Consultation Version 1.1

Impact of Disasters on the Education Sector in Cambodia

Developed under the Advocacy and Pilot Implementation Project on the Education Sector in South East Asia

Support to Implementation of Hyogo Framework for Action through Mainstreaming of Disaster Risk Reduction into Development - A Program of the Regional Consultative Committee on Disaster Management (RCC)

National Committee on Disaster Management

Ministry of Education, Youth and Sports

EUROPEAN COMMISSION
Humanitarian Aid

UNDP

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A Study on Impact of Disasters on the Education Sector in Cambodia.
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www.eicambodia.org

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List of Abbreviations and Acronyms

ADB	Asian Development Bank
ADPC	Asian Disaster Preparedness Center
CESSP	Cambodia Education Sector Support Project
CMDG	Cambodia Millennium Development Goals
CR	Cambodian Riel
DRR	Disaster Risk Reduction
ECHO	European Community Humanitarian Aid Department
EIC	Economic Institute of Cambodia
EMU	Emergency Management Unit
ESDP	Education Strategic Development Plan
ESP	Education Strategic Plan
ESSP	Education Sector Support Program
ESWG	Education Sector Working Group
FTI CF	Fast Track Initiative Catalytic Fund
MDRD	Mainstreaming Disaster Risk Reduction into Development
MoEYS	Ministry of Education, Youth and Sports
MoLMUPC	Ministry of Land Management, Urban Planning, and Construction
MPWT	Ministry of Public Works and Transport
MRD	Ministry of Rural Development
NCB	National Competitive Bidding
NCDM	National Committee for Disaster Management
PIP	Priority Implementation Partnership
PRD	Pedagogical Research Department, MoEYS
RCC	Regional Consultative Committee on Disaster Management
RGC	Royal Government of Cambodia
SNAP	Strategic National Action Plan
TWG	Technical Working Group
UNDP	United Nation Development Programme
UNDTUM	United Nation Disaster Management Team
US$	United States Dollar
WB	World Bank
WFP	World Food Program

Chapter 1: Background Information

1. Introduction and Methodology

No one can stop natural disasters. However, we can reduce the impact of natural disasters on the physical and the socio-economic losses in society. It is notable that victims of disasters mainly come from the least wealthy and influential; those in unsafe houses and engaged in more dangerous activities, who have limited options and entitlements. In any case, school children killed in schools or patients in health care facilities are especially disturbing aspects of the aftermath of disasters. Surely, these places should put safety issues first.

Following the October 2005 earthquake in northern Pakistan, between 17,000 and 20,000 students were reported killed in the collapse of some 10,000 school buildings. Children comprised half of more than 75,000 deaths. Over 1,000 health care facilities were also destroyed, with high casualties among patients and health care workers. In the Gujarat 2001 earthquake 11,600 schools were destroyed or severely damaged. The main shock occurred during a national holiday so school deaths were not large, but tragic incidents involved students in schools for celebrations and, again children comprised half of more than 20,000 dead.

Concentrated or disproportionate casualties among certain groups occur in most disasters. The table below shows a selection of events, in a variety of countries, in which there were concentrated casualties in, or widespread destruction of school, or both; and where destruction was identified with improper construction or sites, and failure to meet established building standards.

Table 1: Earthquakes and School Disasters

2005 northern Pakistan (75,000 + killed) 17,000+ 'students' reported killed. 10,000 school buildings destroyed.
2001 Gujarat (20,000 killed) 9,600 primary, 1,913 'grant-in-aid', 127 secondary, 110 higher education and technical schools destroyed or severely damaged.
1998 East Nepal (722 killed, 1,200 injured) 1,200 schools destroyed or heavily damaged.
1993 Latur-Osmanabad, Maharashtra, India (8,311 Killed) Many schools destroyed. Prosecutor General threatened to file a suit against contractors who built them. 48% of all dead were 14 years of age or younger.
1992 Dahahour, Calro, Egypt (560 killed, 6,500 injured, 40,000 homeless) Approximately 1,500 schools destroyed or damaged beyond repair, 3,500 needing major repair.
1992 Erzincan, Turkey 6-story medical school collapsed burying 62 students.
1988 Spitak, Armenia (55,000 killed, 130,000 injured, 250,000+ homeless) Two thirds of deaths children and adolescents, mostly killed in school and kindergarten buildings. 32,000 children evacuated.
1988 Yunan Province, China (748 killed, 7,750 injured, 1 million homeless) 1,300 schools destroyed.
1980 El Asnam, Algeria (25,000 killed, 50,000 injured, 325,000 homeless)

In this regard, Cambodia is considered as one of the more disaster-prone country in South East Asia; its main and frequent threats are floods. Due to environmental degradation and human activities, such natural hazards have been affecting the country on a recurrent basis.

The Mekong flood in 2000 gave Cambodia the worst experience in the last 70 years, causing both socio-economic and physical damages. According to the official report of the National Committee for Disaster Management (NCDM), the floods affected about 3.4 million people with 347 fatalities, 80 percent of which were children. Moreover, schools and other infrastructures such as hospitals, houses, and pagodas were seriously damaged, with a total estimated loss of US$161 million.

Again, floods hit Cambodia in 2001 and 2002, damaging approximately US$36 million and US$12 million respectively. In 2001, the floods killed 62 people while in 2002 the floods killed 26 (40 percent of whom were children), and many schools were destroyed.

Generally, children are the most vulnerable group in all disasters but there are no major educational programs related to disaster risk reduction (DRR) in primary or secondary schools in Cambodia. Thus teaching DRR in schools will help raise awareness and give better understanding not limited to children and teachers, but to the community as well. When disasters occur, this will in turn help to minimize losses borne by the government. At the same time, investing more in strengthening school-building structures before disasters take place would help reduce long term costs, protect children, and ensure educational continuity after the event.

A. Project Background

Realizing the importance of disaster preparedness, the Regional Consultative Committee (RCC), in collaboration with the Asian Disaster Preparedness Center (ADPC), has initiated a program on Advocacy and Capacity Building for Mainstreaming Disaster Risk Reduction into Development (MDRD) in March 2004 at the 4th meeting in Bangladesh. This MDRD program is divided into three phases: Phase I (2004-2007), Phase II (2008-2010), and Phase III (2011-2015) as detailed in Annex B.

The program focuses on two main objectives: (1) to increase awareness and political support for adoption of MDRD in RCC member countries, and (2) to enhance the capacity of national disaster management systems to develop and implement MDRD in selected sectors and thus provide support to the implementation of the Hyogo Framework for Action (HFA) in South East Asia.

The 5th Regional Consultative Committee (RCC) meeting held in Hanoi, Vietnam, has drawn a new roadmap for the achievement of RCC program on MDRD in Asia. With the endorsement from the 25 RCC member countries during the meeting, a statement on MDRD was issued to prioritize mainstreaming of disaster risk reduction (DRR) to be initiated in national development planning process as well as in six specific sectors development, namely Agriculture, Education, Health, Housing, Infrastructure, and Financial services.

In the Education sector alone, this Hanoi RCC 5th statement identified three sub themes to initiate mainstreaming of DRR as shown below:

- Integrating DRR modules into school curriculum;
- Promoting hazard resilient construction of new schools; and
- Introducing features into schools for their use as emergency shelters.

To achieve the component 2 of the MDRD program (detailed in Annex B), the Regional Consultative Committee (RCC) has chosen three RCC member countries with proven strong interest in piloting the implementation of Priority Implementation Partnerships (PIP) to mainstream DRR in line with the three sub themes above into the Education sector, called the MDRD Education project. These countries include Cambodia, Lao PDR, and the Philippines. The project is comprised of four main activities:

- Activity 1: Initiating mainstreaming of disaster risk reduction into secondary school curriculum;
- Activity 2: Report on impacts of disasters on education sector;
- Activity 3: Advocacy workshop on mainstreaming disaster risk reduction into education sector; and
- Activity 4: Stakeholder consultation as follow up to the advocacy workshop.

In Cambodia, the activity 1 was piloted since mid 2007 with support from ADPC in close collaboration with MoEYS and NCDM in seven schools located in three provinces, Kandal (two schools), Kratie (four) and Prey Veng (one school), and was completed at the end of 2007.

As part of the MDRD Education project, a research study on socio-economic and physical impact assessment of disasters on education sector is jointly produced by the MoEYS, NCDM, ADPC, ECHO, UNDP, and EIC. This paper aims at raising awareness on the necessity of integrating DRR into education sector policy.

B. Project Objectives

The objectives of the MDRD Education project are the following:

- To build up evidence based rationale to raise awareness of integrating DRR concerns into education sector policy;
- To advocate for changing practices in school construction and incorporating disaster risk resilient features in school construction.

C. Project Purpose/Rationale of the Study

Results of the project have included consensus for mainstreaming DRR in the education sector and identification of additional mainstreaming opportunities in education and related ministries. It is envisaged that the experience obtained throughout the project activities will serve as a good example for drawing lessons on how to mainstream DRR into development policy and planning. Moreover, this can also be adapted in other countries.

To meet the above project objectives, a study on impacts of disasters on the education sector has been conducted with emphasizing focus on the following issues:

- Socio-economic and physical impacts of disasters on education sector
- Review of current practices in school construction
- Solution oriented recommendations for:
    - Minimization of social and economic impacts of disasters, especially on education sector;
    - Improving procedures and guidelines for school construction;
    - Identifying specific opportunities to improve safety in school construction in pipeline projects over the next 3 years.

D. Study Methodology

To build up evidence-based rationale for raising awareness on integrating disaster risk reduction concerns into education sector policy and to advocate for changing practices and incorporating disaster resilient features in school construction, it was necessary that a study on socio-economic and physical impacts of disasters on education sector has to be conducted.

Due to the mixed nature of the study, which combines both socio-economic and physical assessments of disaster impacts, EIC had proposed the following research methodology to assure the objectives attainment and the validity of the study. Since Cambodia is more vulnerable to floods than other kinds of disasters such as draught, earthquakes and storms, the study has stressed only on the impacts of floods on the education sector.

Desk Review: A review of existing relevant documents and research studies was made to get a better understanding of the issues in the project. These research studies were conducted by different institutions such as ADPC, MoEYS, NCDM, MRC, etc. At the same time, all relevant secondary data were collected and analyzed in close collaboration with ADPC, MoEYS, and NCDM.

Field Survey: Certain field surveys were conducted in three provinces located in first priority flood prone areas, namely Prey Veng, Takeo, and Kandal, under assistance from MoEYS and NCDM. The total number of sample for this survey was 92 vulnerable schools, which were randomly selected from the three provinces.

In order to assess the impacts of disasters on education sector at the national level, secondary data related to disaster on education sector of other provinces were also collected through assistance from MoEYS and NCDM. Detailed study methodology, including sampling and survey process, can be found in annexes A and D at the end of the report.

Chapter 2: Institutional Arrangement for disaster mitigation and education

2.1 General Information on Education Sector in Cambodia

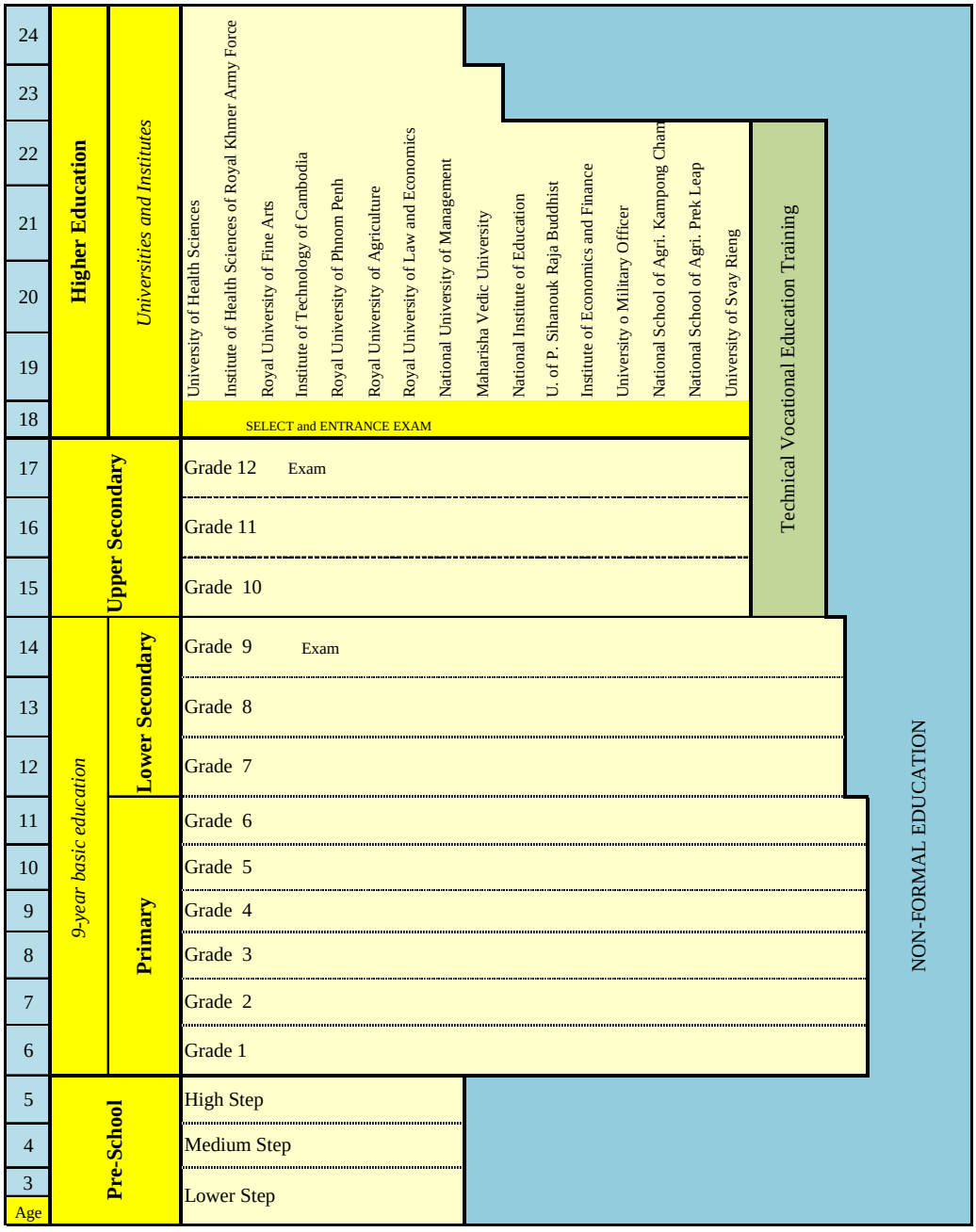
The education sector in Cambodia has been improved gradually under efforts from the Ministry of Education Youth and Sports (MoEYS) and various stakeholders, though currently perceived to need major improvements..This improvement can be reflected by the development of educational system, starting back in the 1980s after the collapse of the Pol Pot regime.

Until recently, there are three main stages of educational system development in Cambodia. The first stage started from 1979 to 1983 which adopted the ten-year system; that is, five years for primary education, two and three years respectively for lower and upper secondary education. By adding one more year into lower secondary education, the second stage began in 1984 and ended in 1996, making the total duration of education increase to eleven years. During these two stages, MoEYS used a education methodology, called “Teacher Center”, in which teachers play the most active role by providing knowledge to students,

In order to adapt to the educational system in developed countries, the third stage of educational system development started from 1997 to date, applying the 12 years system, of which six years for primary education, three years for both lower and upper secondary education (*Refer to figure below*). At this stage, the above education methodology, “Teacher Center”, was changed to “Student Center” in which students are the most active in the class and teachers play a role only as a guide and not as an instructor.

To understand in depth the gradual improvement of education sector in Cambodia, curriculum development policy and selected educational statistics and indicators are shown in the following parts of the report. At the same time, location of schools considered vulnerable to disasters, particularly floods and droughts, is also presented.

Figure 1: Education System in Cambodia



A. Curriculum Development

The core school curriculum for general education in Cambodia was developed back in the year 1996. More recently, in 2004 the Pedagogical Research Department (under MoEYS), the national agency responsible for preparing the school curriculum, has prepared the "Policy for Curriculum Development 2005-2009" which states the policy for upgrading and improving the 1996 core curriculum. This policy has been designed for a period of five years 2005-2009 and will be reviewed in 2009 for another five years, i.e. for the period 2010-2014[1].

[1] RCC Guideline 6.1

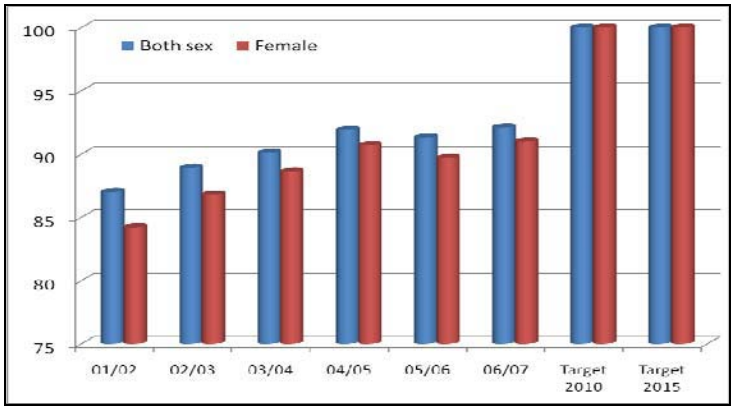
Having seen the importance of mainstreaming disaster risk reduction (DRR) into students and people in the country as a whole, partnerships between ministry of education and national disaster management office has been established under the ongoing Priority Implementation Partnerships (PIP) on Mainstreaming DRR into Education Sector of the RCC MDRD Program, being implemented by the RCC Secretariat in partnership with UNDP and ECHO in Cambodia, Lao PDR and the Philippines[2].

Currently, MoEYS is implementing the revised 1996 core curriculum as stated in the 2005-2009 curriculum development policy. The implementation of this revised curriculum has started since academic year 2007/2008 for Grade 1 and so on, and is expected to be accomplished in all grades by 2011. At this cycle of curriculum development, it is helpful and relevant time to integrate DRR module into the study programs in Cambodia.

B. Selected Education Statistics and Indicators

The Education Statistics and Indicators of MoEYS show that 2006/2007 net enrollment rate in primary schools was 92.1 percent, up from 91.3 percent in the previous year and from 87 percent in the academic year 2001/2002. Female net enrollment rate in primary schools was 91 percent, slightly up from 89.7 percent in the prior year and from 84.2 percent in 2001/2002. These rates have not reached the 2010 targets of Cambodian Millennium Development Goals (CMDGs) yet, which requires 100 percent enrollment rate in primary education.

Figure 2: Net Enrollment Rate (percent) in Primary Education

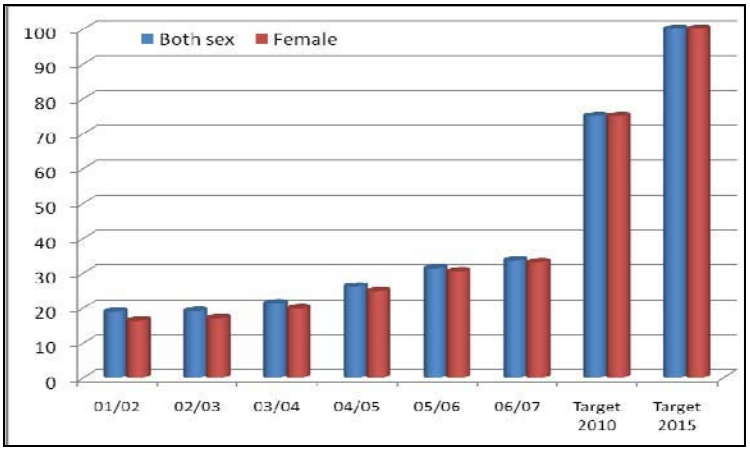


Source: Compiled from Education Statistics and Indicators series, MoEYS

In lower secondary schools, net enrollment rate was 33.7 percent, about 2.4 percent up from the previous year and around 15 percent up from 2001/2002. Female net enrollment rate in this stratum was about 33 percent in 2006/2007, around three percent up from the previous year and 17 percent up from 2001/2002. But, these rates are still far below the CMDG targets, which are 75 percent and 100 percent in 2010 and 2015 respectively.

[2] Ibid

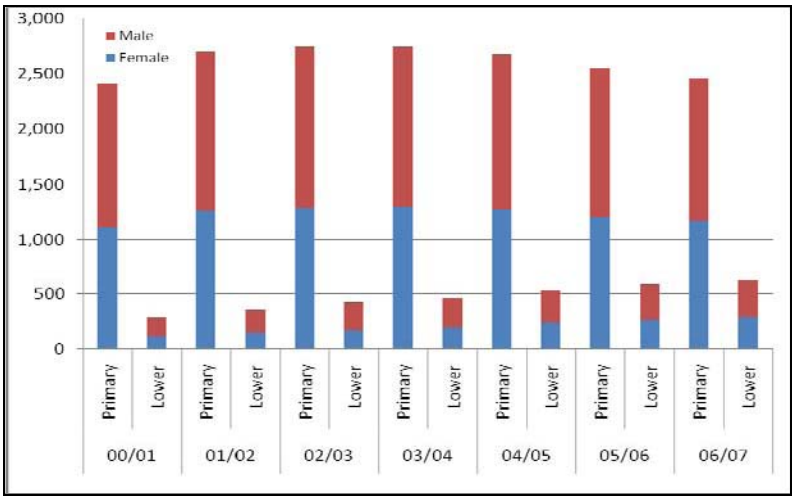
Figure 3: Net Enrollment Rate (percent) in Lower Secondary Education



Source: Compiled from Education Statistics and Indicators series, MoEYS

In the academic year 2006/2007, student enrollment was about 3.4 million, 46 percent of which was female. The classroom size averages around 42 students, down from 43 in the 2005/2006 and 44 from 2001/2002. The primary student enrollment declines gradually during the last five years, making the annual rate down of around two percent. Such decline is mainly due to the lower birth growth rate resulting from contraception programs. Yet, the enrollment in secondary schools increases remarkably with the annual growth of 12 percent in lower secondary schools and 14 percent in upper secondary schools.

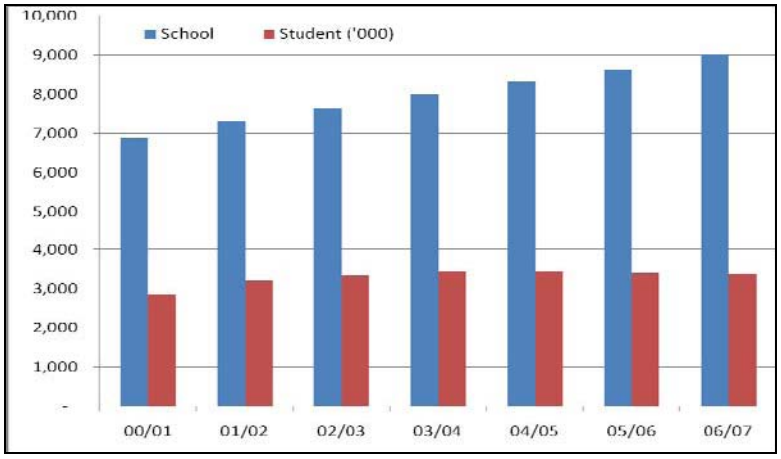
Figure 4: Student Enrollment ('000) by Gender in Primary & Lower Secondary Schools



Source: Compiled from Education Statistics and Indicators series, MoEYS

The same MoEYS statistics indicate that there were more than nine thousands schools in Cambodia in the academic year 2006/2007, around five percent up from the prior year and 24 percent up from the year 2001/2002. Of this number, the primary school takes 6,365 while lower and upper secondary schools respectively take 846 and 283, making the total class number increase to around 80,733 in that year.

Figure 5: Number of Schools and Student Enrollment in Cambodia



Source: Compiled from Education Statistics and Indicators series, MoEYS

2.2 Disaster Intervention MechanismS of MoEYS

A. MoEYS Intra-ministry Mechanism

The MoEYS organizational chart shows that there are five main directorate generals functioning in the ministry, namely: Directorate General of Administration and Finance; Directorate General of Education; Directorate General of Higher Education; Directorate General of Youth and Sports; and Inspectorate General.

The Directorate General of Administration and Finance is composed of seven departments, of which there is one department responsible for management of material and assets of MoEYS, called Material and Public Assets Department. When disasters affect school buildings and/or equipments, this directorate general has the duty to take measures financially and technically.

Another directorate general of MoEYS, Directorate General of Education, plays an active role in general education, i.e. from grade 1 to 12. This important directorate general, composing of seven departments, is to assure the quality and efficiency of general education services in the country. The Pedagogical Research Department of this directorate general is account for designing and upgrading school curriculums.

The Municipal/Provincial Office of Education, Youth and Sports, another organ in the MoEYS organizational structure, is responsible for functioning at the basic level and to report to the ministry headquarters which in turn allocates tasks to its respective directorate general for taking actions. Detailed organizational charts of MoEYS could be found in Annex E of the report.

According to the NCDM policy document and the structure of NCDM in which MoEYS is a member, the MoEYS has the following duties:

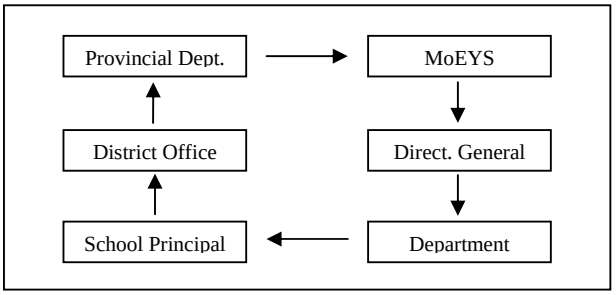
- Establish an emergency management unit (EMU) in the Ministry which is responsible for developing and administering policy and supervises the emergency-related activities of the departments, bureaus, offices and agencies under it, as well as all other institutions and agencies working in the sector.

- Establish national policy, operational plans, training curricula and material, as well as guidelines for damage and need assessments to be conducted by agents in the sector.
- Organize emergency response teams in all schools, institutions of learning, and educational establishments.
- Make suitable school buildings in the affected areas available as evacuation centers.
- Assist in the public education campaign through integration in the school curricula of subjects related to emergency management, hazards, and precautionary measures.

In practice, when disasters occur, each school principal is responsible for reporting educational losses and damages to District Office of Education which then informs to the Provincial Department. All the reported data and information will be forwarded to MoEYS to take measures accordingly to the responsibility of its respective directorate general, mainly Directorate General of Education and Directorate General of Administration andFinance.

For instance, when the course syllabus cannot be accomplished within the timeframe of an academic year due to either floods or any other kinds of hazards, the school principal has to report the issues through his hierarchical line to MoEYS. Then, MoEYS will divide the tasks to its specialized department, called Directorate General Department of Education, to address the problems. Likewise, if schools are incurred from physical damages caused by such disasters, the Directorate General of Administration and Finance of MoEYS will take its role solving the issues.

Figure 6: MoEYS Intra-ministry Mechanism in Disaster Interventions



Source: Authors, interviews with MoEYS officials

B. MoEYS Inter-ministry Coordination

Since the emergency management unit (EMU) of MoEYS does not exist yet in the organizational structure of the ministry, methods used in inter-ministry coordination related to disaster intervention between MoEYS itself and other ministries or institutions are not officially regulated. In general, MoEYS always cooperate with other ministries while addressing problems related to education. For example, when constructing new schools in flood prone areas, MoEYS will collaborate with NCDM and the Ministry of Public Works and Transport (MPWT) by providing recommendations on how to build the most adaptable schools.

According to the resolution dated October 25, 2007 of NCDM, an inter-institutional technical working group (TWG) was created for DRR Strategic National Action Plan (DRR SNAP) for 2008-2013. This TWG is comprised of 16 members from various ministries and institutions,

one of whom comes from the Pedagogical Research Department of MoEYS. The following duties must be taken into practice:

- Directly participate in forming DRR SNAP
- Set up projects through consultation with main stakeholders and through workshops, trainings; and include all related sectors in SNAP
- Collect all necessary data, documents, and experience from relevant stakeholders for drafting DRR SNAP
- Assess actual demands and build up capacity in order to mainstream DRR into development
- Monitor and report by consulting processes and dissemination of SNAP
- Organize workshops with participations of United Nation Disaster Management Team (UNDMT), International Organizations (IOs), and Non-governmental Organizations (NGOs).

2.3 DRR-related Educational Programs in Cambodia

There are no major educational programs related to DRR in Cambodia. However, DRR-related topics can generally be found in several subjects such as Geography, Environment, and Earth Studies, which have been implemented by MoEYS in most grades in Cambodia.

Until recently, a drafted DRR-related educational program, funded by ADPC, has been piloted under a memorandum of understanding between MoEYS and ADPC in seven secondary schools of three flood prone provinces, Kandal, Prey Veng and Kratie. The course-syllabus and supporting documents of this specific program are drafted by the Department of Pedagogical Research of MoEYS. This integrated draft DRR module focuses on two subjects, Earth and Geography, which cover flood, drought, tsunami and deforestation.

Since July 2007, the implementation of this draft DRR module has been done in two stages. First, all concerned teachers from the pilot schools were trained on how to teach this specific module. Then, the module was integrated into school curriculum. There was a monitoring and evaluation process conducted at the end of the pilot project in order to get recommendations for the finalization of the DRR module, done in the end of 2007.

Chapter 3: Socio-economic Impacts of Disasters on Education Sector

3.1 Location of Schools in Disaster Prone Areas

Based on a study conducted by WFP/NCDM on mapping disaster prone areas in 2003[3], there are around 260 communes in 15 provinces considered prone to flood, mostly those located around Tonle Sap Lake and along the Mekong River. Whereas 270 communes in nine provinces are considered prone to drought.

Floods generally cause much more damage than droughts do in the education sector. Every year, floods provoke delay of study programs and school damages, mainly those located in the aforementioned flood prone areas. Among the 15 flood prone provinces, there are five most affected provinces situated along the lower part of the Mekong River, namely, Kampong Cham, Kandal, Prey Veng, Svay Rieng, and Takeo.

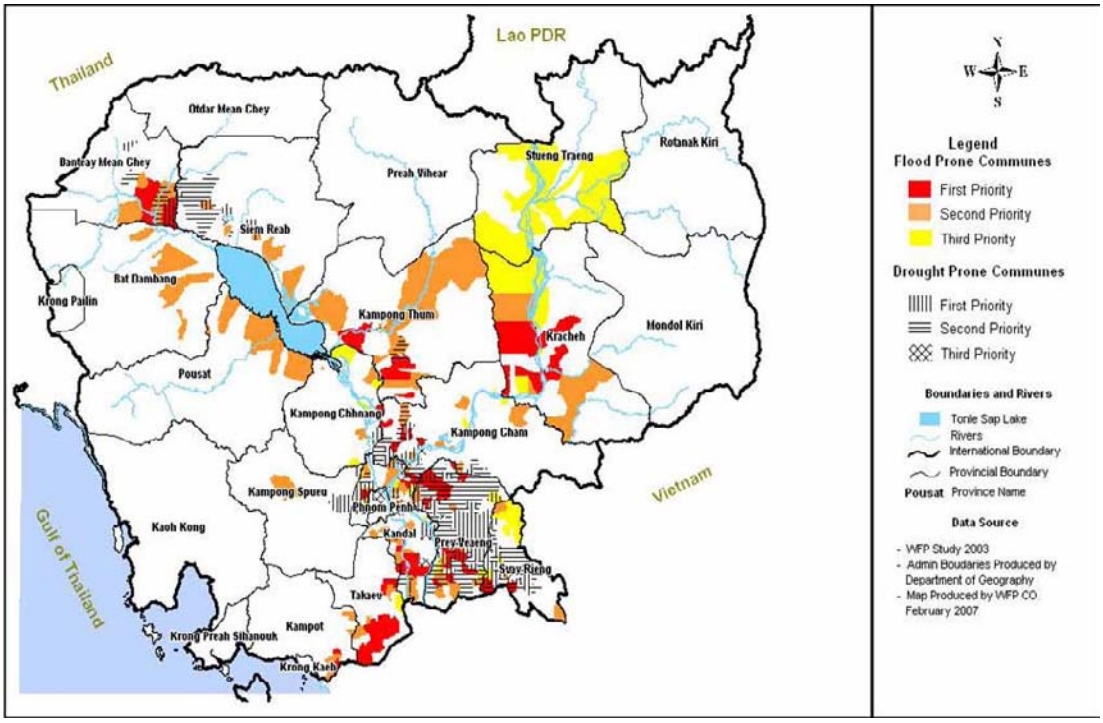
The compilation of 2006 data obtained from SEILA Program and the 2003 survey data of WFP/NCDM proves that about 21 percent of schools in Cambodia are situated in flood prone areas which equal 1,886 schools, of which 65 percent are primary schools. Those vulnerable schools are mostly in Kampong Thom (17 percent), Kandal (15 percent), and Prey Veng (12 percent) as detailed in Table C1 of Annex C.

In accordance with the prioritization of emergency by WFP and NCDM among the 260 flood prone communes, there are 76 communes located in first priority[4] flood prone areas, in which about 552 schools situated. The majority of those schools are primary schools in Prey Veng, Takeo, Kandal, and Kratie.

[3] NCDM/WFP (2003) "Mapping Vulnerability to Natural Disasters in Cambodia"

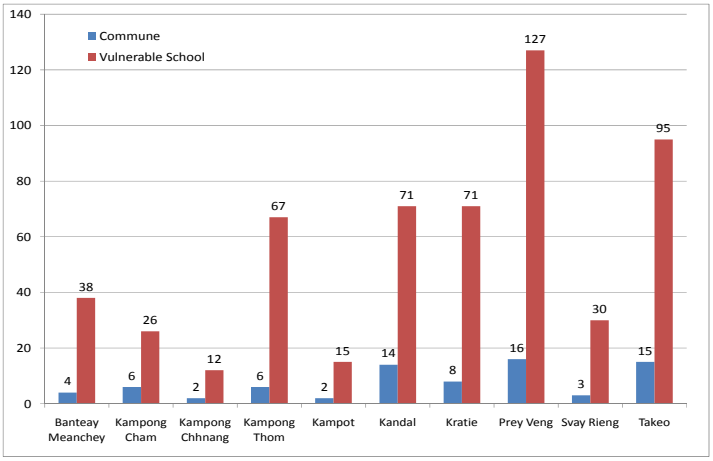
[4] There are three categories of prioritization of emergency by WFP/NCDM: First Priority, Second Priority, and Third Priority, as shown in the map (Figure 6)

Figure 7: Flood and Drought Areas in Cambodia



Source: World Food Program (WFP)

Figure 8: Communes and Schools Located in First Priority Flood Prone Areas



Source: Compiled from WFP Survey (2003) and SEILA Program (2006)

3.2 Socio-economic Impacts of Floods on Education

To measure the impacts of flood on education, interview with 92 school principals were conducted. Among those 92 vulnerable schools, 78 percent are flooded every year; 22 percent are flooded every few years or rarely. The flooding occurs for more than 3 months per year, ranging from July to early December. Thus, most of flooding affects schooling at the beginning of the academic year, especially October and November.

According to the findings of the survey, flood is one of the factors disrupting study program accomplishment and thus affecting the quality of current education in Cambodia, particularly in provinces which are prone to floods and where schools were constructed without proper flood resilient features.

When there is flood, students always encounter difficulties to go to schools because of road damages and having to travel across rivers. Mostly, they have to catch a boat to study, which takes longer time and higher costs to reach schools. Such difficulties could in turn lead to high absenteeism rate among poor students at the beginning of each academic year. In some cases, schools were used as an emergency shelters during flooding time, resulting in damages of school structures, especially school floor.

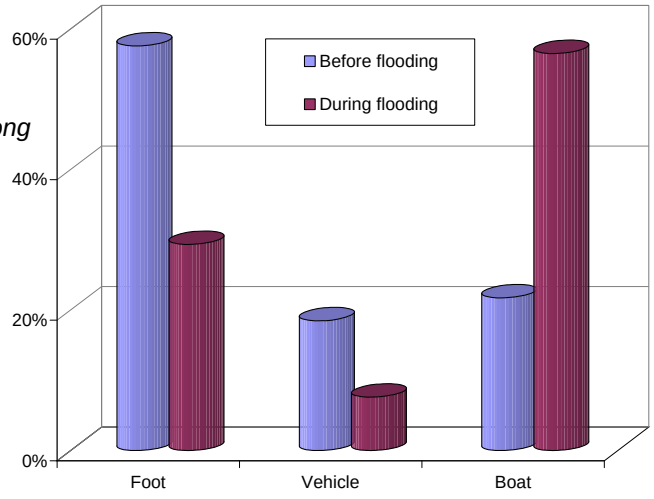
A. Difficulty in Accessing the Schools

Public transport in Cambodia is limited; so students use their own means to travel to schools, mostly on foot and by bicycle. Since they have to catch a boat during flooding period, students in flood prone areas generally incur more difficulties, with higher cost, to access the schools. Findings of the survey of the 92 vulnerable schools proved that students in flood prone areas usually had difficult access to schools at the beginning of each new academic year since they have to catch boat instead of going on foot or by vehicle.

Among the 92 interviewed school principals, about 57 percent of respondents showed that their students went to school by boat during flooding, up from only 22 percent of respondents during non-flooding season. Thus, students of 35 percent of interviewed schools have experienced more difficulty during flood season. About 58 percent and 18 percent of those who used to go to school by foot and vehicle, respectively, during non-flood season need to catch boat during flooding as the way to school is partially under flood water. Nonetheless, 37 percent said that students still have access to school on foot and by vehicles even in the flood time because of newly constructed roads which are higher than the flood level. (Some of the roads integrate DRR)

Figure 9: Means used in accessing the Schools >>

Source: Results of the survey among 92 flood prone schools, detailed methodology in Annex A



In some places, the way to school is separated by rivers or affluents, forcing students to catch boat to school in both dry and wet seasons. These students spend more time and money on traveling to study than the others, and even much more during flooding time in the wet season.

A case from one school in Koh Samrong commune of Kampong Siem district in Kampong Cham province, an island considered prone to floods, reveals that since there is only lower secondary school in the commune, students have to travel far to continue their studies in upper secondary school in Kampong Cham town. It should be noted that to travel from the commune to the town, students have to catch a machine boat spending about half an hour and costing them US$0.25 in dry season, with 50 percent higher in flooding time[5]. In this case, some students coming from poor families cannot afford to continue their studies in Kampong Cham town due to higher expense on traveling and thus decide to drop out of school.

A qualitative interview with a teacher who has been teaching in Koh Samrong lower secondary school for more than twenty years proves that around half of the total students passing final exams in grade 9 decide to stop studying because of lack of financial support resulting from poverty.

"Through my observation, among ten students who successfully finish grade 9, around five students do not go on their studies in Kampong Cham town because of financial problems. Their families, which are mostly poor, cannot further provide financial support to those students for either traveling to school or renting a room to study in the town. As a result, some of these drop-out students participate in planting crops with their families at homeland and some migrate to various places for vocational training." said the teacher.

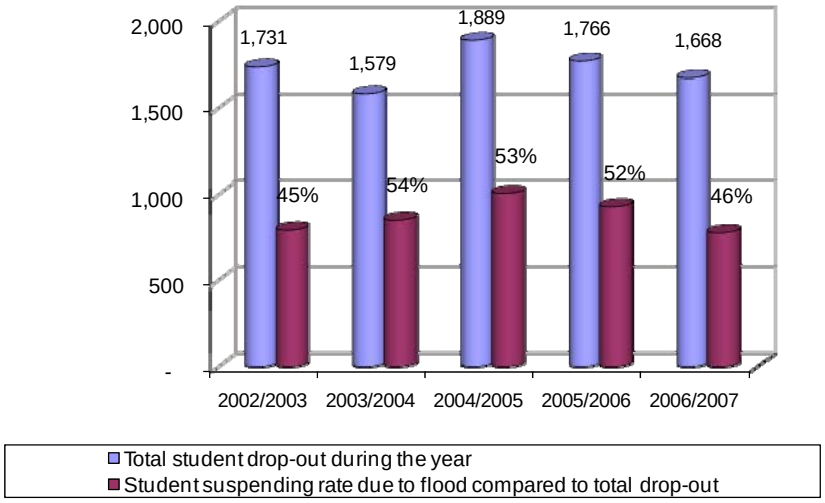
Sok Ley, an 18-year-old boy, has dropped out of school for more than three years due to lack of funds for supporting travel and accommodation expenses. He passed grade 9 final exams in the academic year 2005/2006 and could continue to grade 10 in Kampong Cham town for only a few months as his family had financial difficulties to support his studies. Currently, Sok Ley helps his parents planting crops at home and does not have any clear plans for his future.

B. High Drop-out Rate caused by Floods

The student drop-out rate caused by floods is rather high compared to the normal drop-out rate, especially at the beginning of the new academic year. The average drop-out rate in the last five years among the 92 interviewed schools in the three provinces is around 7 percent per annum, equaling about 1,700 students per year. This drop-out rate is well below the five-year drop-out rate average among the three provinces, which is 8.6 percent annually. The data from the survey proves that half of the dropout students in the interviewed schools, of which around 51 percent are female, decide to give up their studies because of difficulties caused by floods.

[5] The costs were calculated in the end of 2007, so there may be increases in costs due to higher fuel prices. The exchange rate is fixed at CR 4,000 per US$ 1.

Figure 10: Student drop-out rate caused by floods compared to total drop out



Source: Results of the survey among 92 flood prone schools, detailed methodology in Annex A

Nonetheless, by observations of some provincial department officials of MoEYS in other provinces, the student drop-out rate due to difficulties caused by floods is low, compared to that due to poor living standard. Yet, the absenteeism rate in relation to difficulties caused by floods is rather high as shown in the figure above. In some cases, students suspend their studies for a period of around one month as the way to school is affected by flood and they cannot afford to travel to study as they mostly live in poor family.

A qualitative interview with one primary school principals in Romeas Haek district of Svay Rieng province proves that there are some students starting their new intake late around one month compared to the others because of the difficulties caused by floods. These students mostly come from poor families which are far away from school and cannot afford to travel to go to study during flooding. Since these students start new courses late, they are generally perceived to be poor in knowledge compared to the others in the class. In this case, MoEYS has the policy to provide additional courses taught on Thursday for weak primary students under financial support of the PAP programs.

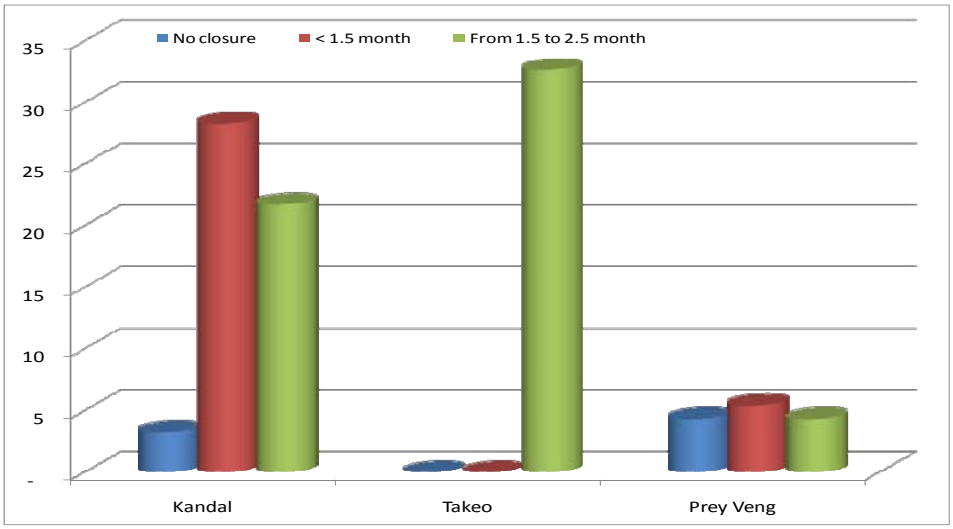
The same case can be found in another school in Andaung Khmot village of Romeas Haek district, Svay Rieng province. “Normally, the new academic year of my primary school starts around two to three weeks late compared to other schools in the province. Due to road damages caused by floods, some students living in other villages particularly Prey Phdeak and Thlok Veay Ty Muoy have to suspend their studies for a short time, making the total delay duration of around one month.”, said the principal of Tbaeng Rorm primary school.

A young boy coming from a poor family in Thlok Veay Ty Muoy village, Pungsa is a 7-year-old student in grade 2 for the academic year 2007/2008 in Tbaeng Rorm primary school. During the beginning of this schooling year, he had encountered difficult access to school as the way connected his village to school had partially been affected by floods. Since he was young and his parents were busy with farming, he had to suspend his studies for a period of time until the flood went away. Consequently, he had difficulty to catch up with other students at the beginning of the class because he was around one month behind them.

3.3 Disruptions to the completion of the Study Programs

Schools in Cambodia are normally closed for two and a half months for vacation, starting from end of July until mid October. According to the findings of the 2003 survey by WFP/NCDM, the most critical period for flood emergency is from September to November and may span until early December. It could be reflected that schools located in heavy flood prone areas are subject to closure at least one and a half months due to flooding, which results in delay of study time in each academic year.

Figure 11: Delay (percent) in starting the new schooling year due to floods



Source: Results of the survey among 92 flood prone schools, detailed methodology in Annex A

The findings of the survey within the 92 schools in flood prone areas show that about 92 percent of the total schools are closed during study time due to flooding. Among the 92 schools, around 60 percent close at least one and a half months and mostly situated in Takeo province.

In Angkor Borey and Borey Chulsa districts of Takeo province, flooding season starts in around mid July or early August and ends in mid November or early December each year. Thus, most schools in these districts begin their new academic year late and finish earlier than other schools, making the period when schools closed due to flooding of about two and a half months.

When there is school closure during study time, most of the schools do not have an alternative place for students to study. Only 10 percent of the interviewed school principals stated that they have another place for teaching students while the schools are closed due to flooding; that is, they borrow place from either pagoda or the nearby schools which are not affected by floods.

Although half of the interviewed school principals stated that all study programs in their schools are in general completed within the timeframe set by MoEYS, the quality of education provided by those schools is lower than those located in other areas where courses are normally started. Such lower quality of education is due to two main reasons:

- On the one hand, since schools are temporarily moved to another place, i.e. pagoda, school facilities are not well equipped.

- On the other hand, due to the delay to courses of about two weeks to one and a half months, teachers have to select the most important subjects to teach in additional hours in order that all subjects are accomplished on time.

In some cases, teachers in some schools come from various places which are far away from the schools. So during the vacation, those teachers will go back to their homeland and thus cannot afford to teach the remaining subjects in additional hours, making schools not able to successfully complete the study programs suggested by MoEYS.

Like in a primary school of Angkor Borey district in Takeo province, the study programs are not successfully completed on time. According to the qualitative interview with the school vice principal, new academic year of this school begins in December, which is two months late compared to schools in other areas, and ends in mid July every year, about a half month earlier than the other schools, because of flooding. Besides, almost all of the teachers come from various places and return to their home during floods. In this situation, the school cannot successfully complete the study programs.

3.4 Uses of Schools as Emergency Shelters

Interviews with several school principals in various provinces show that people evacuate their animals into school buildings, particularly cattle and pigs, making the floor of the schools unusable, like in the case of floods in 2000, 2001, 2002 which were severe.

Dara Kum primary school in Takeo province can be discussed as an example. “During 2001, 2002, and 2003, some villagers living near this primary school evacuated their pigs into classrooms of the school because the other places were under water, while some used the school as a warehouse for rice seed storage. Generally, seed storage does not cause any damages to the school, unlike animal evacuation which mostly affects the school floors but does not interrupt teaching.” said the school principal.

However, the uses of schools as emergency shelters are not so frequent among the interviewed schools as about 92 percent of them are affected by floods every year. Habitually, people prefer pagoda campus located in higher place to that of the school as an emergency shelter.

Chapter 4: Physical Impacts of Disasters on Education Sector

4.1 The Vulnerability of Cambodia to Disasters

Geographically, it is perceived that Cambodia has never been affected by either earthquakes or severe storms due to its mountainous borders. Yet, floods and droughts are the most frequent disasters occurring in Cambodia over the last decade.

The findings of the WFP/NCDM prove that Cambodia has been severely affected by droughts and floods almost every two years for the last ten years. The country was hit by bad droughts in 1992, severe floods in 1996, severe droughts again in 1998, and the worst floods in 70 years in 2000, and both drought and floods in 2001.

Additionally, while the country was in the process of recovering from two consecutive years of disasters, the late arrival of rains in the early wet season and flash flooding of the Mekong River later in 2002 made the situation from bad to worse[6].

4.2 Infrastructures Available in Cambodia's Education Sector

Till date, there are about 17 thousands school buildings divided into nine thousand schools in the whole country. These buildings were constructed mainly from concrete or brick (76 percent) and from wood or bamboo (24 percent), according to MoEYS record. It is perceived that the latter structures, wood and bamboo, are the most vulnerable to natural disasters such as floods, drought, and storms, compared to concrete buildings.

In Cambodia, most schools are not well equipped with facilities, particularly due to lack of financial support. Almost all schools in Cambodia do not have computer lab and access to electricity. Among the nine thousands schools in the country, only 32 percent possess separate library and about half of the total schools own separate office for administrative work.

Moreover, approximately 30 percent of the schools have no access to latrine and around 40 percent have no access to water, translating into poor sanitation and difficulty faced by most female students which in turn may result in inequality of access to education. Such situation is improving gradually, on account of participation from local communities and various stakeholders especially sanitation improvement.

Concerning sport facilities, MoEYS statistics in 2006/2007 shows that on average only 24 percent of schools have such facilities, reflecting that most schools in Cambodia still lack sport facilities. Among the total schools in the country, around 45 percent have volley ball teams, 35 percent have high or long jump teams, and three percent have basketball teams. Generally, there are eight kinds of sports in Cambodian schools, namely, volley ball, football, basketball, rope climbing, shot-put, high jump, long jump, and running.

[6] NCDM/WFP (2003) "Mapping Vulnerability to Natural Disasters in Cambodia"

4.3 Physical Impact of Past Disasters on Education Sector

According to MoEYS preliminary estimation, floods in 2000 destroyed at least 1,000 schools, representing around 18 percent of total schools in the country at that time. Yet, based on the UN figures, this number could double to about 2,000 schools which constitute roughly half of the school system[7]. It should be noted that there were four provinces where schools were most affected by the 2000 floods, namely Kampong Cham, Prey Veng, Kandal, and Kratie as shown in details in Table 1.

Table 2: Schools in Flooded Areas Predicted by Satellite Imagery, October 2000

Code	Province	Primary Schools	Lower Sec. Schools	Upper Sec. Schools	Total
3	Kampong Cham	222	27	10	259
14	Prey Veaeng	184	19	7	210
8	Kandal	166	24	5	195
10	Kratie	95	13	2	110
21	Takaev	56	4	3	63
4	Kampong Chhnang	57	3	1	61
6	Kampong Thum	34	1	1	36
12	Phnom Penh	12	3	2	17
17	Siem Reab	11	0	0	11
15	Pousat	8	1	1	10
1	Banteay Mean Chey	8	1	0	9
20	Svay Rieng	4	0	0	4
7	Kampot	3	0	0	3
	Total	**860**	**96**	**32**	**988**

Source: Compiled from "Rehabilitation of Flooded Primary and Secondary Schools" report, MoEYS (2000)

Additionally, the above estimation also proves that between 0.3 and 0.4 million primary school students were directly affected during the severe flood in 2000. Including secondary school students, this figure is estimated at around 0.5 million students[8].

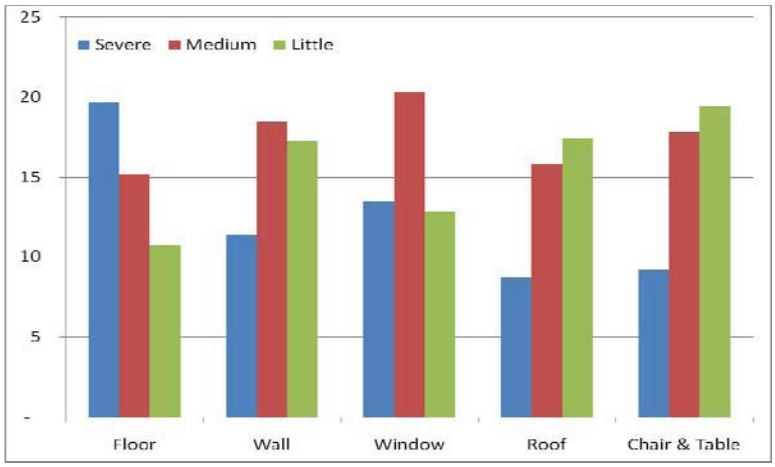
The costs of overall school rehabilitation in 2000 were estimated at around US$ 16.8 million, broken down into priority 1 schools (US$ 3.9 million), priority 2 (US$ 8.8 million), and priority 3 (US$ 4.1 million)[9], which were funded mainly by donor community such as ADB, UNICEF,WB, etc.

Recent estimation made by the Material and State Assets Department of MoEYS show that there were eleven schools comprising 57 classrooms in two provinces, Banteay Meanchey and Prey Veng, affected by storms and flash floods in 2007, generating the total loss of about CR 1.7 billion which equals US$ 435 thousands.

[7] MoEYS (2000), "Rehabilitation of Flooded Primary and Secondary Schools"
[8] Ibid
[9] Ibid

Among structures of the school building, the floor is the most vulnerable, followed by the wall and the roof. During the 1980s and 1990s, many schools were built by local communities without lifting up the plinth from land because of limited financial support and lack of knowledge of techniques, making the plinth level one meter high. This kind of construction is vulnerable to floods especially for schools located in flood prone areas. When there is severe flood, the floor of the school is always damaged and in turn wall and whole structure of school may collapse.

Figure 12: Percentage of school by damage types (average in last seven years) >>

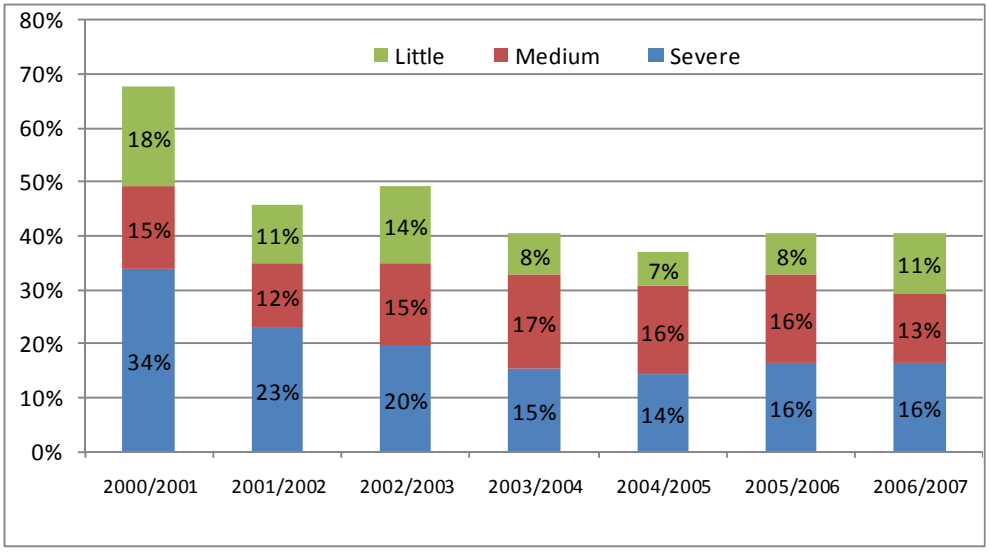


Source: Results of the survey among 92 flood prone schools, detailed methodology in Annex A

Results obtained from the survey prove that almost half of the 92 interviewed schools are physically affected by floods. Around 20 percent of the schools incur severe floor damages every year, ten percent get wall damage, and eight percent experience roof damages. In general, school equipment is not destroyed by floods. Only eight percent of the schools stated to have table and chair damages, and about 12 percent get window damages each year.

It is worthy to note that floor damage tends to be severe, while other damages are likely to be medium or little. The following figure shows percentage of floor damage according to its severity and year by year since 2000 among the 92 interviewed schools. As expected, the floods in 2000 gave the highest figures of floor damage where 67% of the schools reported damage which was either little, medium or severe in nature. For the years following 2000, the floor damage ranges from 37% to 49% of the schools surveyed.

Figure 13: Percentage of floor damage according to severity, year by year



4.4 National Annual Budget for School Construction and Reconstruction

MoEYS does not have its own budget for either construction or reconstruction of schools, according to qualitative interviews with officials from Directorate General of Administration and Finance of MoEYS. Every year, around 70 percent of the total budget for MoEYS, representing about 20 percent of annual national budget, is spent for salary costs and the remaining 30 percent for non wage, i.e. teacher training, scholarships for students, and so on.

In this case, to build new schools or repair, the ministry obtains financial support or grants from donors: the Asian Development Bank (ADB), the World Bank (WB), and various other sources of private fundssuch as high ranking government officials, rich businessmen, local communities, etc.

The table below shows school construction projects since 2002 until 2007. However, schools built by Samdach Hun Sen were taken into account only until April 2005 while those of JHP were considered from 1993 till 2007. In the table we see clearly that the national budget has provided only 10 buildings which translate into 60 classrooms.

Table 3: School construction projects as of 2007

Nº	Project Name	Year of Construction								
		2002			2003			2004		
		Building	Room	Budget	Building	Room	Budget	Building	Room	Budget
1	Samdach Hun Sen									
2	State Budget									
3	ADB									
4	WB									
5	BETT									
6	School Aid Japan	3	15	$87,688.00	5	28	$132,850.00	4	20	$116,015.00
7	Goto Funito(Japan)									
8	JHP	14	73	N/A	15	71	N/A	16	79	N/A
9	JHP Phnom Penh									
	Total									

Year of Construction									Total Building	Total Room	Total Budget
2005			2006			2007					
Building	Room	Budget	Building	Room	Budget	Building	Room	Budget			
2429	11899	N/A							2429	11899	N/A
4	16	N/A	6	44	N/A				10	60	N/A
83	326	$2,220,303.78	78	367	$2,413,401.53	238	1186	$8,548,795.54	399	1879	$13,182,500.85
			121	550	$3,722,864.00	122	630	$4,313,328.24	243	1180	$8,036,192.24
									106	522	$4,520,806.43
17	76	$478,572.00	22	82	$574,153.00	22	82	$619,834.00	73	303	$2,009,112.00
						17	64	N/A	17	64	N/A
27	125	N/A	24	133	N/A	35	160	N/A	199	948	N/A
5	113	N/A	6	111	N/A	7	109	N/A	18	333	N/A
									3494	17188	

In the Educational Strategic Plan 2006-2010, MoEYS has proposed a financial plan which is composed of eight components, detailed in the table below. This financial plan requires total

capital investment of US$ 117.4 million over a five-year period starting from 2006. The first three components which are school expansion projects represent about 50 percent of the total budget and are funded mainly by the Asian Development Bank (ADB) and jointly by the World Bank (WB) and the Royal Government of Cambodia (RGC).

Table 4: Projected Capital Investment Budget, 2006-2010

Component	Riels (million)	US$ (million)
01 Incomplete School Expansion	11,000	2.8
02 Lower Secondary Expansion	125,000	31.3
03 Upper Secondary Expansion	100,000	25.0
04 Science, Technology and ICT Facilities Expansion	21,960	5.5
05 Education Staff Development	32,800	8.2
06 Education Staff Accommodation	20,000	5.0
07 HE Facilities Development Fund	49,000	12.3
08 Capacity Building Program	110,000	27.5
Program Management and Monitoring	55,000	13.8
Sector Wide Management	55,000	13.8
Total:	469,760	117.4

Source: MoEYS (2005), "Education Strategic Plan (ESP) 2006-2010"

4.5 School Construction Projects in Cambodia

The Education Sector Support Program (ESSP) 2006-2010 document has set goals that every primary age pupil should be within three kilometers of a school to ensure that all children have easy access to education without incurring transport costs. This implies that each village should have at least one primary school.

Additionally, for secondary education, it is proposed that each commune should have a lower secondary school while each district should have a combined school offering upper secondary grades. Exceptions may be made in remote areas where student numbers are low.

To reach the above goals and to respond to demands for school buildings in the country, several projects for school construction have been undertaken. Currently, there are two main school expansion projects respectively funded under the Second Education Strategic Development Plan (ESDP II) by the Asian Development Bank (ADB) and under the Cambodia Education Sector Support Project (CESSP) jointly by the World Bank (WB) and the Royal Government of Cambodia (RGC).

With the total estimated budget of US$27 million, these two projects for school construction were put in operation in 2006 and will be completed in late 2009 or early 2010 by offering about 756 new school buildings to Cambodia, breaking down into 19 primary schools, 663 lower secondary schools, and 74 upper secondary schools as detailed below.

Table 5: New School Buildings Constructed with Support from ADB and WB

YEAR	06-07	07-08	08-09*	Total
Asian Development Bank (ESDP II) [1]	**178**	**153**	**143**	**474**
LSS	168	124	108	400
USS	10	29	35	74
Allocation in million US$	5.7	5.4	7.1	18.2
World Bank (CESSP) [2]	**180**	**57**	**45**	**282**
PS	7	12	-	19
LSS	173	45	45	263
Allocation in million US$	5.9	2.3	1.0	9.2
Total school buildings	**358**	**210**	**188**	**756**
PS total	7	12	-	19
LSS total	341	169	153	663
USS total	10	29	35	74
Allocation in million US$	**11.6**	**7.7**	**8.1**	**27.4**

Source: Compiled from (1) ESDP II workplan, (2) CESSP documents and interviews with a national consultant

*Note: PS =Primary School, LSS = Lower Secondary School, USS = Upper Secondary School, * estimated data for CESSP 08-09*

The number of classrooms required in 2010 was projected by MoEYS in the ESP to reach 64 thousands equaling roughly 13 thousand school buildings. It can be inferred that from 2006 to 2010, about 1.5 thousands new school buildings are needed. Since the total new school buildings constructed under ESDP II and CESSP projects will be about 756 by early 2010, another 750 new additional school buildings should be constructed in the following years before the end of 2015. In this case, it is crucial that the proposed new school construction projects should integrate DRR concerns so that the new buildings will be resilient to hazards and thus help to assure the attainment of "Education for All".

Table 6: Number of Classrooms Required

	2005	2006	2007	2008	2009	2010
Primary	**39,514**	**39,535**	**39,207**	**38,972**	**38,973**	**39,452**
Lower Secondary	**9,989**	**11,039**	**11,886**	**12,500**	**13,851**	**15,201**
Upper Secondary	**4,542**	**5,458**	**6,444**	**7,500**	**8,231**	**8,962**
Total	**54,045**	**56,032**	**57,537**	**58,972**	**61,055**	**63,615**

Source: MoEYS (2005), "Education Strategic Plan (ESP) 2006-2010" Note: 2006-2010 numbers are projected by MoEYS

Furthermore, a Fast Track Initiative Catalytic Fund (FTI CF) grant totaling US$57.4 million was approved in May 2007 by the FTI Catalytic Fund's Strategy Committee, based on the Education Sector Working Group (*Please refer to the Annex for the detail of this* ESWG) technical appraisal that won Cambodia's endorsement into the EFA-FTI in 2006 and the presentation of a proposal for funding in Bonn on May 23, 2007. The grant provides partial funding for Cambodia's strategy to attain universal primary school completion by 2015. The strategy encompasses six broad themes:

- School facilities, water and sanitation
- Textbooks, learning materials and teachers manuals

- Teacher upgrading; in-service teacher upgrading and preparation for policy-making and leadership in the education sector
- Improving school management (education assessment, reporting, planning and budgeting)
- Early childhood education
- Reaching the un-reached

This FTI project presents another opportunity for the government to integrate DRR concerns into the first theme, namely school facilities, water and sanitation.

The following table provides a list of projects, including the ESDP II presented earlier, in Education Sector. All these projects constitute an opportunity for the Cambodian Government to mainstream DRR in teaching as well as in the school construction.

Table 7: List of Donor Funded Projects in Education Sector in Cambodia

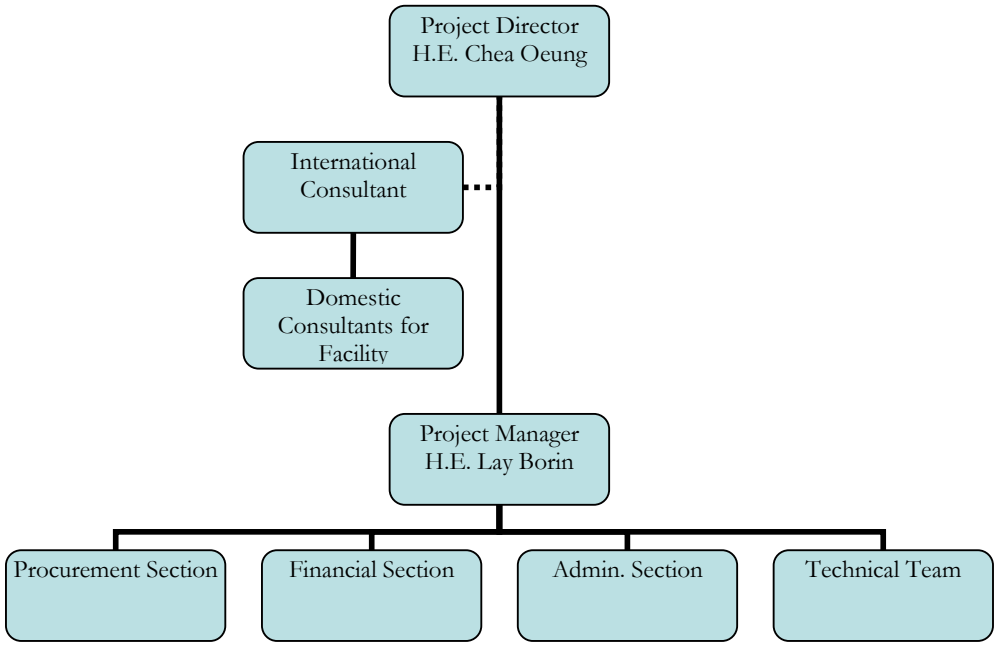
No.	Country	Project name	Project Objective	Funding agency	Loan/Funds amount	type of fund	Project duration	Execution agency
1	Cambodia	Education sector development program	- to contribute to Cambodia's broader poverty reduction policy - to support the implementation of policies designed to improve equitable access to quality education for under-served and disadvantaged populations	ADB	USD 20 million	Loan	2001 - Nov 2007	MoEYS
2	Cambodia	Education Quality Improvement (formerly Enhancing Quality of School Education, originally Education Sector Development)	(i) developing a policy framework for teacher development, including a review of the institutional network to support teacher development and issues related to recruitment, deployment, qualifications, professional development and career growth, and incentives, and suggesting supporting interventions; (ii) filling the gaps in curriculum development and linking it to teacher training; (iii) text book availability; (iv) review of, and improvements in, the assessment and examination system; (v) management of education delivery systems including school management; and (vi) strengthening capacity for planning and management through an Education Management Information System (EMIS)	Japan Special Fund	US$500,000	TA	2004-2008	MoEYS
3	Cambodia	Enhancing Secondary Education	to be provided	ADB	US$30.0 million		9 Dec '04 - 9 Dec '09	Ministry of Labor and Vocational Training, MoEYS
4	Cambodia	Dormitories and Learning Centers for Secondary Schoolgirls (formerly Dormitories for Secondary School Girls)	(i) improved access to secondary education for girls; (ii) enhanced quality of learning through life skills training and ICT; (iii) gender capacity building in education; and (iv) TA management, evaluation, research, and knowledge management.	ADB	US$800,000	TA		MoEYS

4.6 MoEYS Organizational Structure for School Construction

As mentioned earlier Cambodia has no national annual budget allocated for either school construction or reconstruction. The organizational structure of the education sector for building construction depends on each main school expansion project specifically. It is noted that currently there are two such projects, namely the Second Education Strategic Development Plan (ESDP II) and the Cambodia Education Sector Support Project (CESSP), funded respectively by the Asian Development Bank (ADB) and jointly by the World Bank (WB) and the Royal Government of Cambodia (RGC).

It is worth highlighting that the two projects have similar organizational structures. According to the figures 8 and 9 below, the main difference between the two structures is that the term *Project Director* in the ESDP II project refers to *Project Manager* in the CESSP project, and the term *Project Manager* in the ESDP II project refers to *Project Coordinator* in the CESSP project.

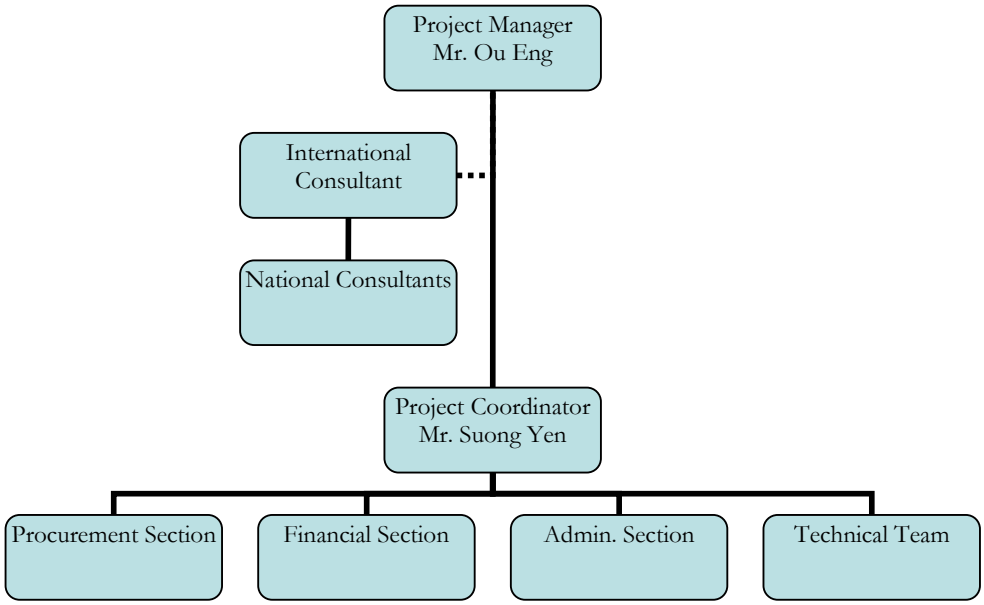
Figure 14: ESDP II Organizational Structure



Source: Interview with ESDP II project manager

Globally, there are a project director/manager and a project manager/coordinator who supervise the whole project, with the assistance from an international consultant. The international consultant has, in turn, national or domestic consultants to render assistance.

Figure 15: CESSP Organizational Structure



Source: Interview with CESSP project manager

According to the same figures, the different sections in the structure include a Procurement Section to ensure an open and fair bidding process, a Financial Section and an Administration Section to manage the financial and administrative issues of the project, and a Technical Team composed engineers and architects to make sure the contractors comply with the technical standards set by the projects. In the CESSP project, there are also five provincial engineers located in five provinces where the projects exist to supervise the construction work, in addition to these national-level technical personal. Each provincial engineer will be sent to another province once the construction work is finished in his/her province.

4.7 Past Experience of School Construction

In the 1990s and early 2000s, many schools were built without proper compliance to an acceptable standard. Actually, there were no standards or specifications from the Ministry of Land Management, Urban Planning and Construction (MoLMUPC), or the MoEYS over the technical norms of building construction. The typical school building plan and technical specifications that are in use currently were only developed in 2006 when the construction projects of ESDP II and CESSP began.

Before that, many schools were built by local and private international donors, most of whom are government's high-rank officials. Due to the lack of technical specifications, coupled with insufficient capacity among the contractors, some schools in the flood prone areas were not properly elevated to an altitude higher than the level of water in flood period. When the level of flood water is abnormally high, this problem is even more serious as it impacts the safety of the building. The teaching of students is also seriously disrupted.

Case Study 1: Bunrany Hun Sen Peam Raing Secondary School

This case study addresses the importance of mainstreaming disaster risk reduction (DRR) into study program piloted in a flood vulnerable school of Kandal province. At the same time, it also raises a bad practice of previous school construction, which did not include proper flood resistant features.

School History

Bunrany Hun Sen Peam Raing is the upper secondary school in Peam Raing commune of Leuk Daek district, one of the first priority flood prone areas in Kandal province. The school was built in the Sangkum Reastr Nyum regime and reconstructed by local communities after it was destroyed in the Pol Pot regime during late 1970s.

Under strong support from a head of Buddhist monks of Peam Raing Leu pagoda, a school building was built from concrete by villagers in 1986 by following the same norms of construction of the old buildings, which the plinth level is less than one meter high from the ground. Later on, the other two new buildings were offered by the Prime Minister Hun Sen and built by a local construction company in 1996 under the previous norms of building construction.

Current Situation

Presently, the school has four buildings comprising 17 rooms and a big school ground located in a plot of land which has a lower level than that of the new road constructed along the front side of the school. This road was built with a higher level to avoid flood damages compared to the previous one by the Ministry of Rural Development in around 2006 and recently expanded until Khporp Ar'teav, another commune of Leuk Daek district situated several kilometers away from the school.

In the academic year 2007/2008, total student enrollment in the school is 711 students, about 336 of whom are female. The school has 25 teachers coming from various parts of Leuk Daek district, giving pupil-to-teacher ratio of around 29 students which is lower than the ratio of upper secondary school in the whole country, which is about 33 students.

The new intake of this school usually starts around one month late compared to the other schools in the country because of flooding which begins in September and ends in October each year. The delay of new intake results in difficulty of study program accomplishment as the school can complete only 85 percent of the programs though it tries to give some extra teaching to

students during the free time, so the quality of the education provided in this school is somehow limited, according to the school principal's observation.

Experience from Past Disasters

Up to date, this upper secondary school has experienced floods every year and a small storm in 2003 which destroyed some parts of the school roof. The severe flood in 2000 damaged the school floor, causing an estimated loss of about US$4,000, and has gradually affected wall of several school buildings. Besides, the uses of school as an emergency shelter for cattle has often disrupted the school, particularly in 2001 and 2002 due to damaged floor in several classrooms.

It is worth noting that all buildings of the school were constructed without proper flood resistant features because the plinth was not lifted from the ground though knowing that the school is located in the flood prone area. This is due to two main reasons: on the one hand, from past experience, floods were not as severe as in 2000, making constructors not taking into account the construction features which can resist a large flood with a 100-year recurrence and one percent probability of occurring in any year. Thus, the plinth was not necessarily lifted up from the ground. On the other hand, there was neither building code nor technical specifications from relevant ministries at that time.

Floods disrupt not only the school building but also the quality of education. A teacher of the school who also joined the focus group discussion complained that it is difficult to accomplish the study program on time because of two disrupting factors. "First, the school is one month behind schools in other places as it started late due to flooding, so we already lose one month. Second, all teachers have to teach slowly as they have to help weak students who start their new intake late catch up with the others. In this case, we can hardly complete all study subjects according to the MoEYS schedule. As a result, the quality of our education service is limited compared with others in the country", said the teacher who also teaches DRR related subjects in the school.

In addition, the focus group discussion with teachers in the school proves the rate of student drop-out in relation to difficulties caused by flood is low while that of student absenteeism at the beginning of the new academic year is rather high. It should be noted that students whose houses are located in other communes outside the school's commune like Khporp A'Teav, Sandar, and Kaam Samnor have to use a small machine boat to go to school, spending an average two dollars for a two-way trip. To reduce such high cost of traveling, the student who is the owner of the boat asks the nearby students to join the trip to school by sharing about US$0.25 per person, as one boat can contain around eight people. Yet, those who live in poor families still cannot afford to cover such expenses and thus suspend their studies for about one month until the flood has gone away.

During the last three years, the drop-out rate averages only around one percent per annum which is well below the annual absenteeism rate averaging about ten percent. The table below reveals that both the drop-out and suspending rates are gradually decreasing, on account

of newly constructed road which is higher from flood level and gives a wider access to school to students whose houses are far away.

Bun Rany Peam Raing Upper Secondary School						
Academic Year	Student	Female	In relation to floods		In relation to floods (%)	
			Absenteeism	Drop-out	Absenteeism	Drop-out
04-05	603	225	68	12	11.3%	2.0%
05-06	622	264	65	3	10.5%	0.5%
06-07	646	300	56	2	8.7%	0.3%

Source: Author, compiled from the school's records

Good Practice of Disaster Risk Reduction (DRR)

"After attending the DRR courses, students know how to prepare for the upcoming floods. When I went to a small shop in the village, a woman who is a mother of a student told me that her child now knows how to be careful with the flood and even reminds her to store some food and find safe places to evacuate her cattle when the flood comes.", said Long Moeun, the school principal.

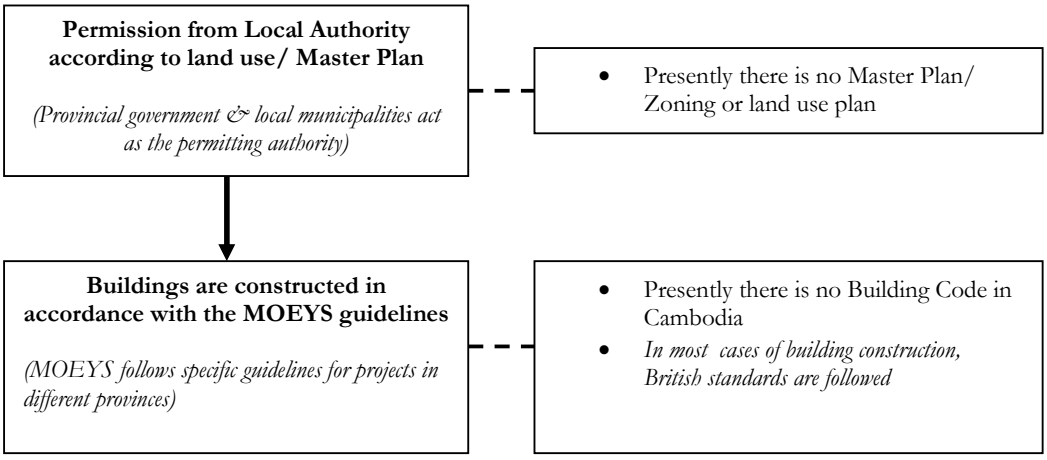
"Still, there is some limitation of mainstreaming DRR to my students. When students come to school during flooding via a small machine boat, they do not wear life jackets because they think that they know well how to swim and do not want to spend money on buying such things.", added Moeun.

This experience illustrates how important it is to consider very carefully the plinth level of the school building before the construction, to ensure that the school is above water level even in a 100-year high level of flood. In addition, materials used for the construction have to be of the highest quality available to make sure the buildings can provide enough resistance in the flood period. A mixed concrete/brick structure serves as a good example of flood-resistant building.

4.8 Present Methodology of School Construction

A. Construction Process

Following steps are followed for construction of school buildings in Cambodia.



Source: Law on Land Management, Urban Planning and Constructions (Preah Reach Kram/04NS94/10th August 1994)

These steps are followed by all public schools construction in the whole country. For the private schools, they are too few to consider and most of them are located in central Phnom Penh.

In practice, however, there are two main methodologies of how the building construction is done depending on where the school is located. Normally, a National Competitive Bidding (NCB) is convened for one or more school building construction. But if the school is located in remote areas, then the Community Construction process will be adopted.

According to the Department of Planning of MoEYS and the national policy, the following criteria are to be considered for the decision for construction of a school:

- Specific demand exists (sufficient number of students)
- There is a land plot for school construction
- Teachers will be available in the area
- The local community wants the school and will look after it
- The commune does not have any school yet

A typical process of school construction is as follows:

Based on the above criteria, once there is a demand from the community for a school (especially the Lower Secondary School), the commune council will send the request to the District Office of Education who will forward it to the Provincial Department of Education and the MoEYS. The MoEYS then send the request to either ESDP II or CESSP to examine whether the request should be fulfilled. If the investigation shows signs of compliance to the criteria listed above, a site investigation will be conducted by the technical team of the projects to see whether and how the school building can be constructed on the designated site. Following this step, a National Competitive Bidding (NCB) or a Community Construction process can be adopted depending on the location of the building. The NCB means that the bidding is done nationally, with everyone competing fairly and openly, while the Community Construction refers to the construction by the local people and, to a certain extent, local materials.

During the construction, there are regular inspections from the provincial engineer, the national consultants, as well as the international consultant to make sure that the building complies with the technical standards agreed initially between the contractors and the project authorities. The finishing and the furniture to be equipped in the classrooms are also important points for the inspectors to check. The payments between to the contractors, are done step by step, i.e. the payments are made after each phase of the construction.

Case Study 2: Sok An Wat Ang Primary School

Mainly focusing on the site selection for school construction, this case study will reinforce the necessity of DRR mainstreaming into primary education in a flood prone country like Cambodia. Therefore, an example of one primary school situated in a vulnerable area of Kirivong district in Takeo province is brought for the case study as detailed below.

School History

Created in 1984 with a wooden building by local community and the nearby pagoda, Sok An Wat Ang primary school is situated on a hilly plot of land in the center of Kamnop commune in Kirivong district, Takeo province. Until late 2004, a new school building from concrete and reconstruction of the existing old building were materialized under financial support from His Excellency Sok An.

Current Situation

Currently, Sok An Wat Ang primary school has four buildings comprised of ten rooms. The total enrolment from grade 1 to 6 in the academic year 2007/2008 is 385 students, 199 of whom are female representing about 52 percent of total students in that year. There are five teachers in the school, and all are male coming from various places of Kamnop commune of Kirivong district.

Normally, new academic year of the school begins in the end of October or early November or around one month late compared to the other schools, depending on duration of floods. In this case, the school cannot complete all lessons on time set by MoEYS. However, since the flooding season in the school site starts from September to October, the school can afford to finish the study programs by teaching students during the first month of vacation which is in around August each year.

Experience from Past Disasters

Though situated on a hilly plot of land, the school has experienced floods every year and occasionally experienced storms. The 2000 and 2001 floods generated losses of respectively US$148 and US$150 to the school, according to the school principal's estimation. A storm in 2007 affected roof of the school building, but the damage caused was little and did not disrupt the study program.

As could be found in the previous case study, floods provoke not only physical impacts on school but also difficult access to school to students. "Students have to catch boat to school during flooding, particularly the first few months of new academic year. During this period, students coming from other villages such as Kamnop, Derm Slaeng, and Chamkar Teab may take around 50 percent longer time to reach school, compared to the dry season.", said Gnorn Sieng,

the school's principal. He added that sometimes students get wet when arriving at school as the boat was full of water, but fortunately did not drown.

During the last three years, the drop-out rate averages around three percent per annum which is well below the annual absenteeism rate averaging about eight percent. The table below reveals however that both the drop-out and suspending rates are not decreasing due to the fact that the access to school is still under water during flooding season.

Sok An Wat Ang Primary School						
Academic Year	Student	Female	In relation to floods		In relation to floods (%)	
			Absenteesim	Drop-out	Absenteesim	Drop-out
04-05	329	142	28	10	8.5%	3.0%
05-06	370	183	25	11	6.8%	3.0%
06-07	383	199	32	12	8.4%	3.1%

Source: Author, compiled from the school's records

In this situation, some parents do not allow their young children to go to school because they are afraid that their children could drown in water while catching boat to reach the school, making the number of students absent rather high during the beginning of the new school year. It can be said that mainstreaming DRR into primary education is important as it can teach young students how to protect themselves from disasters, such as floods.

Good Practice of Disaster Risk Reduction

Good site selection for school construction is an effective and efficient mean for reduction of disaster impacts specifically on school buildings. According to the qualitative interview with the school's principal, the plot of land where Sok An Wat Ang primary school is situated is in the highest place in the village which is the center of Kamnop commune. Actually, it is the land of the pagoda nearby and was given to the school by the local community and authority.

Thus, floods do not severely damage the school building though the plinth was not lifted up from the ground. Yet, it is sometimes difficult to find such perfect place for school construction as it depends on the nature of land in different locations.

B. School Building Design and Safety Provisions

As Cambodia does not have any Building Code yet, both ESDP II and CESSP use the same technical standard, which was developed by the Technical Team with assistance from the World Bank and Asian Development Bank. The standards also got approval from MoEYS before coming into use. The standards are converted into a typical plan of construction for any school building, with adjustments made to the 3-classroom buildings and the 5-classroom buildings. Adjustments are also made to differentiate the elevated schools from the non-elevated ones. Annex F provides a typical plan for an elevated school construction.

Technically, the design is good since it provides a concrete and brick building which is more resistant than the wooden one. In terms of disaster risk reduction, the building also provides better resistance to floods and storms. In addition, the concrete and brick building is more sustainable, meaning that it will last longer and require less maintenance than the wooden one. The design also takes into consideration the level of flood in the area during the flooding period, and then translates this into adjustments for elevated schools and non-elevated ones.

Case Study 3: Koh Sampov Lower Secondary School

This case study will highlight the good practice of DRR of a lower secondary school construction in Koh Sampov commune of Peam Chor district, Prey Veng province which is another flood prone area in Cambodia. This commune is located in one of the most remote areas in Cambodia bordering with Vietnam. The school building is elevated to avoid flooding.

School History

Koh Sampov lower secondary school was recently created in the academic year 2007/2008 by borrowing a building from one primary school called Svay Andoung, located about 2.5 kilometers away from its new school site. However, it will move to a new building starting from the next academic year.

The new building of this school, which comprises of five classrooms and a separate four-room toilet, has been under construction since mid 2007 through the CESSP project jointly supported by the World Bank and the Royal Government of Cambodia. The school was built on a new land bought from a villager in Ampov Prey village of Koh Sampov commune.

Current Situation

Till date, 70 percent construction of this lower secondary school has been accomplished and only the roofing and finishing remains, which will be completed in the next few months. There are currently eight teachers teaching 72 students in the school which has two classes of the seventh grade running in one-shift timetable in the morning. The school is facing lack of facilities (tables and chairs) as well as teaching materials (books, chalk,…), said Bun Phal who is the principal of Koh Sampov lower secondary school.

Good Practice of Disaster Risk Reduction

According to an interview with the school principal, selection of the school site was done with two criteria: the center of Koh Sampov commune, and the high ground. The plot of land selected for school construction is situated in the center of Koh Sampov commune, so all students in other villages of the commune namely Svay Andoung, Pau Thmey, Ampov Prey, etc, can have an easy access to the school. Besides, this plot of land is on high land in the commune, which can at least avoid damages from small floods.

Although located in the highest altitude in the commune, the plinth of the school building structure is lifted 2.5 meters up from the ground to avoid severe floods which may happen once in 100-year time with one percent probability of occurring in any year.. It should be noted that all the areas in this commune receive flooding every year and the level of the 2000 flood in the above selected school site was around two meters, which made all areas on the hill get flooded. Yet, the new school building is constructed at a level above even that of the 2000 flood, which means the school will remain open even during floods albeit using boats to travel to school.

But regarding the DRR concerns, below is an overview on the Bidding document prepared by MOEYS for school construction project funded by the World Bank. This document is a guide for construction of school buildings in the Provinces of Svay Rieng, Prey Veng, Kratie, Mondulkiri, Ratanakiri and Kandal. The document provides detail guides for construction and design. However, there are some shortcomings in the guidelines regarding construction in areas prone to disasters like flood and drought. These are as follows:

- This document only provides guidelines for Concrete/ Brick Structure school buildings.
- Elevation of school sites have not been emphasized in the guidelines.
- Section A- 4.0 (page 59) instructs for earth filling of the site. However it does not specify the elevation (height) of the earth filling whether it will be free from flood or not.
- Section A-33 (page 65) instructs the provision of water storage. But it does not specify the place whether free from flood or not.
- Section D-1 (Page 69) regarding water well, it does not instruct to set it in a place above the average flood level.

Those are the gaps in the guidelines that need to be addressed by stressing the importance of integrating DRR concerns into the document so that big losses can be avoided from future disasters.

C. Existing Capacity for School Construction

Cambodia's capacity for school construction is clearly not in good health. In urban areas where there exist a lot of construction firms, this issue may not be a problem. But in the rural and remote areas where there exist only local sub-contractors or community construction team, this problem is severe in regards to their technical and managerial capacity. Moreover, the national and international consultants go rarely to these places to check for the technical compliance as the remote areas are difficult to access. And if the school construction sites are located in disaster prone areas, technical compliance becomes more critical for the resistance of the building against the disasters such as flood or storm.

At the provincial and national level, there is also a lack of engineers and architects to monitor and control the construction process as effectively and comprehensively as desired. This may lead to some loopholes in the process resulting in defective construction.

Chapter 5: Recommendations and Suggested Next Steps

5.1 Recommendations for Strategic and Sector Development Plan

- DRR and/or "Safer construction of school buildings" should be the integral part of the Education Strategic Plan (ESP) which the latest one (ESP 2006-2010) has been lacking such, while there is a scope to add DRR in Section 4.4 of the Plan: Strategies for Addressing Crosscutting Issues. This can be done by the MoEYS. The MoEYS's senior technical staff and technical consultants of the ESWG should tackle this problem in their next revision of the plan.

- The financial planning and budgetary forecasts clearly show (in ESP, ESDP) the objective to spend capital on basic education facilities development including new schools establishments and renovating old ones, which amounts to US$50 million during 2006-2010. The Department of Planning of MoEYS should stress in the plan that such constructions and renovations practices incorporate DRR concerns so that the built structures and the renovated one become hazard resilient.

- DRR concerns should be incorporated with the long term Strategic Plan of the Education Sector so that the safe schools or safe school buildings are achieved in the goals and objectives. In such a Plan in Cambodia (i.e. Education for All by 2015) it is projected that the MoEYS's contribution in developing additional facilities and capacity building will be increased from around US$24 million per annum in 2002 to around US$59 million per annum by 2015. However, there is a lack of linking DRR or safer school construction with the Strategic Plan, which needs to be addressed by the senior policy makers of MoEYS**.**

- The MoEYS must seek inter-ministerial and inter-departmental cooperation and collaboration with the MPWT, the Ministry of Post and Telecommunication and other relevant institutions, which is needed for implementing the holistic approach of DRR. It has been demonstrated that floods not only damage the school buildings but also create communication or access problems and sometimes result in the school being used as a shelter. Since disasters not only disrupt education but often cause indirect impacts (e.g., damaging roads, stop using the school for education, hindering access to the school for pupils), such collaboration is very much required in order to develop resilient infrastructures and communication means like roads, and flood shelters.

5.2 Recommendations for Structural Measures

- Specific construction guidelines and building codes that integrate DRR must be issued by the MoLMUPC in consultation with the MPWT and other relevant ministries/institutions. Although MoEYS (in Cambodia) provides guidelines for school building constructions, DRR issues have not been incorporated properly in the recent construction of school buildings under World Bank and ADB funded projects. While the issuing procedure of the construction guidelines and building code may require time, the immediate measure should be analyzing the proposed school designs by an Engineer using the guidelines of

UNDP or guidelines from Government of India/Bangladesh/New Zealand in order to find out the deficiencies and/or discrepancies. Such integration will reduce the economic loss aftermath in terms of re-building and repairing of school buildings after disaster.

- Site selection should be an important task for new school construction. Land use plan along with construction guidelines and building codes are required to be considered while setting up a school building in a flood/ disaster prone area. But as the land use plan is not yet available, construction guidelines and building codes need to be analyzed properly with the local context and the disaster occurrence history. Local level collaboration among education, local government and land departments are needed for future well being of the education sector and hence for the society.

- Development of training modules and capacity development of training institutes, especially the Institute of Technology of Cambodia and the Faculty of Architecture and Urbanism of the Royal University of Fine Arts who train engineers and architects respectively, for training in safe construction practices which integrate DRR. The training modules will be available for architects, engineers, developers, masons and the community.

A. Suggestions for Better Practices in School Construction

The methodology of school construction in Cambodia shows clearly that, overall, there are a few points needed to be addressed in terms of DRR concerns.

B. Suggested Construction Process

Although the overall process of school construction described earlier looks good, there's one serious concern to that. The selection of the site for construction does not always take into consideration the technical aspects; for instance the site location is situated in the flood prone area. This results from the fact that the projects will build a school for the commune as soon as the local community identifies a free land plot for the construction, and normally lands situated in elevated area are private property. So the projects have no choice but to build the school in the flood/ disaster prone and marginal lands.

To tackle this problem, the projects should only build schools in non-flood prone areas, if such an area exisits in the commune, even if it means they have to spend more in buying private property for construction. Site selection is the most critical part in any building construction because if a school is constructed in non-flood prone area, it will last much longer and students can still go to school (by boat…) during the flood period without disrupting their studies..

Moreover, a Master Plan/Zoning or land use plan and a National Building Code are required as soon as possible, so as to effectively apply the Law on Land Management, Urban Planning and Constructions. It would be the task of the MoLMUPC in consultation with the MPWT and other relevant ministries/institutions to draft the plan and code mentioned above.

During the construction or reconstruction of school buildings, engineers and architects of MoEYS should go on-site more often to check the compliance of the guidelines of MoEYS which would also have to integrate DRR concerns.

C. Suggested School Building Design and Safety Provisions

As mentioned earlier, the design looks rather good technically. However, the implementation does not always comply with the technical standards detailed in the contract. This results from the lack of capacity as well as the loose supervisory control of the projects. It requires more severe measures from the projects in terms of the design compliance and the correct use of appropriate materials in the construction. Poor quality construction will incur more maintenance costs due to low resistance to natural forces and affect the longevity of the building.

There are also a few gaps in the guidelines of MoEYS mentioned above that need to be addressed in terms of DRR concerns. Suggestions are as follows:

- This document should also provide guidelines for school buildings other than the Concrete/brick Structure, for the rural areas that cannot wait for the concrete/brick buildings and decide to build wooden/bamboo ones.
- Elevation of school sites must be emphasized in the guidelines in case of construction in flood prone areas.
- Section A- 4.0 (page 59) must state clearly that the elevation of the earth filling will be free from floods.
- Section A-33 (page 65) must specify the place of water storage tanks to be free from floods.
- Section D-1 (Page 69) regarding water well, must instruct to set it in a place free from floods.

And to achieve all the mentioned suggestions, it will require each individual project to take strict actions against any contractors who breach the safety standards.

D. Suggested Capacity for School Construction

With most new schools construction located in rural areas and remote areas, attention should be given to the capacity of the local sub-contractors and local community. In this regard, local sub-contractors who show sign of repeated incapability must be expelled and black listed from the bidding process. In case there are only local communities who are going to be responsible for the construction, they should be trained prior to their assignment, on integrating DRR in construction. Capacity building, especially regarding DRR concerns, should also be provided to provincial engineers who have to monitor the construction.

5.3 Recommendations for Non-Structural Measures

- Integration of DRR in the primary school curriculum. The primary sections are the most important to deliver the message of DRR to the students. Students in the primary classes are the most vulnerable to disasters. Of significance is the fact that in Cambodia there is a high drop out rate after primary school. If DRR is not taught at the primary level then a substantial number of potential targets are missed. In addition, an important aspect is that the curriculum development cycle in Cambodia is in the process of review currently. Therefore, this is the best time to make additions of topics on DRR in the curriculum, for all classes.

- Integration of DRR in the senior secondary and technical school curriculum by the General Secondary Education Department and the Higher Education Department of MoEYS.

- Integration of DRR in the university curriculum, especially in the curriculum for courses in architecture, engineering and rural-regional development studies.

- Development of curriculum for students and teachers with disabilities, especially for those who are visually and hearing impaired, and also mentally challenged.

- Development of extracurricular activities for students which complement the DRR curriculum e.g., games (board and CD), quizzes, etc. The need for such activities has been expressed by teachers, education department officials and the NCDM.

- Development of training modules which can be used at teacher training institutes to teach the DRR curriculum to the teachers. This will also involve capacity building of the teachers training institutes and development of master trainers and resource persons who can teach other teachers. The modules are needed for newly appointed teachers as well as in service teachers.

5.4 Recommendations for Emergency Planning and Response

- Development of guidelines by MoEYS in consultation with the Cambodian Red Cross for emergency planning in the schools. This would help complement the teaching of DRR in the schools. This will also require a training module for teachers on school emergency planning and capacity development of the teachers training institutes for this topic.

- Development of guidelines by the Material and State Assets Department of MoEYS for assessment of vulnerability of school buildings and retro-fitting of the buildings based on the results of the assessment.

- Development of guidelines by the Material and State Assets Department of MoEYS in consultation with the Cambodian Red Cross for design of schools so the buildings can be used as emergency shelters during a disaster or aftermath, which include:
    - site selection including accessibility and road safety
    - hazard resilient structural design
    - incorporation of hazard resilient features

All the activities mentioned above will help to integrate DRR into the education sector. The way forward would be to present these actions before the Education Sector Working Group (ESWG) (*Cf. Annex F*). The ESWG must be made aware of the need for integrating DRR in the on–going and pipeline projects, so that the substantial investment which is being made by these projects (*Cf. list of projects in Section 4 part 5*) is sustainable in the long term. Integration of DRR in the projects will ensure that the projects survive any disaster and the investment is not lost. The key action would be engagement of MOEYS with the donors through the ESWG. In brief, all on-going, pipeline, and any future donor-funded and government-funded projects should integrate DRR concerns so as to ensure the minimization of the risks related to disasters and the maximization of the cost effectiveness of the school buildings construction. This would be the most critical recommendation of this study.

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Annex A: Study Methodology

In order to build up evidence-based rationale for raising awareness on integrating disaster risk reduction concerns into education sector policy and to advocate for changing practices and incorporating disaster resilient features in school construction, it was necessary that a study on socio-economic and physical impacts of disasters on education sector has to be conducted.

Due to the mixed nature of the study, which combines both socio-economic and physical assessments of disaster impacts, EIC had proposed the following research methodology to assure the objective attainment and the validity of the study.

1- Socio-economic Impact Assessment

Desk Review

A review of existing relevant documents and research studies was made to get a better understanding of the issues in the project. These research studies were conducted by different institutions such as ADPC, MoEYS, NCDM, MRC, etc. At the same time, all relevant secondary data were collected in close collaboration with ADPC, MoEYS, and NCDM.

Field Survey

Certain field surveys were conducted with assistance from MoEYS and NCDM in selected disaster prone areas. Since most schools in Cambodia are more vulnerable to floods than other kinds of disasters such as storms, earthquakes and draughts, only schools located in flood prone areas were selected for this survey.

Questionnaire design and survey process: The questionnaire was designed by EIC under close consultation with ADPC. The designed questionnaire was then distributed to the provincial education offices in the three provinces and finally forwarded to the selected vulnerable schools through the district education offices

Sampling: Sample selection was done based on the compilation of data obtained from WFP/NCDM survey in 2003 and from SEILA program in 2006, which had proved that the selected three provinces located in first priority flood prone areas, namely Prey Veng, Takeo, and Kandal, have higher number of vulnerable schools compared to the others. The number of vulnerable schools in these three provinces is 293, representing about 53 percent of the total vulnerable schools in first priority flood prone areas.

Due to time and resources constraints, only around 30 percent of the vulnerable schools in the three provinces was randomly selected as a sample equaling 92 schools, about 80 percent of which were primary schools. These are generally known as the most vulnerable ones in Cambodia.

To assess the impacts of disasters on education sector at the national level, secondary data related to disaster on education sector of other provinces were also collected through assistance from MoEYS and NCDM.

2- Physical Impact Assessment

To assess the physical impacts of disasters on education sector, especially on school buildings, it was indispensable that technical consultation with engineers hs to be made. EIC used its existing resources specializing in infrastructure engineering to accomplish this task.

EIC had consulted with the NCDM over the records for past disasters, as well as their impacts on the education sector.

National building code were obtained from the Ministry of Public Work and Transport, while at the same time, EIC had interviewed officials from the government unit responsible for school construction, Construction Unit of MoEYS, and some contractors to check the compliance of standards and norms set by the national building code and the particular specifications and requirements of the MoEYS.

3- Case Studies

After identifying with relevant stakeholders on projects which can serve as good examples, EIC had interviewed the managers of those projects as well as the contractor and sub-contractors to share their experiences. Field visits were conducted to check the site location and the compliance to the norms and specifications.

4- Solution-oriented Recommendations

To double check the validity of data and to give effective solution-oriented recommendations, EIC had conducted some qualitative interviews with relevant stakeholders namely:

1- Ministry of Education, Youth and Sports (MoEYS);
2- National Committee for Disaster Management (NCDM);
3- Pedagogical Research department, MoEYS;

4- Education Sector Support Project, MoEYS; and
5- UNDP-Cambodia.

In addition to their own expertise, the above mentioned organizations could be the members of the project technical working group.

Annex B: RCC MDRD Components

Phase I: 2004-2007

1. Component 1: Developing guidelines and tools for MDRD
2. Component 2: Undertaking priority implementation partnerships (PIP) in MDRD in RCC member
3. Component 3: Showcasing good practice on MDRD and monitoring progress
4. Component 4: Advocacy for building awareness and political support to MDRD
5. Component 5: Mobilizing partnerships for ongoing & sustainable implementation

Phase II: 2008-2010 & Phase III: 2011-2015

1. Program management
2. Advocacy
3. Knowledge management platform
4. Capacity development
5. Integration in planning
6. Integration in bilateral and multilateral program
7. Safe schools (Education)
8. Safe hospitals (Health)
9. Secure livelihood (Agriculture and non farm)
10. Microfinance for DRR (Financial services)
11. Safer (Infrastructure)
12. Safer housing (Shelter)

Annex C: Communes & Schools Located in Flood Prone Areas by Province

Table C1: Communes[(1)] and Schools[(2)] Located in Flood Prone Areas

Province	Commune	Pre-school	Primary School	Lower Sec. School	Upper Sec. School	Total
Banteay Meanchey	13	12	97	11	3	123
Battambang	8	9	63	10	8	90
Kampong Cham	18	6	71	9	0	86
Kampong Chhnang	9	5	30	5	1	41
Kampong Speu	1	0	4	1	0	5
Kampong Thom	31	95	186	26	8	315
Kampot	9	9	26	4	0	39
Kandal	50	61	170	39	10	280
Kratie	17	15	108	16	2	141
Prey Veng	30	60	152	16	6	234
Pursat	13	33	71	13	4	121
Siem Reap	9	2	44	6	0	52
Stung Treng	18	25	70	11	1	107
Svay Rieng	15	67	54	7	2	130
Takeo	19	27	75	14	6	122
Total	**260**	**426**	**1,221**	**188**	**51**	**1,886**

Source: Compiled from WFP Survey (2003) and SEILA Program (2006)
Note: (1) WFP Survey data in 2003 (2) SEILA Program data in 2006

Table C2: Communes[(1)] and Schools[(2)] Located in First Priority Flood Prone Areas

Province	Commune	Pre-school	Primary School	Lower Sec. School	Upper Sec. School	Total
Banteay Meanchey	4	2	32	4	0	38
Kampong Cham	6	3	22	1	0	26
Kampong Chhnang	2	3	6	2	1	12
Kampong Thom	6	23	39	4	1	67
Kampot	2	4	9	2	0	15
Kandal	14	10	48	10	3	71
Kratie	8	11	51	8	1	71
Prey Veng	16	31	83	9	4	127
Svay Rieng	3	14	13	3	0	30
Takeo	15	22	59	11	3	95
Total	**76**	**123**	**362**	**54**	**13**	**552**

Source: Compiled from WFP Survey (2003) and SEILA Program (2006)
Note: (1)WFP Survey data in 2003 (2)SEILA Program data in 2006

Annex D: Survey Questionnaire

Impact Assessments of Disasters on Education Sector

GENERAL INFORMATON

1 School name:

2 School type:

- Primary
- Lower secondary
- Upper secondary

3 Number of students in 2007/2008?

- Total:
- Female:

4 Number of school buildings and classrooms in 2007/2008?

- Buildings:
- Classrooms:

5 School location:

- Village name:
- Commune name:
- District name:
- Province name:

6 School principal's name:

and contact:

SOCIO-ECONOMIC IMPACT ASSESSMENT

1 Was the school affected by 2000 flood?

- Yes
- No

2 How often is the school affected by floods?

- Every year
- Once every few years
- Rarely

3 Duration when the school is under floods:

- From (month):
- To (month):
- Duration (months):

4 Access to school:

	Before flood	After flood
On foot		
Vehicle		
Boat		
Other, specify		

5 Impacts of floods on the school:

- School closure during study
- School building damages
- Other impacts on the school

6 In case of school closure during academic time, for how long was the school closed?

- From (month):
- To (month):
- Duration (months):

7 In case of school closure during academic time, are there any other places for teaching?

- Yes
- No
- If YES, specify here

8 Were courses accomplished within timeframe?

- Yes
- No

9 If NO, how to deal with such problem?

Specify here:

10 How many students dropped out of school each year?

	Total	Female
2002/2003		
2003/2004		
2004/2005		
2005/2006		
2006/2007		

11 How many students dropped out of school due to difficulties caused by floods?

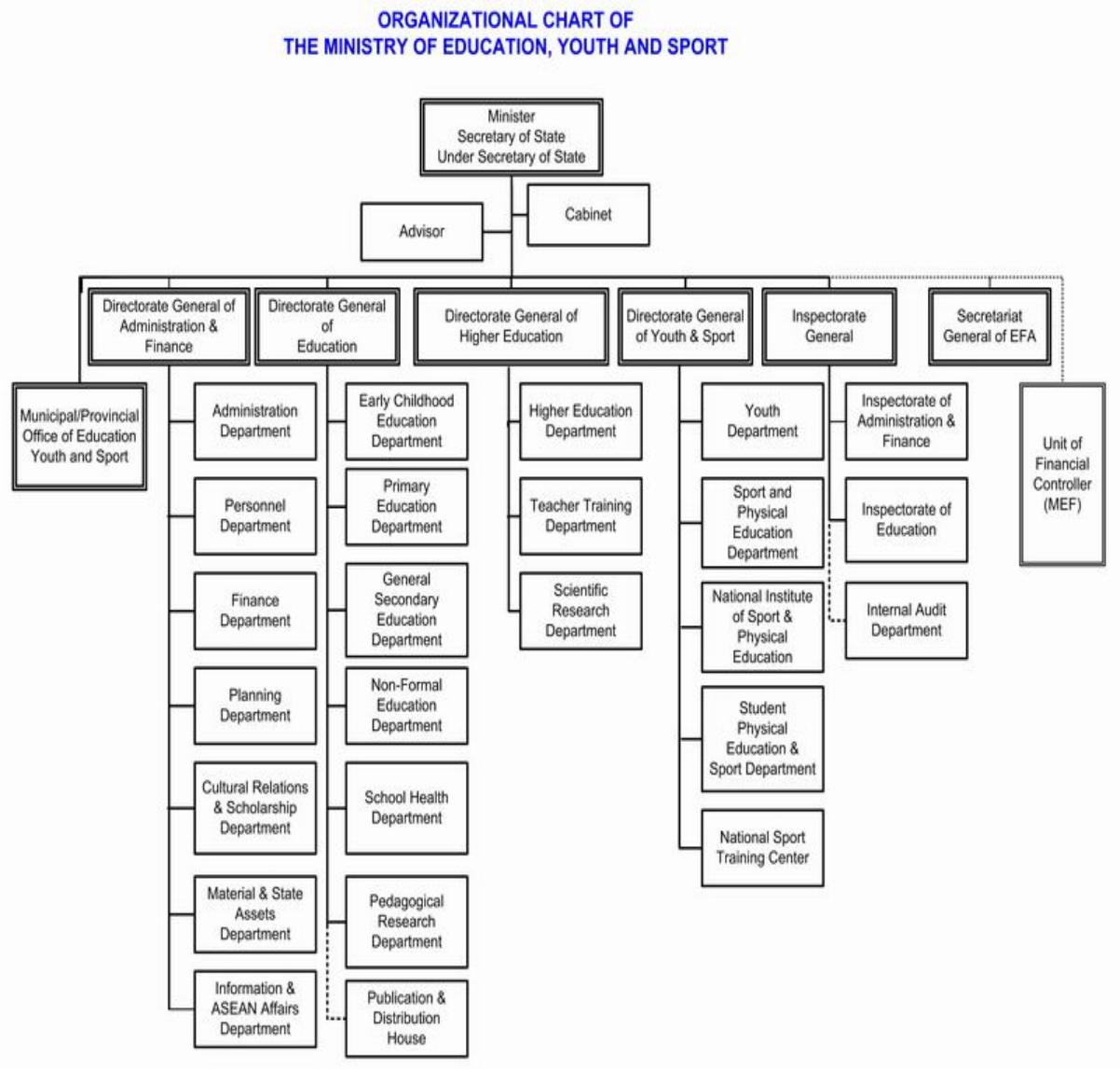
	Total	Female
2002/2003		
2003/2004		
2004/2005		
2005/2006		
2006/2007		

PHYSICAL IMPACT ASSESSMENT

13 In case of school building damages, what are the kinds and costs of damages? Please tick or fill in:
(Please specify the degree of damages: Severe = **1**, Medium = **2**, or Little = **3**)

	Depth of flood from floor level (m)	Floor	Wall	Window	Roof	Chairs & tables	Total costs, US$
2000/2001							
2001/2002							
2002/2003							
2003/2004							
2004/2005							
2005/2006							
2006/2007							

Annex E: Organizational Chart of MoEYS



Source: MoEYS's website

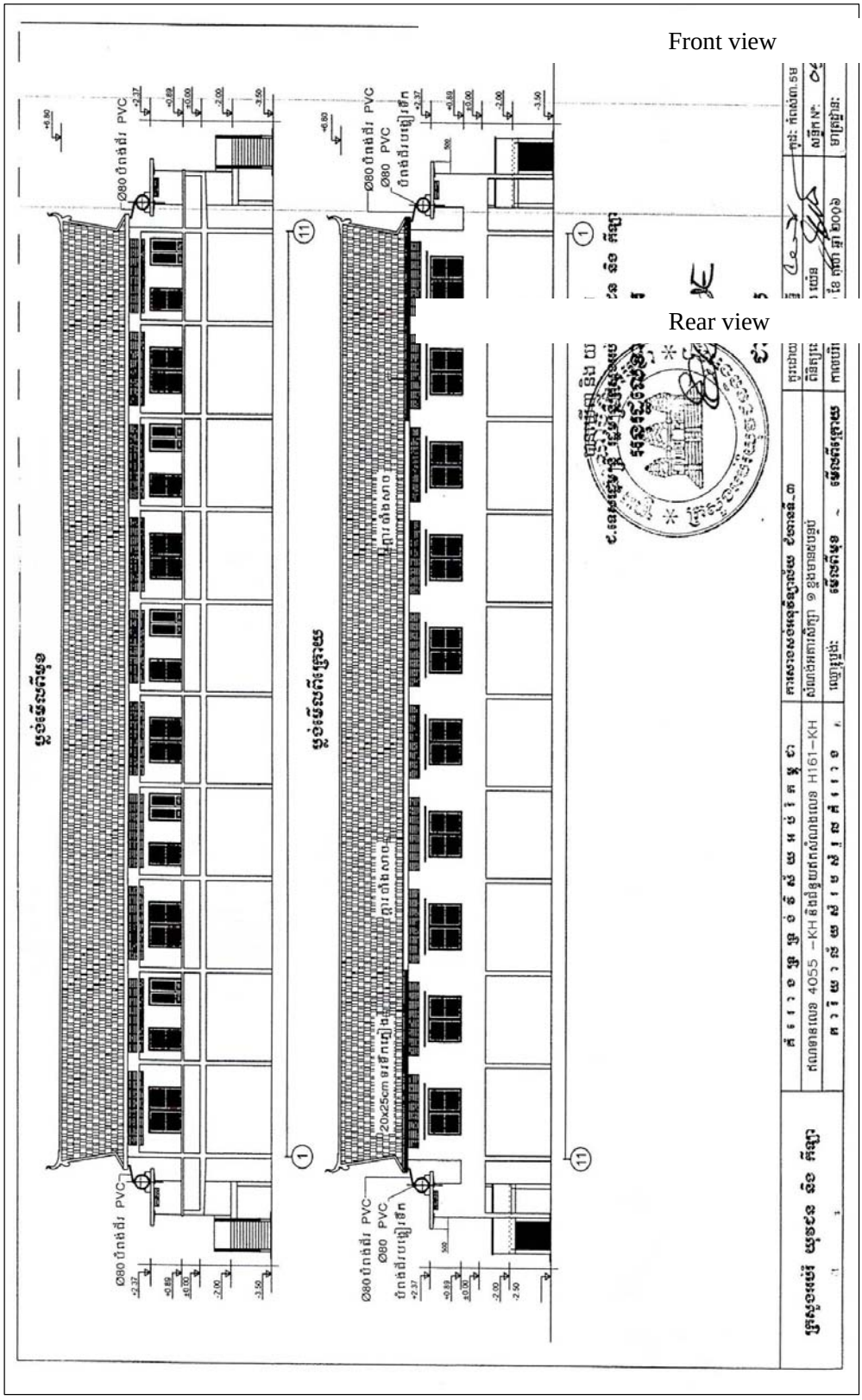
Annex F: Education Sector Working Group (ESWG)

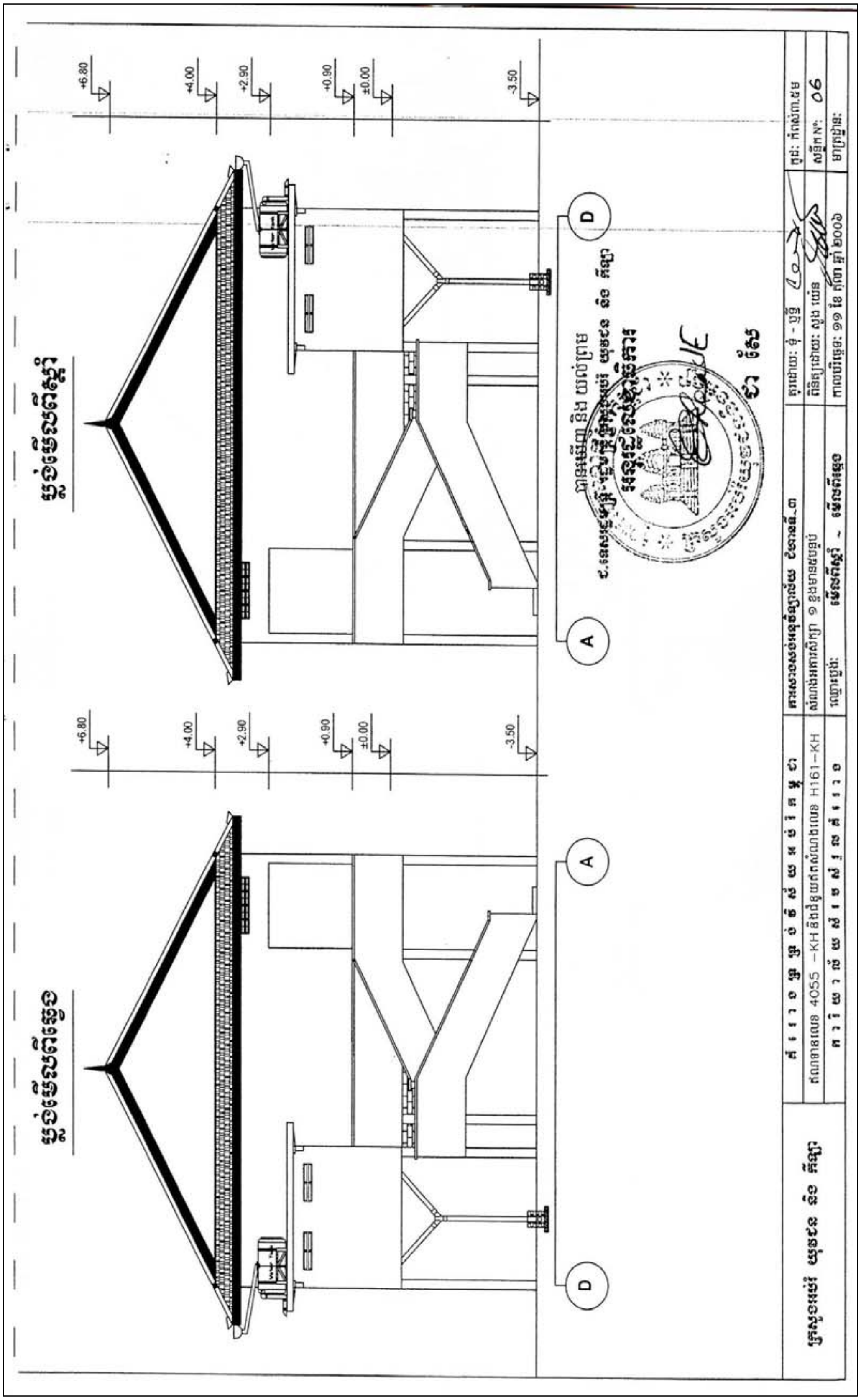
Name	Title
Ministry of Education, Youth and Sports	
1. H.E. Kol Pheng	Senior Minister
2. H.E. Im Sethy	Secretary of State
3. H.E. Mak Vann	Secretary of State
4. H.E. Pit Chamnan	Secretary of State
5. H.E. Bun Sok	Secretary of State
6. H.E. Nath Bunroeun	Under-Secretary of State
7. H.E. Hak Seang Ly	Under-Secretary of State
8. H.E. Chea Se	Under-Secretary of State
9. H.E. Keu Nay Leang	Director General of Education
10. H.E. Chea Oeung	Director General of Admin and Finance
11. H.E. Say Gnen	Inspectorate General
12. Ms. Gnim Vann Chankan	Deputy Inspectorate General
13. Mr. Ou Eng	Deputy Director General of Education
14. Mr. In The	Deputy DG of Admin and Finance
15. Mr. Mak Ngoy	Deputy General Director Directorate General of Higher Education
16. Mr. Leang Seng Hak	Director of Teacher Training Department
17. Mr. Pen Saroeun	Director of Health School Department
18. Ms. Yim Chansrey	Director of ECE
19. Mr. Lay Borin	Director of State Asset Department
20. Mr. Ly Sathyk	Director of Finance Department
21. Mr. Sam Sereyrath	Director of Planning Department
22. Mr. Pen Saroeun	Director of School Health Department
23. Mr. Chorn Chheang Ly	Director of Primary Education Department
24. Ms. Yim Chansrey	Acting Director of Early Childhood Education Department
Ministry of Economic and Finance	
1. H.E. Kong Vibol	Secretary of State
2. H.E. Dr. Hang Chuon Naron	Secretary General Supreme National Economic Council
Royal University of Phnom Penh	
1. Mr. Lav Chhiv Eav	Rector
2. Dr. Neth Barom	Vice-Rector
Development Partners Joint Mission Members	
ADB	
1. Mr. Arjun Goswami	Country Director Cambodia Resident Mission
2. Ms. Sukhdeep Brar	Senior Education Specialist ADB, Manila
3. Mr. Sophea Ma	Social Sector Officer Cambodia Resident Missions
4. Ms. Raikhan Sabirova	
EC	
1. Mr. Christian Provoost	Attaché, Education, Health
2. Ms. Simone Seper	Program Officer Education, Health, Social Development
UNICEF	
1. Mr. Hiroyuki Hattori	Project Officer, Education Section UNICEF Cambodia Country Office
2. Ms. Aye Aoki	Project Officer-Education UNICEF East Asia and Pacific Regional Office
ESWG/UNESCO	
1. Mr. Teruo Jinnai	Chair of ESWG and Head-of-Office UNESCO Representative in Cambodia
2. Ana Telleria	ESWG Secretariat
WFP	
Ute Meir	WFP Rome and senior expert on school feeding programmes

Education Sector Working Group

JICA	
Kanazawa Daizuke	MOEYS Advisor
WFP	
Thomas Keuster	Representative of WFP in Cambodia
UNFPA	
Hou Vimol	RHIYA Coordinator
USAID	
Lyne Losert	Head of Education Section
Save the Children Norway	
Kan Kal	Program Director
Disable Action Council	
1. James Clarice	DAC Advisor
2. Vorn Samphors	Program Coordinator

Annex G: Typical Plan for 3.5-Meter Elevated Schools

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+2.90
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About this Study

The study is one of the four activities developed under the Advocacy and Pilot Implementation Project in the Education Sector in South East Asia-Support to Implementation of Hyogo Framework for Action through Mainstreaming of Disaster Risk Reduction into Development (MDRD) program of the Regional Consultative Committee on Disaster Management (RCC).

The project is being implemented in Cambodia, Lao PDR and the Philippines by the National Disaster Management Offices and the Ministries of Education, in partnership with DIPECHO, UNDP and ADPC. The project includes the following activities:

1. Initiating Mainstreaming Disaster Risk Reduction into Secondary School Curriculum,

2. Study on Impacts of Disasters on Education Sector,

3. Advocacy Workshops on Mainstreaming Disaster Risk Reduction into Education Sector, and

4. Stakeholder Consultation as a follow-up to the Advocacy Workshops.

The objective is to build an evidence-based rationale to raise awareness on integrating disaster risk reduction concerns into education policies and to advocate for changing practices in school construction and incorporating disaster risk resilient features in new school construction.