the approval from the municipality.
- The drawings of the building falling under A and B classes from outside the municipality area shall be approved by the concerned office of the Urban Development and Housing.
- The municipality shall not approve the drawings against the standards specified in buildings codes.
- Pursuant to clause 14(2), if any one constructs buildings against the standards as specified in building codes the Office of the Urban Development and Housing may order to demolish part or the complete building and penalise the person or the institution for an amount of Rs. 75,000 or 50,000 for the buildings constructed under A or B classes respectively.

26.10 Operation and Maintenance

Schools or campuses comprising buildings, services and the premises are major capital investments and it is necessary to preserve them by means of appropriate maintenance done at an appropriate time. Failure to maintain these physical facilities properly leads to rapid deterioration with such subsequent increase in operational and maintenance costs and eventually to expensive reconstruction.

Educational institute maintenance may be defined as a function of keeping the building, services, premises and other facilities in the best possible condition to ensure reliable and safe conduct of all educational related functions. It will:

- i. minimise the rate of deterioration of the facilities and prolong its life;
- ii. provide better running atmosphere and reduce the cost of running the school; and
- iii. ensure reliable and safe operation of the educational programmes.

Maintenance should not be intended to extend the life of the buildings and services into perpetuity, but minimises rate of deterioration over time due to the twin forces of aging and use and provide increase service performance.

From an engineering point of view, there is a set of interventions that are required over the life of a building as mentioned below :

- routine or regular maintenance;
- periodic or planned maintenance; and
- rehabilitation (redesigning, reconstruction and upgrading).

Optional timing of these interventions depends primarily on climate, level or frequency of use and the original quality of construction. The specific activities to be carried out, however depend on the type of physical facilities the school or the campus have.

Chapter 20, clause 109 of Education Regulation, 2049 with seventh amendment 2057 has made a provision to collect various fees as stated below :

- Monthly tuition fee
- Sport fee
- Library fee
- Poor student assistance fee

- Admission or readmission fee
- Physical facility development fee
- Examination fee
- Extra curricular activities fee
- Transfer certificate fee
- Other fees.

However, the public schools shall not collect the tuition and admission or readmission fee from the students. Fees collected shall be spent on the designated purpose only.

Therefore, the fees collected for the purpose of physical facility development should be used only for developing the physical facility or its maintenance.

26.11 Benefit Monitoring and Evaluation (BME)

26.11.1 General

BME refers to a group of activities which seek to improve the beneficial impact of completed projects as well as to incorporate lessons of experience into future project's operations. BME comprises three activities which provide managers and planners with information needed to enhance the efficiency and effectiveness of developments. These include :

- the preparation and analysis of benchmark information
- benefit monitoring; and
- studies which evaluate the benefits of a completed project.

26.11.2 Monitoring and Evaluation (M&E)

The following monitoring and evaluation arrangements should be followed :

- Periodic project management information system (PMIS) and education information management system (EIMS) reports to districts and national level authorities;
- Annual reviews of district annual work programmes and budgets (AWPBs) by DDE;
- A mid-term-review which would monitor changes in student achievement vis-à-vis a baseline survey of students undertaken for program preparation;
- Periodic evaluations of the impacts of specific program intervention on classroom practices and learning to be carried out by NGOs/experts;
- Bi-annual and joint supervision mission by HMGN and project financiers, i.e., the donor agency.

For details, please refer the Basic and Primary Education Program of HMGN, chapter 5 Monitoring and Evaluation in Program Implementation Plan (Main Report).

BI-MONTHLY PROGRESS REPORT

Region :
Zone :
District :

Fiscal Year:
Bi-Monthly Period:

(Progress as % of Total)
NRs.)

(Amount in Thousand

S.No. [1]	Name of Scheme [2]	Start Year [3]	Total Estimated Amount [4]	To end of Last Fiscal Year		Current Year		This Period		Progress for This Year to end of This Period [11]	Cum. Prog. to end of This Period [12]	Remarks [13]
				Prog. [5]	Amount [6]	Target [7]	amount [8]	Target [9]	Amount [10]			

TRIMESTER PROGRESS REPORT

Region :
 Zone :
 District :
 Scheme Name :

Start Year :
 Est. Completion Year :
 Current Fiscal Year :
 Trimester :
 Scheme :

NRs.)(Progress as % of Total)(Amount in Thousand

S.No. [1]	Item No. [2]	Item Description [3]	Unit [4]	Estimated Quantity [5]	Estimated Amount [6]	To end of Last Fiscal Year		Current Year		This Period				Remarks [15]
						Prog. [7]	Expense Amount [8]	Target [9]	Budget Amount [10]	Target [11]	Budget Amount [12]	Prog. [13]	Expense Amount [14]	