

UNICEF HANOI

RESEARCH CENTER FOR RURAL  
POPULATION AND HEALTH

REPORT

EFFECTIVENESS OF THE UNICEF-SUPPORTED PROGRAM  
ON SANITATION AND WATER SUPPLY SYSTEMS  
AT PRIMARY SCHOOLS AND KINDERGARTENS



HANOI - 2004

822-VN04-19234

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BC 19234  
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## Acknowledgement

*The survey on "Effectiveness of the UNICEF-supported program on sanitation and water supply systems at primary schools and kindergartens" has been conducted successfully. We would like to express our sincere thanks to UNICEF Ha Noi for the effective financial and technical assistance.*

*We also would like to thank the Department for Students' Activities - Ministry of Education and Training, and the School Boards, teachers and pupils of the 112 surveyed schools for their strong support and cooperation during the data collection and practical feedback on our reports.*

*We thank all our colleagues from the managerial organizations and research institutes at the central, and provincial levels for their collaboration throughout the survey.*

*Finally, we thank the scholars, experts and project managers at the central and local levels for their very useful comments and contributions in writing this report.*

*Ha Noi, November 10, 2004*

**Prof. TRINH HUU VACH**

**Director of the Research Center for Rural  
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## ABBREVIATION

MoET	Ministry of Education and Training
MOH	Ministry of Health
RCRPH	Research Center for Rural Population and Health
UNICEF	United Nations International Children's Emergency Fund

# LIST OF CONTENTS

<b>1. BACKGROUND.....</b>	<b>8</b>
<b>2. SITE AND METHODOLOGY.....</b>	<b>9</b>
2.1. Study sites.....	9
2.2. Survey time.....	9
2.3. Methodology.....	9
2.4. Study subjects.....	9
2.5. Data collection, processing and analysis.....	9
2.5.1. Data collection.....	9
2.5.2. Data processing and analysis.....	10
<b>3. FINDINGS AND DISCUSSION.....</b>	<b>11</b>
3.1. Information on the environmental sanitation and health education program at schools.....	11
3.1.1. Sponsors and project's coverage.....	11
3.1.2. Responsibilities of the departments of MOET in construction and maintenance of sanitation and water supply systems.....	12
3.1.3. Curriculum and teaching method applied in health education.....	13
3.1.4. Outputs and effectiveness of the project.....	14
3.1.5. Implementation steps of the UNICEF project.....	14
3.1.6. Strong points, weak points, and coincidence.....	17
3.2. General information on the surveyed schools.....	18
3.3. Actual situation of sanitation systems.....	19
3.4. Water supply at schools.....	28
3.5. Behavior of pupils on sanitation.....	33
<b>4. MAIN FINDINGS.....</b>	<b>37</b>
4.1. Funding of the project.....	37
4.2. Situation of sanitation systems.....	38
4.3. Child-friendly and safe designs of sanitation systems for children.....	39
4.3. Situation of water supply systems at schools.....	39
4.4. Behavior of pupils on sanitation.....	40
4.5. Fund to build sanitation and water supply systems.....	40
4.6. Impact of sanitation and water supply systems.....	40
<b>5. RECOMENDATIONS.....</b>	<b>41</b>
5.1- To UNICEF Ha Noi.....	41
5.2- To MoET.....	42

## LIST OF TABLES

Table 1. Number of the surveyed schools .....	18
Table 2. Number of classes, teachers and pupils at the surveyed schools .....	18
Table 3. General information about sanitation systems .....	20
Table 4. Quality of construction and usability of sanitation systems .....	22
Table 5. Operation and sanitation status of sanitation systems .....	23
Table 6. Maintenance of sanitation systems .....	25
Table 7. Child-friendly and safe designs of sanitation systems .....	27
Table 8. Water to clean sanitation systems .....	28
Table 9. Water supply systems for water latrines .....	29
Table 10. Water sources for hand washing .....	30
Table 11. Quality of places for handwashing .....	31
Table 12. Drinking water for pupils .....	32
Table 13. Behavior of pupils on sanitation .....	33
Table 14. Sanitary situation and waste mangement at school .....	34
Table 15. Funds for building sanitation and water supply systems .....	35

## LIST OF FIGURES

Figure 1. Managerial system for the construction and maintenance of sanitation systems	13
Figure 2. Implementation organization of the UNICEF project on school sanitation	15
Figure 3 Schools that had sanitation system	20
Figure 4. Latrines at primary schools and kindergartens	21
Figure 5. Usability of sanitation systems	23
Figure 6. Operation of sanitation systems	24
Figure 7. Sanitation status of the latrines	26
Figure 8. Water to clean sanitation systems	28
Figure 9. Schools had no water for hand washing	30
Figure 10. Drinking water supplied by the school	32
Figure 11. Drinking water that was not boiled	33
Figure 12. Schools that did not have waste bins	34
Figure 13. Managerial system of the UNICEF project on school sanitation	43

## 1. BACKGROUND

After the Workshop on Sanitary Education at Primary Schools held in 1986 by MoET, Vietnam started a health education program at all primary schools. Due to poor conditions of health education and environmental sanitation at almost all primary schools in Vietnam, UNICEF and MoET launched a program to supply sanitation and water supply systems for primary schools.

The program has built sanitation and water supply systems for thousands of primary schools. At the end of 2002, UNICEF had supported to construct sanitation systems for 4,300 primary schools and 2,438 kindergartens; furthermore, MoET had also supported to build sanitation systems for 6400 primary schools.

At present, there are about 15,000 primary schools in Vietnam. With the average of about 3 satellite schools per primary school, there will be about 40,000 satellite schools currently needing sanitation and water supply systems; however, only 10,700 of them were supported by the government of Vietnam and sponsors; therefore, a big problem still remains for children, especially for those who live in rural or mountainous areas where only 8% of children aged under 3 years and 48% of children aged 3-5 years basically have access to clean water and sanitation systems.

In addition, bad conditions of sanitation systems, poor sanitary practice of children and contaminated water at schools negatively affected on the morbidity and mortality among children. It was a main cause of malnutrition (currently, the malnutrition rate among children under 5 was 37%), diarrhea, unintelligence and blindness, etc. In many areas of Vietnam, arsenic was found at an alarm level.

The development of sanitation and water supply systems at primary schools, kindergartens and households is an activity of the information, education and communication program. For many years, UNICEF has strongly supported building sanitation and water supply systems suitable for children.

The assessment on the effectiveness of sanitation and water supply systems at primary schools and kindergartens aims to:

- To make an overview on UNICEF-supported sanitation and water supply systems at primary schools and kindergartens in terms of planning, supplying, managing, monitoring and supervising.
- To evaluate the quality of sanitation and water supply systems at selected schools (primary schools and kindergartens).
- To evaluate the operation and maintenance of sanitation and water supply systems at schools after they were constructed.



- To recommend to make the collaboration between UNICEF and MoET more effective in the future.

## **2. SITE AND METHODOLOGY**

### **2.1. Study sites**

The survey was conducted at 122 schools including 83 ones in the provinces of Son La, Hoa Binh, Hanoi, Ha Nam, Nam Dinh, Ninh Binh, Phu Tho, Tra Vinh and 39 ones in the provinces of Phu Tho and Tra Vinh (detailed in the attached).

UNICEF actively selected these schools and supported them to construct sanitation and water supply systems, water supply systems only, or sanitation systems only.

### **2.2. Survey time**

From August 15<sup>th</sup> to November 30<sup>th</sup>, 2004.

### **2.3. Methodology**

A cross-sectional survey was conducted to evaluate the construction, operation and maintenance of sanitation and water supply systems at 122 primary schools and kindergartens.

### **2.4. Study subjects**

- Water supply systems, sanitation systems, wastewater drainages, and waste treatment systems at the selected primary schools and kindergartens.

- Teachers and leaders of the selected schools.

- Pupils who directly used sanitation and water supply systems at the selected schools.

- Relative reports of the UNICEF, MoET and community.

### **2.5. Data collection, processing and analysis**

#### **2.5.1. Data collection**

- Quantitative study: at each school, through observation to access the actual situation of construction, operation and maintenance of water supply systems, sanitation systems and waste treatment systems through checklists and data collection forms.

- Qualitative study: at each school, conducted in-depth interviews with two pupils of the 5th grade (a boy and a girl), one teacher and one principal about the operation and maintenance of the sanitation and water supply systems. In addition, in-depth interviews with some project staff of UNICEF and MoET about the financial support and resource management were conducted.

### ***2.5.2. Data processing and analysis***

- The data collected were entered twice to avoid mistakes and processed by EPI-INFO 6.0 software.

- The draft report was submitted to UNICEF Ha Noi to get comments on it; the final was completed after that.

### 3. FINDINGS AND DISCUSSION

#### 3.1. Information on the environmental sanitation and health education program at schools

##### 3.1.1. Sponsors and project's coverage

###### *Support from UNICEF for primary schools*

During 1991-2000, UNICEF assisted MoET to conduct the environmental sanitation and health education project through compiling textbooks, training teachers, providing materials/equipment to construct sanitation and water supply systems. The project was implemented in all 61 provinces and cities.

During 2001-2004, UNICEF mainly supported 15 districts of difficult provinces including Loc Binh, Lang Son; Bac Ha, Lao Cai; Quan Ba, Ha Giang; Thach An, Cao Bang; Van Chan, Yen Bai; Chiem Hoa, Tuyen Quang; Dien Bien Dong, Lai Chau; Moc Chau, Son La; Lac Son, Hoa Binh; Anh Son, Nghe An; Hung Hoa, Quang Tri; Phu Vang, Thua Thien Hue; Bu Dang, Binh Phuoc; Bac Ai, Ninh Thuan; and Cau Ngang, Tra Vinh.

###### *Support from UNICEF for kindergartens*

- During 2001-2003, UNICEF supported two districts of Phu Tho province: 23 communes of Thanh Ba district, and 15 communes of Lam Thao district.

- In 2004, UNICEF funded 4 provinces: Quang Tri, Thua Thien Hue, Dong Thap and Gia Lai.

###### *Support from the National Targeted Program for Water Supply and Environmental Sanitation:*

During 2001-2004, the National Program for Water Supply and Environmental Sanitation funded 10 provinces to construct systems for clean water supply and environmental sanitation at primary schools. The districts supported were Yen Mo, Yen Khanh and Nho Quan (Ninh Binh province); Yen Binh and Luc Yen (Yen Bai); Hoai Duc and Quoc Oai (Ha Tay); Cam Khe and Thanh Son (Phu Tho); Yen Phong (Bac Ninh); Hiep Hoa (Bac Giang); Y Yen (Nam Dinh); Bo Trach (Quang Binh); Vinh Tuong (Vinh Phuc); and Dong Hy (Thai Nguyen).

###### *Supports from other international organizations:*

Other international organizations such as Plan, Danida, and WHO provided financial and technical assistance for construction of sanitation and water supply

systems in their project communes. Because their supports were given directly to the localities, not via MoET, we did not have detailed information about them.

### ***3.1.2. Responsibilities of the departments of MOET in construction and maintenance of sanitation and water supply systems***

#### ***3.2.2.1. Department for Students' Activities (named the Department for Physical Training, before 2004)***

Assigned by MoET, the department is in charge of monitoring and supervising physical training activities, health education and school health at all educational levels. As a result, this department has been directly involved in implementation, monitoring and management of activities related to health, environmental sanitation, clean water supply, social evils control, and injury prevention.

#### ***3.1.2.2. Department for Primary Schools' Activities***

This department is in charge of management of primary schools in activities related to curriculum, teaching plans etc. The Department coordinated with stakeholders to implement projects for primary schools. Based on the effectiveness of these projects, if needed, the department may recommend the Minister of Education and Training for further extension that is additional to the support from the projects.

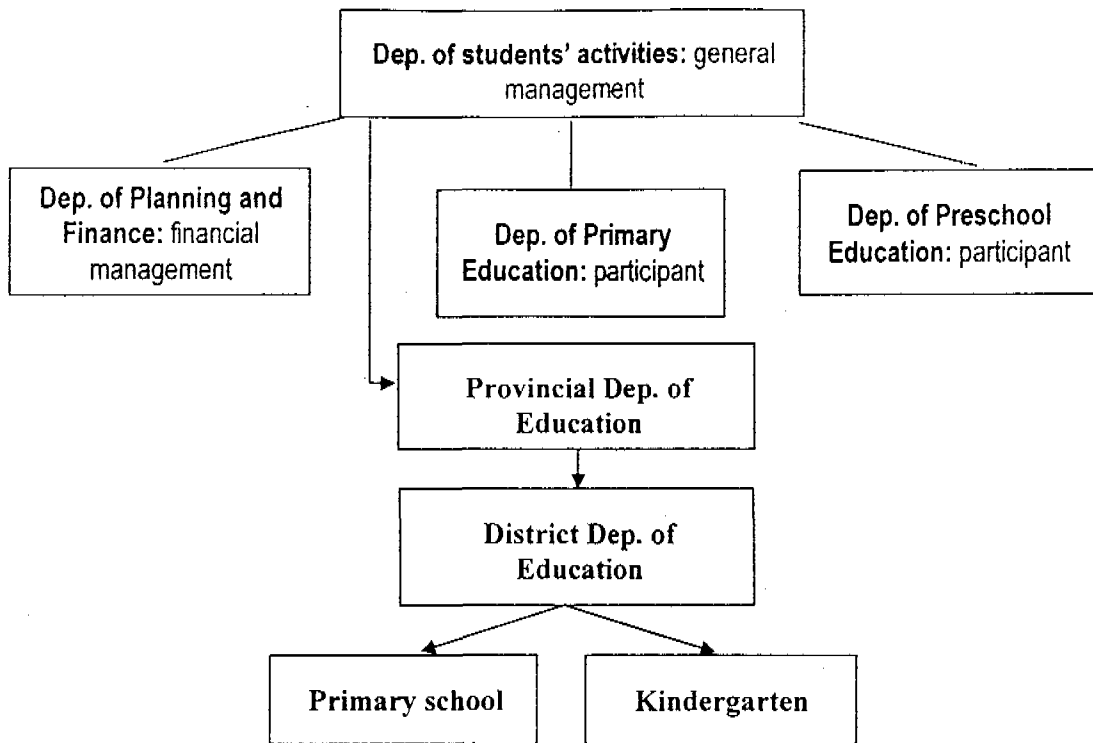
#### ***3.1.2.3. Department for Kindergartens' Activities.***

The department is in charge of management of kindergartens, the same type of function as that of the Department for Students' Activities. Hence, the Department may coordinate with stakeholders in implementation and monitoring of project activities.

#### ***3.1.2.4. Department of Planning and Finance***

The department is responsible for finance; it manages funds of ministerial projects. The department reviews financial proposals sent from projects to approve them. Quarterly or annually, it goes on an inspection tour about the financial implementation of localities or ministerial agents conducting projects.

The below figure presents the managerial function of the departments of MoET and other partners at provincial and district levels in construction and maintenance of the sanitation systems funded by UNICEF:



**Figure 1. Managerial system for the construction and maintenance of sanitation systems**

### ***3.1.3. Curriculum and teaching method applied in health education***

After a 6-year pilot implementation of health education program at primary schools, the subject in question has been accepted since 1995 as one out of nine obligatory subjects at primary schools. The active teaching method was applied in teaching; as a result, it changed the behavior on sanitation and health protection of the pupils as well as their families.

However, this subject no longer exists and its contents have been integrated in natural and social subjects (for 1st, 2nd, and 3rd grade), or in scientific subjects (for 4th, and 5th grade). For that reason, in order to improve the behavior on sanitation of primary school pupils it is necessary to do extra-curriculum activities such as:

- Conduct IEC campaigns on health education, clean water, and environmental sanitation for pupils and their parents.
- Hold knowledge competitions among pupils on health education and environmental sanitation.

- Develop new teaching materials and teaching means for extra curriculum activities at schools or integrate new contents in natural and social subjects (at primary schools) and environmental activities (at kindergartens).

- Improve teachers' skills on teaching and communicating about clean water supply and environmental sanitation.

### ***3.1.4. Outputs and effectiveness of the project***

#### ***3.1.4.1. Construction of sanitation and water supply systems***

In recent years, UNICEF effectively supported for difficult localities through construction of sanitation and water supply systems at main schools and/or its satellites.

Some localities not supported by UNICEF project received assistance from national programs. This improved the quality of health education, clean water supply and environmental sanitation in many schools, detailed as followings:

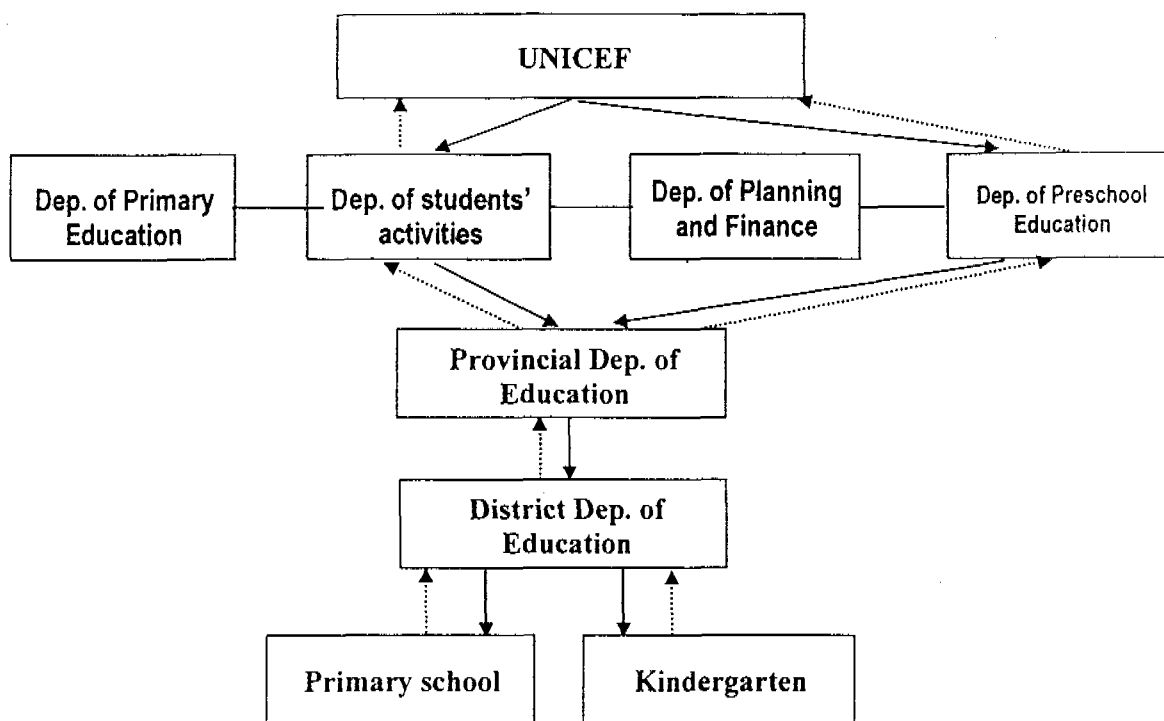
- Improved environmental conditions of schools.
- Helped pupils practice their knowledge on environmental sanitation and personal hygiene.
- Made sanitation and water supply systems become models for the pupils' parents and community to apply.

However, some school leaders did not know the significance and importance of sanitation and water supply systems at schools. Consequently, they did not support to construct these things as well as change pupils' behavior on sanitation.

#### ***3.1.4.2. Training for primary school teachers on individual hygiene and environmental sanitation***

After the training courses, primary school teachers gained new teaching methods and motivated pupils to participate in developing lessons to change behavior on health, individual hygiene, and environmental sanitation. This high effective teaching method was being applied for many other courses at primary schools.

### ***3.1.5. Implementation steps of the UNICEF project***



Cooperate: ———  
 Guide: ———→  
 Report: ←·····

**Figure 2. Implementation organization of the UNICEF project on school sanitation**

For UNICEF projects, there are 6 steps of implementation:

*Step 1:* Based on the annual workplan of the Vietnam-UNICEF project on education and assigned by the ministerial project management board, concerned ministerial departments assisted subprojects to implement activities.

*Step 2:* The relative ministerial departments set up criteria to select schools.

*Step 3:* Provincial and district localities cooperated with the selected schools to select appropriate models of latrines or water supply systems and sent detailed workplan to the Department of Education and Training at provincial and district levels.

*Step 4:* The provincial Departments of Education and Training sent workplan to the responsible department of MoET (Department for Students' Activities is responsible for the implementation of clean water supply and environmental sanitation activities).

*Step 5:* MoET sent the workplan to UNICEF. The responsible department approved the budget sheets and sent them to the Department of Finance. This department delivered budget to provincial Departments of Education and Training to allocate funds to the project schools via the district Department of Education and Training.

*Step 6:* Receipts and financial statements of project activities were required to submit to MoET. MoET rechecked to approve and send to UNICEF to draw the balance sheet.

6 steps mentioned above show a close management of project activities consisting of planning, monitoring, supervision, financial delivery and liquidation. Nevertheless, in-depth interviews with schoolteachers show findings as follows:

- In Step 3: when selecting appropriate models, designs and construction sites of latrines and water supply systems, localities did not get comments from teachers, pupils and parents. Consequently, some latrines were not suitable after constructed so they were not used or their quality was not so good.

- In Step 4: two different ideas were found from in-depth interviews as follows:

+ The first idea: it is not needed to change the current management, in other words, provincial Departments of Education and Training should send their workplan to the ministerial level via its two departments (Department of students' Activities, and Department of Preschool Education). These two departments cooperate with the Health Education Session of UNICEF.

+ The second idea: there should be only one department of MoET representative for MoET to cooperate with the provinces and UNICEF. It makes provincial departments save their time and expense when they have to work with only one ministerial department; they only attend one meeting held by one department instead of attending many meetings for a nearly similar content. The suitable one should be the Department of Students' Activities. Currently, UNICEF has two sessions, the Session of Health Education and the Session of Water and Environmental Hygiene, involving in management of the school sanitation project. Because its activities most related to professional techniques, they should only belong to the Session of Water and Environmental Hygiene.

In the opinion of the research group, it is better to follow the second idea. This managerial model was applied in the years before 2000; so managerial agencies should refer it when finding the best managerial model for the project.

- In Step 5: UNICEF and MoET only based on financial norms to deliver budget to localities without consideration for its design, budget forecast and



supervision. Researchers found some sanitation and water supply systems constructed without any formal designs or with designs made by workers. Some schools had received enough budgets from UNICEF since 2001-2002 but did not complete the construction. Some others completed constructions but the quality and technology were not good, or even they built unsanitary latrines.

- In Step 6: Some schools sent their financial reports to UNICEF while the construction was not started or completed because they want to receive enough money to avoid the change of the budget approved and/or to submit them due to the deadline. So they had to buy financial receipts (“red” receipts) to use. Besides, at many localities, especially at mountainous areas, financial receipts were not always available when purchasing materials so the schools had to buy financial receipts to submit. Because UNICEF did not include the VAT payment in the total budget, it made some difficult for the schools since they did not have other sources of money to supplement that amount of tax.

### ***3.1.6. Strong points, weak points, and coincidence***

Strong points: sanitation and water supply systems funded by UNICEF much supported the teaching activities at schools, details as follows:

- Thanks to the sanitation and water supply systems, pupils developed their behavior on individual and environmental hygiene and know how to use and maintain them at the school as well as at their home.

- The sanitation and water supply systems improved the sanitary situation of the schools, especially at difficult regions.

- The sanitation and water supply systems participated in changing the behavior of community leaders, parents, and pupils on environmental health at schools.

- The sanitation and water supply systems conducted IEC activities to motivate community in general and pupils’ parents in particular to build sanitation systems and clean water sources to erase unsanitary habits.

#### *Weak points:*

- For mountainous or difficult areas, because the prices of materials and labor cost were higher, the budget from UNICEF was not sufficient (equal to only 50 – 70% of the actual cost). For that reason, the localities had to raise additional money from local people. Because the people did not have money to contribute in time, constructions were prolonged and their quality was not good as expected (especially for water supply systems).

- Although designs were made in advance for each type of facilities, the schools had to pay for new designs to be legally accepted, this wasted money of the localities.

In comparison with the demand of the community or the number of schools to be supported, the responsibility of UNICEF was quite small. Many other schools expected that UNICEF and other sponsors would extend their support to other areas.

*Coincidence:* ministerial departments should implement, monitor and supervise activities of their projects or subprojects only to avoid coincidence.

### 3.2. General information on the surveyed schools

**Table 1. Number of the surveyed schools**

Indicators	Primary school		Kindergarten		Total	
	n	%	n	%	n	%
Expected total of schools to survey	83	100	39	100	122	100
Total of schools surveyed	73	88	39	100	112	91.8
Total of schools not surveyed	10	12	0	0.0	10	8.2

Expected number of schools to survey was 122, but the survey was conducted at only 112 schools (91.8%). Those that were not surveyed were primary schools (8.2% of the total or 12% of the primary schools).

The schools not under the survey were remote or satellite schools with a small amount of pupils so they were less eligible for selection. Besides, the annual number of children decreased in recent years as a result of the family planning program made the capacity of the schools reduced. Their pupils had to move to their main schools for better management.

The schools having no pupils at the survey time were Sai Luong, Co Cai, Tong Kiang, Lac Muong, Da Mai, and Bo Mong (Moc Chau district, Son La province); Ninh Son, Vo, Bo Tuc, and Cau (Lac Son district, Hoa Binh province). Some of these schools constructed sanitation systems but they were not used; some others did not construct sanitation systems.

**Table 2. Number of classes, teachers and pupils at the surveyed schools**

Indicators	Primary school	Kindergarten
Total of classes	813	127
Total of teachers	1235	203
Total of other staff	161	50
Total of schoolboys	11583	1592
Total of schoolgirls	10823	1381

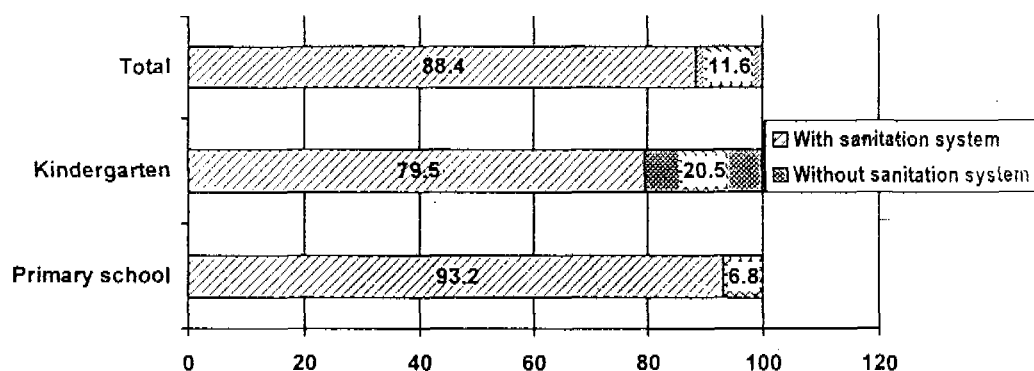
In the 112 surveyed schools, there were 813 classes in the primary schools and 127 classes in the kindergartens. Among the primary schools, there were 1235 teachers, 161 other staff, 11583 schoolboys and 10823 schoolgirls. Among the kindergartens, there were 203 teachers, 50 other staff, 1592 schoolboys and 1381 schoolgirls. The proportion of primary school pupils who dropped in 2001-2002 was 0.27%; in 2002-2003 and 2003-2004 was 0.23%. The disparity is not significant ( $p > 0.05$ ).

### **3.3. Actual situation of sanitation systems**

Among 112 surveyed schools, 5 primary schools (6.8%) and 8 kindergartens (20.5%) still did not have sanitation system for pupils. Conceptually, a school considered having no sanitation system was one that had no latrine or no latrine/urinal or no latrine, urinal and water supply system. Details on these schools were presented below:

Among primary schools: Suoi Quanh primary school (Moc Chau district) was being rebuilt with a new sanitation system. Xuan Son primary school (Thanh Son district) was funded by UNICEF but it only built the sanitation system for teachers that had a well, a water tank about 10 m<sup>3</sup>, a bathroom separate for males and females, a water tank at springhead, and a rubber pipe system to lead water to the school. While no latrine and water supply system were built for pupils. In Kim Chung primary school (Kim Son district) the old sanitation and water supply systems were destroyed in September 2004, there was currently only a temporary urinal for pupils. Two other ones that were Nga Village and An Village primary schools (Moc Chau district) did not have both sanitation and water supply systems; their teachers and principals reported that they did not receive any support from UNICEF for the construction of sanitation and water supply systems.

Among kindergartens: Phuong Linh school (Thanh Ba district) had only water supply system; the pour-flush latrine was destroyed for the locality to build a Culture House. In Hy Cuong (A) Kindergarten, Hy Cuong Commune, Lam Thao district, there were no sanitation and water supply systems. According to the principal, the school was funded by UNICEF to build sanitation and water supply systems but these constructions were destroyed to build a new road 2 years ago. In kindergartens of the 7th village and 10th village, Xuan Lung commune, Lam Thao district, there were a dug well, a water tank, and a hand washing place close to the water tank, but no latrine. In kindergartens of Cong A 2 village (Ban Nguyen), Tan Tien and Van Diem (Vinh Lai – Lam Thao), and Bong Lai (Hop Hai – Lam Thao) there was only water supply system; they did not have latrine; according to the principals, the support from UNICEF was insufficient while that from the local people was lacked, so the school could not build these ones.



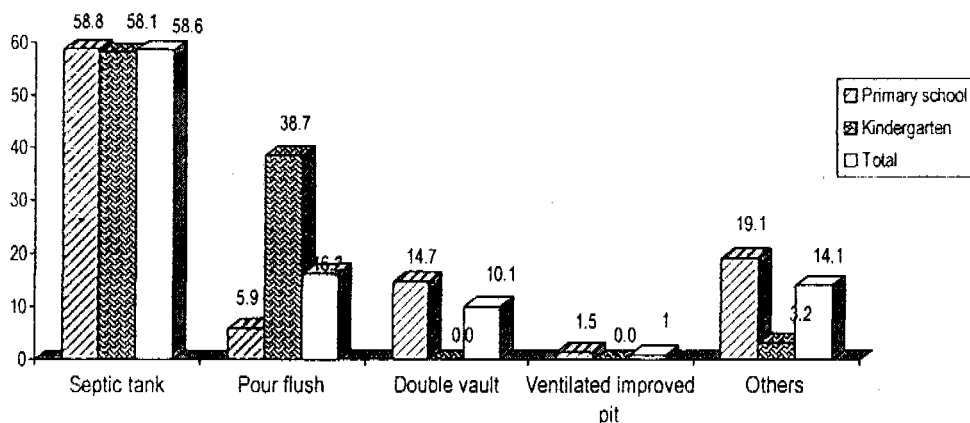
**Figure 3 Schools that had sanitation system**

Among the schools having sanitation systems, all kindergartens had only a sanitation system for each. Nine primary schools (13.2%) having two facilities were Tan My (Lac Son), To Mua (Moc Chau), Khai Xuan (Thanh Ba), Tan Minh A, Tan Minh B, Bac Son B, Viet Long (Soc Son), Gia Van (Gia Vien), and Xuan Nha (Moc Chau).

**Table 3. General information about sanitation systems**

Indicators	Primary school		Kindergarten		Total	
	n	%	n	%	n	%
<i>Availability</i>						
Available	68	93.2	31	79.5	99	88.4
Not available	5	6.8	8	20.5	13	11.6
<i>Number of sanitation systems</i>						
One	59	86.8	31	100.0	90	90.9
Two	9	13.2	0	0.0	9	9.1
<i>Number of squatting slabs or seats</i>						
One	14	20.6	4	13.3	18	18.4
Two	24	35.3	22	73.3	46	46.9
Four	24	35.3	4	13.3	28	28.6
Six	3	4.4	0	0.0	3	3.1
Eight or more	3	4.4	0	0.0	3	3.1
<i>Type of latrine</i>						
Septic tank	40	58.8	18	58.1	58	58.6
Pour-flush	4	5.9	12	38.7	19	16.2
Double vault	10	14.7	0	0.0	10	10.1
Ventilated improved pit	1	1.5	0	0.0	1	1.0
Others	13	19.1	1	3.2	14	14.1

When asked about the reason to have two types of sanitation systems, we found that the septic tanks were not used due to a lack of water or severe degrading so the schools had to use the single vault or bridge latrines.



**Figure 4. Latrines at primary schools and kindergartens**

Almost all of the kindergartens had two squatting slabs or seats (73.3%), one and four squatting slabs or seats were found at the same proportion (13.3%). Among the primary schools, those having two and four squatting slabs or seats were found at the same high proportion (35.3%); the schools had one squatting slab or seat were accounted for 20.6%; 6 squatting slabs or seats 8.8%.

The schools having one squatting slab or seat were those with a small number of pupils, they were 8 satellite schools in Xuat Hoa (Lac Son), namely Nam Hoa, Roc, Ngai, Xua Ha, Danh, Xua Thuong, Chuong and Bau; 5 satellite schools in Tan My (Lac Son), namely Lot, Cai, Nai, Nach and Troi; Khai Xuan (Thanh Ba), for teachers use only; kindergartens in Vu Yen, Hanh Cu (Thanh Ba), kindergartens in Hy Cuong, Cao Mai (Lam Thao).

Among the schools having sanitation systems, 74.8% constructed septic and pour-flush latrines, 10.1% constructed double vault latrines, 1.0% constructed ventilated improved pit latrines, and 14.1% constructed unsanitary types (single vault, bridge, dug latrines, etc.).

Among the kindergartens, almost all of the sanitation systems were septic and pour-flush latrines. Among the primary schools, 64.7% constructed septic and pour-flush latrines, 14.7% constructed double vault latrines, 1.5% constructed ventilated improved pit latrines and 19.1% constructed unsanitary types (almost single vault latrines).

14 schools constructed double vault latrines were Ngai, Voc, Bap, Xua Ha, Danh, Xua Thuong, Bau (Xuat Hoa, Lac Son); Phuong Lau (Viet Tri), Quarter B Hy Cuong (Lam Thao); Phu Son (Nho Quan); Pan (To Mua, Moc Chau); Mai Dinh B (Soc Son); Duc Long (Nho Quan) and Gia Phu (Gia Vien).

Majority of primary schools constructed single vault latrines instead of double vault latrines because workers and teachers did not know about double vault latrines. When asked about this, almost all of them could not identify the difference

between two types of latrines. Consequently, they also did not know sanitary criteria, operation and maintenance.

**Table 4. Quality of construction and usability of sanitation systems**

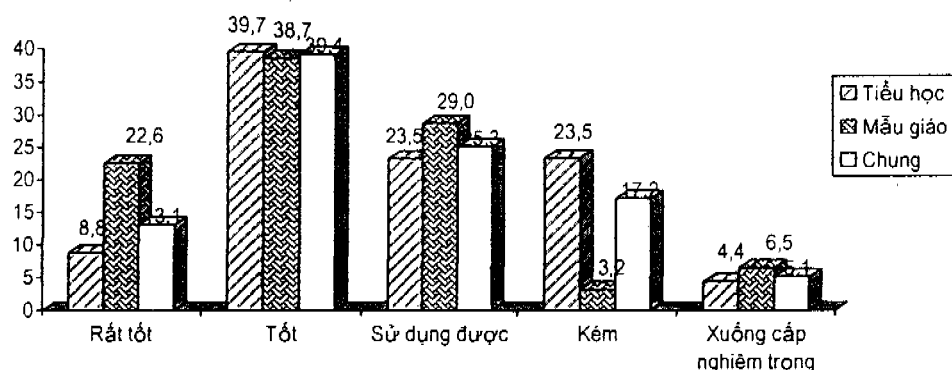
Indicators	Primary school		Kindergarten		Total	
	n	%	n	%	n	%
<i>Quality of construction</i>						
Very good	7	10.3	4	12.9	11	11.1
Good	26	38.2	17	54.8	43	43.4
Medium	23	33.8	8	25.8	31	31.3
Bad	12	17.6	2	6.5	14	14.1
Inside-wall of urinals and latrines were not paved with enameled tile	51	78.5	3	10.3	54	57.4
Floors of urinals and latrines were not paved with enameled tile	53	77.9	2	6.9	55	56.7
<i>Usability</i>						
Very good	6	8.8	7	22.6	13	13.1
Good	27	39.7	12	38.7	39	39.4
Usable	16	23.5	9	29.0	25	25.3
Bad	16	23.5	1	3.2	17	17.2
Too bad	3	4.4	2	6.5	5	5.1
Total	68	100.0	31	100.0	99	100.0

Based on 4 levels of the quality of the construction (very good, good, medium, and bad), 5 levels of the usability (very good, good, usable, bad, and too bad), and classifications specified in questionnaires (see the annex), findings were presented in the Table 4.

1.1% of the sanitation systems at primary schools were very good; 43.4% good; 31.3% medium and 14.1% bad. The proportion of latrines having medium and bad quality in the primary schools was higher than that in the kindergartens (51.4% vs. 32.3%).

Schools having bad quality of sanitation system were Roc, Ngai, Xua Ha (Xuat Hoa-Lac Son); Phu Son, Duc Long (Nho Quan); Kim Hai (Kim Son); Gia Phu (Gia Vien); Bac Son B, Mai Dinh B and Viet Long (Soc Son); Thanh Ha 2 (Thanh Ba); Ninh Dan, Hamlet 4-Quarter B-Hy Cuong (Lam Thao).

For the inside-wall and floor of sanitation systems, three quarters of the sanitation systems at primary schools and 2-3 sanitation systems at kindergartens were not paved with enameled tile. It was found that sanitation systems not paved with enameled tile were very difficult to clean and had bad smell caused by some urine kept in the wall.



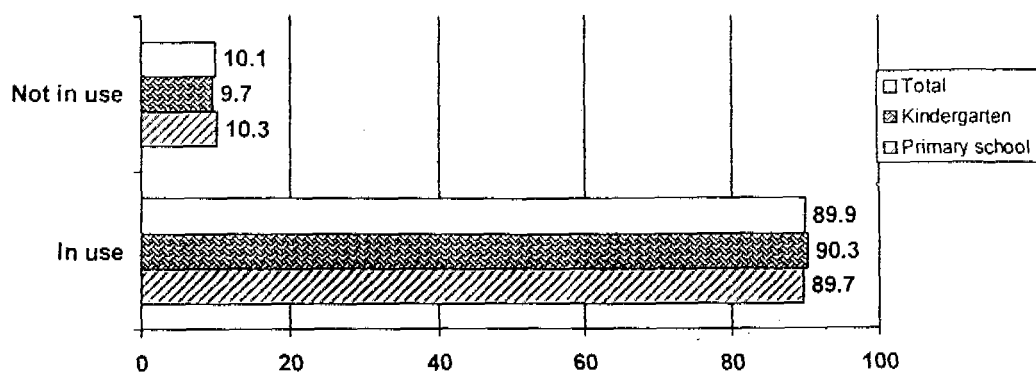
**Figure 5. Usability of sanitation systems**

The sanitation systems in very good and good conditions were found at 52.5%; usable: 25.3%; bad: 17.2%; and too bad: 5.1%. Almost all of the sanitation systems at kindergartens (90.2%) were usable, while 27.9% at primary schools were in bad or too bad conditions.

The schools, where the sanitation systems were found at too bad condition, were Dong Linh (Thanh Ba); Hamlet 4-Quarter B-Hy Cuong (Lam Thao); Bac Son B and Viet Long (Soc Son); Kim Hai (Kim Son); Khanh Hoi (Yen Khanh); and Gia Van (Gia Vien).

**Table 5. Operation and sanitation status of sanitation systems**

Indicators	Primary school		Kindergarten		Total	
	n	%	n	%	n	%
<i>General status of latrines</i>						
In use	61	89.7	28	90.3	89	89.9
Not in use	7	10.3	3	9.7	10	10.1
Total	68	100.0	31	100.0	99	100.0
<i>Number of latrine rooms in use</i>						
All in use	54	79.4	26	86.7	80	81.6
Some in use	5	7.4	2	6.7	7	7.1
None in use	9	13.2	2	6.7	11	11.2
<i>No using-regulations</i>						
No signs to separate latrine for girls or for boys	39	57.4	25	83.3	64	65.3
<i>Containers for used toilet papers</i>						
In every cubicle	32	47.1	2	6.7	34	34.7
Some cubicles	5	7.4	1	3.3	6	6.1
None	29	42.6	13	43.3	42	42.9
Unnecessary	2	2.9	14	46.7	16	16.3
<i>Stagnant water on floor</i>						
Yes	17	25.0	5	16.7	22	22.4
No	51	75.0	25	83.3	76	77.6
<i>Stagnant water around the outside of the latrine block</i>						
Yes	11	16.2	2	6.7	13	13.3
No	57	83.8	28	93.3	85	86.7
<b>Total</b>	<b>68</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>	<b>98</b>	<b>100.0</b>



**Figure 6. Operation of sanitation systems**

At the survey time, 89.9% of the latrines were currently being used. Up to 10.1% of the latrines were not in use due to a lack of water to pour after using the toilets and to clean latrines. These schools built water latrines (septic tank or pour-flush) but they did not build water supply systems for them.

Schools that had latrines but not in use were the primary school of Kim Hoa A (Cau Ngang); the primary school of Thanh Ha 2 (Thanh Ba); the kindergarten of Man Lan (Thanh Ba) that was being constructed; the kindergarten of Do Xuyen (Thanh Ba); the kindergarten of Ward 2-Minh Tam (Nang Yen-Thanh Ba); the primary school of Lien Hung (To Mua-Moc Chau); the primary school of Bac Son B (Soc Son); the primary school of Viet Long (Soc Son); the primary school of Tan Minh A and Tan Minh B (Soc Son). All these schools had no water to pour after using the toilets and to clean latrines.

Although the notices on using regulation and signs to separate latrine for girls or for boys are simple and cheap to set up almost all of the schools did not have notices on using regulation available at sanitation systems; up to 57.4% of the primary schools and 83.3% kindergartens had no signs to separate latrines for girls or for boys.

Furthermore, 81.6% of the latrines had all cubicles in use, and 11.2% had all cubicles not in use. Hence, some squatting slabs or seats were not used although they were not damaged. Due to the lack of water for latrines, the schools closed some of them so that they did not have to clean all.

Almost all latrines did not have toilet paper available, except only 16.7% of the kindergartens. Among latrines at primary schools, 47.1% had containers for used toilet papers available at all cubicles; 7.4% had at some cubicles; the others did not have. Among latrines at kindergartens, 43.3% did not have covers of containers for used toilet papers; 46.7% did not need them because the teachers directly used water instead of papers for the pupils after using the toilets (self-reported by



teachers). Observing the latrines we found that all the containers for used toilet papers had no covers and had only some used toilet papers in them; this might be that the papers were regularly burnt or very few pupils used latrines at school. Findings from interviews with pupils also show that the pupils rarely used school latrines because, in the morning, almost all of them did this job at home.

Findings from observations also show that most school latrines had no stagnant water on the floor or surrounding areas. Only 22.4% schools had their latrines having stagnant water on the floor and 13.3% having stagnant water on surrounding areas.

**Table 6. Maintenance of sanitation systems**

Indicators	Primary school		Kindergarten		Total	
	n	%	n	%	n	%
<i>Squatting slabs or seats</i>						
All are not broken	66	97.1	30	100.0	96	98.0
All are broken	2	2.9	0	0.0	2	2.0
<i>Doors (with wings)</i>						
All have	56	82.4	22	73.3	78	79.6
Some have	2	2.9	1	3.3	3	3.1
None	10	14.7	7	23.3	17	17.3
<i>Latrine inside-wall</i>						
Clean	11	16.2	12	40.0	23	23.5
Rather clean	29	42.6	15	50.0	44	44.9
Dirty	25	36.8	3	10.0	28	28.6
Too dirty	3	4.4	0	0.0	3	3.1
<i>Smell in latrines</i>						
Heavy	24	35.3	3	10.0	27	27.6
Softly	31	45.6	8	26.7	39	39.8
None	13	19.1	19	63.3	32	32.7
<i>Sanitary status of latrines</i>						
Clean	10	14.7	9	30.0	19	19.4
Rather clean	29	42.6	18	60.0	47	48.0
Dirty	21	30.9	1	3.3	22	22.4
Too dirty	8	11.8	2	6.7	10	10.2
<b>Total</b>	<b>68</b>		<b>30</b>		<b>98</b>	

The maintenance of latrines at all schools was quite good. The kindergartens did this job better than the primary schools.

Squatting slabs or seats at all schools were also maintained rather well. Almost all of them were in a good condition (unbroken). Only 2.9% of the primary schools had all squatting slabs or seats broken.

At the survey time, most cubicles had doors (with wings). The proportion of cubicles having doors of the primary schools (82.4%) was higher than that of the

kindergartens (73.3%). Inversely, the proportion of cubicles having no doors in the kindergartens (23.3%) was higher than that of the primary schools (14.7%).

More than two thirds of the schools had latrine inside-wall clean or rather clean while 31.7% had latrine inside-wall dirty or too dirty. The proportion of primary schools having latrine inside-wall dirty or too dirty (41.2%) was higher than that of kindergartens (10%).

35.3% of the primary schools and 10% of the kindergartens had latrines with bad smells. About two thirds of kindergartens had latrines without smell while only 19.1% primary schools did.

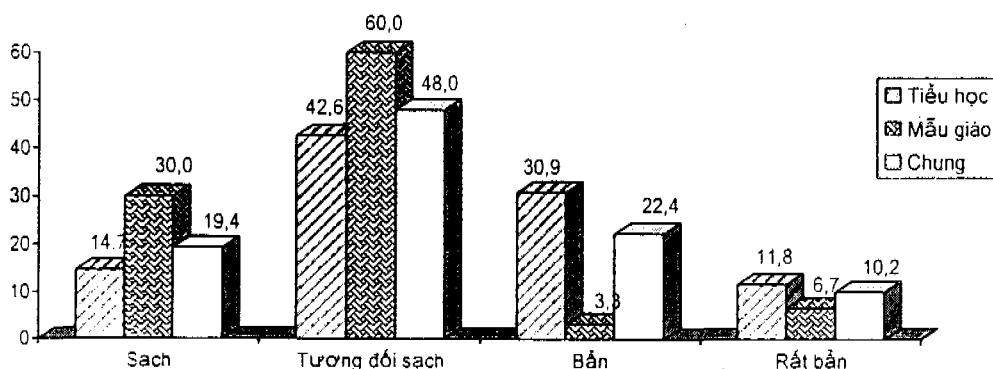


Figure 7. Sanitation status of the latrines

General assessment on sanitary situation of sanitation systems at the survey time shows that 19.4% of schools had latrines clean, 48% rather clean, and 32.6% dirty or too dirty. Sanitary situation of sanitation systems of the kindergartens was better than that of the primary schools. While 90% of the latrines in the kindergartens were clean or rather clean, that proportion in the primary schools was only 57.3%. At the survey time, schools with too dirty latrines were the primary school of Kim Hoa A (Cau Ngang); the kindergarten of the ward 2 of Minh Tam (Nang Yen-Thanh Ba); the kindergarten of the ward B (Hy Cuong-Lam Thao); the primary school of Phu Son (Nho Quan); the primary school of Bac Son B (Soc Son); the primary school of Tan Minh B (Soc Son); the primary school of Mai Dinh B (Soc Son); the primary school of Dong Ly (Ly Nhan); the primary school of Duc Long (Nho Quan); the primary school of Gia Van (Gia Vien).

Among all surveyed schools, the proportion of those having the ventilated improved pit latrines was low (11.1%) and found only at primary schools. The operation and maintenance of 11 double vault latrines and 1 ventilated improved pit latrine was not good, for instance, only 9 ones (81.8%) had the hollow part with drainage to catch and drain urine; only 3 ones (27.3%) had the pit cover; only 2 ones (20%) were used correctly, or in other words, one vault was used to keep while the other used to compost stools; only 2 double vault latrines (20%) had the cover to recover the vault after taking stools out; 8 ones (72.7%) had the ventilating pipe but

smaller than the specified size. Only 1 latrine had enough and 8 ones did not have enough ash to overlay after defecating. Asked about the source of ash, teachers reported that pupils were asked to bring it from home; hence, the amount of ash was not enough to use. Findings from interviews with teachers also show that even they did not know the correct way to use and maintain a double vault latrine. For that reason, most double vault latrines of the primary schools were being used and maintained incorrectly.

**Table 7. Child-friendly and safe designs of sanitation systems**

Indicators	Primary school		Kindergarden		Total	
	n	%	n	%	n	%
<i>The way to sanitary area</i>						
Safe and easy to walk	58	85.3	29	96.7	87	88.8
Unsafe and not easy to walk	10	14.7	1	3.3	11	11.2
<i>Enough light in cubicle</i>						
Yes	24	35.3	18	60.0	42	42.9
No	44	64.7	12	40.0	56	57.1
<i>Foot rests are at a good distance apart for the size of children</i>						
Yes	64	94.1	14	46.7	78	79.6
No	4	5.9	16	53.3	20	20.4
<i>The size of drop hole</i>						
Good size	59	86.8	27	90.0	86	87.8
Too large	9	13.2	3	10.0	12	12.2
<i>Door steps</i>						
High enough (suitable)	18	64.3	5	62.5	23	63.9
Too high (not suitable)	10	35.7	3	37.5	13	36.1
Have steps	4	5.9	0	0.0	4	4.1
Unnecessary to have	36	52.9	22	73.3	58	59.2
<b>Total</b>	<b>68</b>		<b>30</b>		<b>98</b>	

88.8% of the schools had the way to sanitary areas safe and easy for children to walk. However, up to 11.2% of the schools built latrines in the area not safe and easy for children to walk, most at primary schools (14.7%).

The fact is that the children will not be afraid of using a latrine only if the latrine has enough light inside and the air is ventilated. Findings show that most schools did not have electrical lights inside the latrine. It was explained by teachers that pupils only use the latrine at daytime not at night. Observing latrines, interviewers found that only 60% of latrines in the kindergartens and 35.3% in the primary schools had enough light inside them when the doors are closed.

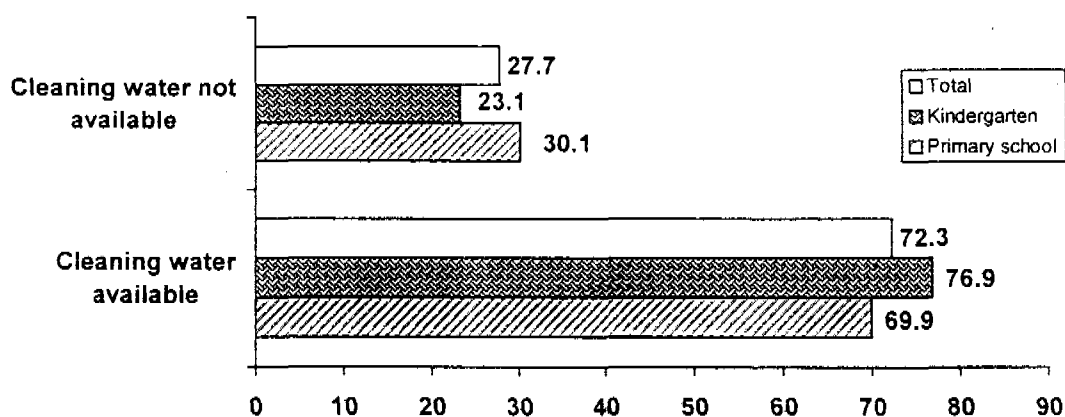
Findings also show that, only 46.7% squatting slabs or seats in the kindergartens had the foot rests that were at a good distance apart for the size of children while that in the primary schools was 94.1%. In fact, all squatting slabs of latrines in both primary schools and kindergartens were for adults; hence, they were larger for small children to use, especially for pupils in the kindergartens. Generally, the drop hole in almost all latrines was in size for children; the bigger size was found at only 12.2% of the schools.

Most latrines in the kindergartens were septic tanks or pour-flush ones, not necessary to build steps. For those that need steps, 36.1% of them had steps inappropriate in height with children; furthermore, all of them had no handrail.

### 3.4. Water supply at schools

**Table 8. Water to clean sanitation systems**

Indicators	Primary school		Kindergarden		Total	
	n	%	n	%	n	%
<i>Cleaning water available</i>						
Yes	51	69.9	30	76.9	81	72.3
No	22	30.1	9	23.1	31	27.7
Total	73	100.0	39	100.0	112	100.0
<i>Cleaning water source</i>						
Tap water	4	7.8	1	3.3	5	6.2
Drilled-well water	19	37.3	7	23.3	26	32.1
Dug-well water	13	25.5	22	73.3	35	43.2
Rain water	1	2.0	0	0.0	1	1.2
Riverhead, springhead	7	13.7	0	0.0	7	8.6
River, spring (not head), pond	6	11.8	0	0.0	6	7.4
Others	1	2.0	0	0.0	1	1.2
<i>Cleaning water collection tools</i>						
Hand pump	8	15.7	5	16.7	13	16.0
Electric pump	16	31.4	9	30.0	25	30.9
Rope and bucket	17	33.3	7	23.3	24	29.6
Water tap	6	11.8	9	30.0	15	18.5
Others	4	7.8			4	4.9
Water tanks available	41	80.4	26	86.7	67	82.7
<i>Water level of the tanks</i>						
Full	7	17.1	5	19.2	12	17.9
More than a half	20	48.8	13	50.0	33	49.3
Less than a half	12	29.3	4	15.4	16	23.9
Empty	2	4.9	4	15.4	6	9.0



**Figure 8. Water to clean sanitation systems**

Water to clean the sanitation systems was not available at all surveyed schools. It was available at only 69.9% of the primary schools and 76.9% of the kindergartens while not available at up to 30.1% of the primary schools and 23.1% of the kindergartens. Schools having water latrines but no water supply were the primary school of Kim Hoa A (Cau Ngang); the primary school of Thanh Ha 2 (Thanh Ba); the kindergarten of Man Lan and Nam Hoa (Thanh Ba) that was being constructed; the kindergarten of Do Xuyen (Thanh Ba); the kindergarten of the ward 2 of Minh Tam (Nang Yen-Thanh Ba); the primary school of Lien Hung (To Mua-Moc Chau); the primary school of Bac Son B (Soc Son); the primary school of Viet Long (Soc Son); the primary school of Tan Minh A and B (Soc Son); the primary school of Gia Van (Gia Vien).

At schools having water to clean the sanitation systems, the most common water sources were dug-well (43.2%), followed by drilled-well (32.1%), riverhead, springhead (8.6%), spring (7.4%), tap water (6.2%) and others (1.2%). The water sources at kindergartens were only the 3 follows: dug-well, drilled-well and tap water.

The cleaning water collection tools were electric pump (30.9%), rope and bucket (29.6%), water tap (18.5%), hand pump (16%) and others (4.9%).

Among schools having water to clean the sanitation systems, 82.7% had water tanks. At the survey time, two thirds of the water tanks were full of water. However, up to 15.4% of the kindergartens and 4.9% of the primary schools had no water in the tanks.

**Table 9. Water supply systems for water latrines**

Indicators	Primary school		Kindergarten		Total	
	n	%	n	%	n	%
<i>Water tanks available</i>						
Yes	40	90.9	23	79.3	63	86.3
No	4	9.1	6	20.7	10	13.7
Total	44	100.0	29	100.0	73	100.0
<i>Water level of the tanks</i>						
Full	4	10.0	7	30.4	11	17.5
More than a half	17	42.5	5	21.7	22	34.9
Less than a half	12	30.0	5	21.7	17	27.0
Empty	7	17.5	6	26.1	13	20.6
<i>Tools to collect water</i>						
Water tap	9	20.5	10	34.5	19	26.0
Bucket	25	56.8	16	55.2	41	56.2
Others	1	2.3	1	3.4	2	2.7
None	9	20.5	2	6.9	11	15.1
<b>Total</b>	<b>44</b>	<b>100.0</b>	<b>29</b>	<b>100.0</b>	<b>73</b>	<b>100.0</b>

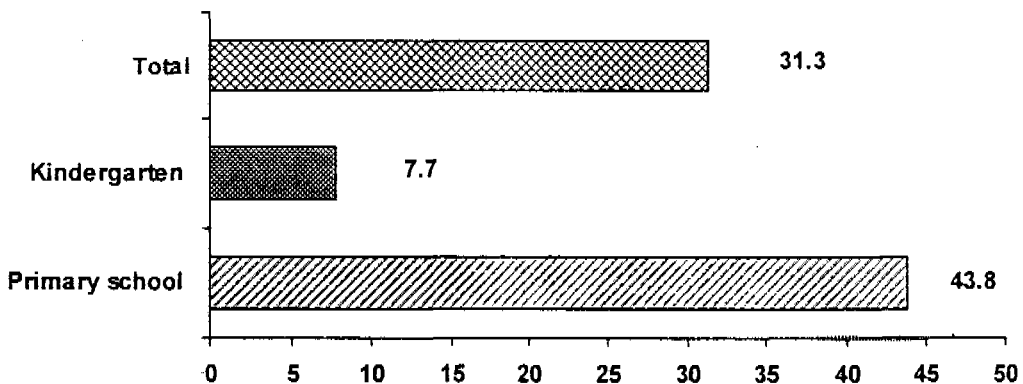
Among 73 schools having water latrines (septic tank and pour-flush), 63 ones had water tanks to supply water (86.3%). The proportion of schools had water tanks to supply water in the primary schools was 90.9%, higher than that in the kindergartens (79.3%).

At the survey time, among schools having water tanks to supply water, 17.5% of the water tanks in the primary schools and 26.1% in the kindergartens did not have water. However, about 52% of the water tanks were full of water or had water at the level of more than a half of tank. Most water to use was clean (88.2%).

The tools to collect water to pour were most common with bucket (56.2%) and water tap (26%). At the survey time, 20.5% of latrines in the primary schools and 6.9% in the kindergartens had no tools to collect water.

**Table 10. Water sources for hand washing**

Indicators	Primary school		Kindergarden		Total	
	n	%	n	%	n	%
<i>Hand washing water source</i>						
Don't have	32	43.8	3	7.7	35	31.3
Tap water	3	7.3	1	2.8	4	5.2
Drilled-well water	14	34.1	8	22.2	22	28.6
Dug-well water	15	36.6	27	75.0	42	54.5
Riverhead, springhead	7	17.1	0	0.0	7	9.1
River, spring (not head), pond	1	2.4	0	0.0	1	1.3
Others	1	2.4	0	0.0	1	1.3
<i>Water collection tools</i>						
Hand pump	9	22.0	3	8.3	12	15.6
Electric pump	8	19.5	17	47.2	25	32.5
Rope and bucket	12	29.3	3	8.3	15	19.5
Water tap	11	26.8	12	33.3	23	29.9
Others	1	2.4	1	2.8	2	2.6
<i>Water level of the tanks</i>						
Don't have	12	29.3	6	16.7	18	23.4
Full	6	20.7	6	20.0	12	20.3
More than a half	17	58.6	14	46.7	31	52.5
Less than a half	4	13.8	5	16.7	9	15.3
Empty	2	6.9	5	16.7	7	11.9



**Figure 9. Schools had no water for hand washing**

Generally, 68.8% of the schools had water for hand washing after using the toilet, of which 92.3% were in the kindergartens, higher than that in the primary schools (56.2%). Inversely, 31.3% of the schools did not have water for hand washing; most of them were primary schools (43.8%).

Water for hand washing was most taken from dug-well (54.5%), followed by drilled-well (28.6%), riverhead, springhead (9.1%), tap water (5.2%), and river, spring and others (2.6%). Water for hand washing in the kindergartens was taken from the only 3 sources: drilled well, dug-well and tap water.

Tools to collect water for hand washing included electrical pump (32.5%), water tap (29.9%), bucket (19.5%), hand pump (15.6%) and others (2.6%). Water from riverhead, springhead may be stored in tanks to use later or used directly.

More than three thirds of surveyed schools had water tanks; the kindergartens (83.3%) had more water tanks than the primary schools (70.7%). At the survey time, 20.3% of the schools had tanks full of water, 52.5% had water at the level of more than a half of the tank. Particularly, 11.9% of the schools had tanks without water, of which 16.7% were in the kindergartens and 6.9% in the primary schools.

**Table 11. Quality of places for handwashing**

Indicators	Primary school		Kindergarten		Total	
	n	%	n	%	n	%
Have handwashing place	38	55.9	29	96.7	67	68.4
Water available at handwashing place	38	55.9	23	76.7	61	62.2
<i>Water collection tools for handwashing:</i>						
Water taps	20	52.6	21	91.3	41	67.2
Water container	1	2.6	0	.0	1	1.6
Open bucket or bowl	11	28.9	2	8.7	13	21.3
Others	6	15.8	0	.0	6	9.8
<i>Soap for handwashing</i>						
Have	0	.0	10	43.5	10	16.1
Don't have	39	100.0	13	56.5	52	83.9

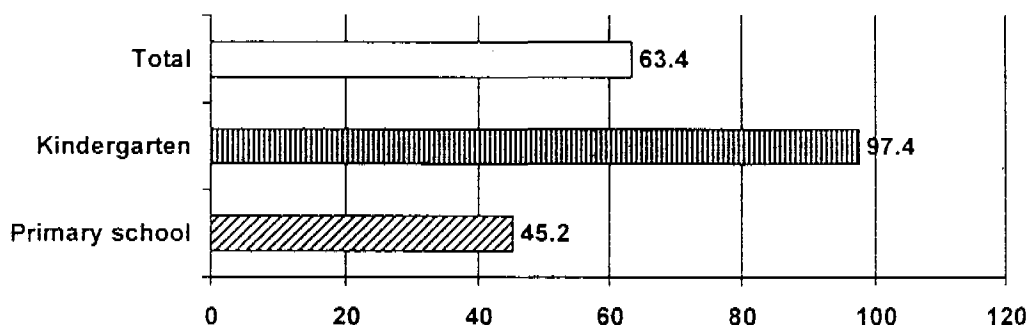
Up to 96.7% of the kindergartens had the separate place for hand washing, but only 76.7% of them had water available. 55.9% of the primary schools had the separate place for hand washing and all of them had water available.

Water tap is very useful for pupils to use, especially those at the kindergartens. Finding show that the most common tool to get water for hand washing was water tap (91.3% in kindergartens, 52.6% in primary schools); followed by bucket (28.9% in primary schools, 8.7% in kindergartens).

All primary schools surveyed did not have soap for hand washing, only 10 kindergartens (43.5%) got it, they were kindergartens of Yen Khe, Chi Tien, Dong Thanh, Thai Ninh, Thanh Xa, Yen Noi, Hanh Cu, Dai An, Hoa Hong (Thanh Ba) and Cao Xa 1 (Lam Thao).

**Table 12. Drinking water for pupils**

Indicators	Primary school		Kindergarten		Total	
	n	%	n	%	n	%
<i>Drinking water supplied by the school</i>	33	45.2	38	97.4	71	63.4
<i>Drinking water source</i>						
Tap water	6	18.2	1	2.6	7	9.9
Drilled-well water	14	42.4	8	21.1	22	31.0
Dug-well water	6	18.2	28	73.7	34	47.9
Rain water	6	18.2	1	2.6	7	9.9
Riverhead, springhead	1	3.0			1	1.4
<i>Drinking water containers</i>						
Container with tap	26	81.3	36	94.7	62	88.6
Container with no tap	6	18.8	2	5.3	8	11.4



**Figure 10. Drinking water supplied by the school**

Generally, 64.4% of the schools supplied drinking water for pupils (45.2% of the primary schools, 97.4% of the kindergartens).

In descending order of percentage, the sources of drinking water were dug-well (47.9%), drilled-well (31%), tap water and rainy water (9.9%) and riverhead, springhead (1.4%). They all met quality requirements (transparent, colorless, smellless, tasteless) and purified or boiled before using.

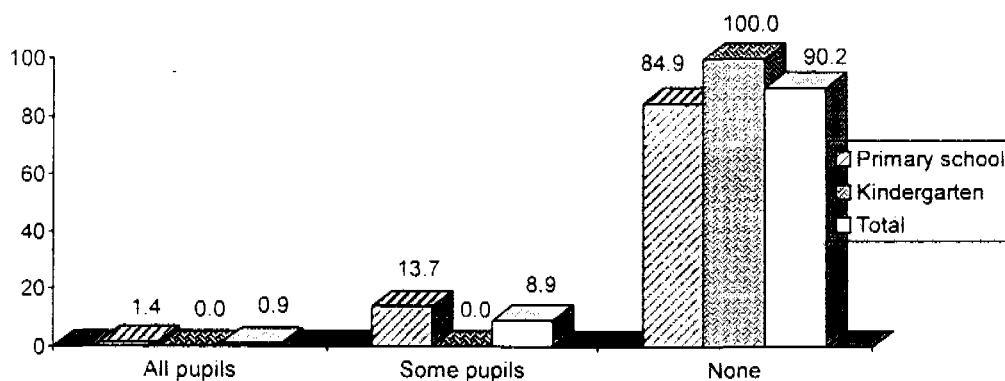
Almost all (88.6%) of the drinking water containers had tap to use. All had the cover and were usually covered carefully. The quality of drinking water at the surveyed schools was good.



### 3.5. Behavior of pupils on sanitation

**Table 13. Behavior of pupils on sanitation**

Indicators	Primary school		Kindergarten		Total	
	n	%	n	%	n	%
<i>Drink unboiled water</i>						
All pupils	1	1.4	0	0.0	1	0.9
Some pupils	10	13.7	0	0.0	10	8.9
None	62	84.9	39	100.0	101	90.2
<i>Urinate inside sanitation systems</i>						
All pupils	23	34.8	8	27.6	31	32.6
Some pupils	29	43.9	19	65.5	48	50.5
None	14	21.2	2	6.9	16	16.8
<i>Flush water after urinating</i>						
All pupils	2	3.8	1	3.7	3	3.8
Some pupils	15	28.8	6	22.2	21	26.6
None	35	67.3	20	74.1	55	69.6
<i>More information on using the toilet</i>						
<i>Wash hands after using the toilet</i>						
All pupils	3	6.7	14	73.7	17	26.6
Some pupils	18	40.0	5	26.3	23	35.9
None	24	53.3	0	0.0	24	37.5
<i>Use soap for washing hands after using the toilet</i>						
All pupils	0	0.0	3	15.8	3	7.5
Some pupils	0	0.0	7	36.8	7	17.5
None	21	100.0	9	47.4	30	75.0



**Figure 11. Drinking water that was not boiled**

Findings from observations show that at the survey time, 9.8% of the primary schools had pupils who drank water not boiled while no kindergartens did.

Also at the survey time, 32.6% of the schools had all pupils who urinated inside sanitation systems; 50.5% had some pupils who urinated inside sanitation

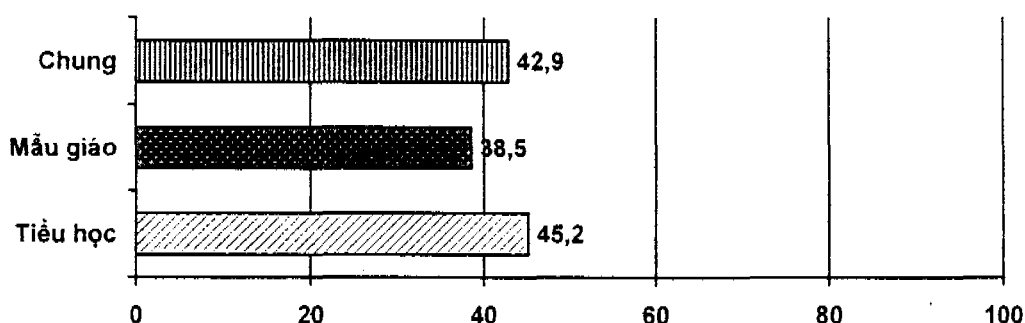
systems; and 16.8% had no pupils who urinated inside sanitation systems. It is notable that up to 69.6% of the schools did not have any pupils who flushed water after urinating. 53.3% of the primary schools did not have any pupils who washed hands after using the toilet. Among those having pupils who washed hand after using the toilet, only 52.6% of the kindergartens had pupils who washed hand with soap after using the toilet and teachers encouraged all of them in the break time. We rarely saw pupils who used the school latrines at the survey time.

**Table 14. Sanitary situation and waste mangement at school**

Indicators	Primary school		Kindergarten		Total	
	n	%	n	%	n	%
Pupils litter on the school yard	7	9.6	3	7.7	10	8.9
School yard is clean	60	82.2	32	82.1	92	82.1
Classrooms are clean	64	87.7	37	94.9	101	90.2
<i>Waste bins are available</i>						
At all classrooms	14	19.2	8	20.5	22	19.6
At some classrooms	11	15.1	2	5.1	13	11.6
At some other places	15	20.5	14	35.9	29	25.9
None	33	45.2	15	38.5	48	42.9
<i>Waste pit/burning area is available</i>						
	58	79.5	20	51.3	78	69.6
<i>Waste management</i>						
Burn	63	86.3	26	66.7	89	79.5
Bury	3	4.1	0	0.0	3	2.7
Remove to other places	5	6.8	12	30.8	17	15.2
Do nothing	2	2.7	1	2.6	3	2.7
Total	73		39		112	

At the survey time, 9.6% of the primary schools and 7.7% of the kindergartens had pupils who litter on the schoolyard.

At the survey time, 82.1% of the schools had the schoolyard kept clean (no garbage only, regardless of materials of the yard). Most classrooms at surveyed schools were rather clean. Only 12.3% of the primary schools and 5.1% of the kindergartens had some classrooms not kept clean.



**Figure 12. Schools that did not have waste bins**

Among the surveyed schools, 42.9% of them did not have waste bins, 25.9% had at some places, 11.6% at some classrooms, and 19.6% at all classrooms.

Findings show that 79.5% of the primary schools and 51.3% of the kindergartens had waste pit/burning area. However, almost all of them were pits without fences.

Most schools treated waste by burning in the pit; 15.2% of schools together with local waste treatment workers removed waste to other places; 2.7% buried waste; however, 2.7% did nothing for waste treatment.

### 3.6. Funds for building sanitation systems and water supply systems

When interviewed about the funds for building sanitation systems and water supply systems, some school leaders and teachers did not remember them exactly. Most of them were young teachers who had just been promoted or those who had just worked in the school for a short time so they did not know about the construction of these works. Very few schools posted the mark “funded by UNICEF” on the constructed facilities while most of other sponsors had their names on the constructed facilities funded by them. However, the survey team collected information as specified via different channels.

**Table 15. Funds for building sanitation and water supply systems**

Sources of budget	Sanitation system		Water supply	
	n	%	n	%
State's budget	5	5.1	6	6.2
Local budget	11	11.1	12	12.4
Parent's contribution	5	5.1	14	14.4
Funded totally by UNICEF	45	45.5	31	32.0
Funded partly by UNICEF	28	28.3	23	23.7
Others	5	5.1	11	11.3
Total	99	100.0	97	100.0

Table 15 shows that, most schools were funded totally by UNICEF. Among 99 schools having sanitation systems, 45.5% of them were funded totally and 28.3% funded partly by UNICEF, the other schools were funded by other sponsors. More than a half of water supply systems at the primary schools and kindergartens were funded totally or partly by UNICEF. In addition, parent's contribution, local budget, State's budget and other sources were also included.

**Parent's contribution, local budget and State's budget played an important role** in building sanitation and water supply systems for the schools.

When asked about why while UNICEF funded the school to built sanitation and water supply systems there were those that were built totally by the budget of the State and/or locality, leaders of schools reported as follows:

- The total budget from UNICEF was only enough to build either sanitation system or a water supply system, therefore the school had to get additional budget from the State and/or locality to supplement.

- The UNICEF-supported sanitation and water supply systems were built but they were destroyed because the school changed its place or had to return its place to the locality. So the school had to rebuild them by the budget not from UNICEF.

- The school used budget from UNICEF to build the sanitation and water supply systems for teachers, not for pupils.

- School leaders who came to work at the school just for a short time did not know exactly about the budget source. They only reported with information cited from the documents of the school with the content that that budget was from the State and/or locality.

### *3.7. Impact of the sanitation and water supply systems on the education and communication activities*

Findings from interviews with teachers show that the sanitation and water supply systems funded by UNICEF much supported the teaching activities at schools, details as follows:

- The sanitation and water supply systems contributed to the improvement of the environment of the school.

- The sanitation and water supply systems have really been “visual teaching materials” for teachers to give practical lectures on individual and environmental hygiene to the learners.

- The sanitation and water supply systems participated in the change of behavior of community leaders, pupils’ parents, and pupils on environmental health at schools.

Findings from interviews with the primary school pupils also show as follows:

- Thanks to the sanitation and water supply systems pupils developed their behavior on individual and environmental hygiene and know how to use and maintain them. The pupils applied them right in the school and later at their home.

- The sanitation and water supply systems improved the sanitary situation of the schools, especially at difficult regions.

Findings from interviews with both teacher and pupils show as follows:

- The sanitation and water supply systems were also the models for the pupils' parents, especially for those in mountainous and remote regions, to apply at their family.

- The sanitation and water supply systems conducted IEC activities to motivate community in general and pupils' parents in particular to build sanitation systems and clean water sources and to erase unsanitary habits.

## **4. MAIN FINDINGS**

### **4.1. Funding of the project**

- UNICEF was the earliest international organization that funded much budget for the construction of sanitation and water supply systems at schools. More than ten thousand sanitation systems at schools were built in all the provinces/cities of Vietnam mainly under the support from the UNICEF, National Targeted Program for Water Supply and Environmental Sanitation, and MoET. Some international organizations such as Plan, Danida, WHO also funded for the construction of sanitation and water supply systems at schools but on a smaller scale and quantity.

- Besides the construction of sanitation and water supply systems, the health education topic was added to the curriculum of the primary schools during the 6 past years. It played an important role in changing pupils' hygienic behavior and promoting their health.

- UNICEF Ha Noi closely cooperated with MoET in management and implementation of the project on school sanitation. Generally, project activities such as planning, supervision, finance supply, and balance-sheet drawing were conducted as specified; the project significantly attained its targets.

- However, the project still got some limitations, for instance, the scale was still narrow; the funding proportion from the project was still low that made the construction prolonged when the contribution from people who were most poor was very slow; the sample designs, especially for kindergartens, were not diversified according to different local conditions; both the school and pupils' parents did not have many chances to give comments on the sample design and construction place selection; the procedures to check and take over the budget were not really convenient; the technical assistance was not provided well that made the construction quality still not very high; etc. UNICEF and MoET did not have a unique representative (session or department) in management of the project, consequently some activities were repeated and the cooperation were not maximumly close.

## 4.2. Situation of sanitation systems

- 8.2% of the sample units were not surveyed; however, they were only the particular primary schools (12%) of Moc Chau district, Son La province and Lac Son district, Hoa Binh province. These schools had no pupils at the survey time so they were not assessed. Most of them were funded by UNICEF to build sanitation systems but the work progress was very slow, the design was not good as specified in sanitary standards, and they were not in use at the survey time.

- At the survey time, up to 11.6% of schools did not have sanitation systems (primary schools: 6.8%; kindergartens: 20.5%). Among those that did not have sanitation systems, some of them were only funded by UNICEF to build clean water supply system only; some sanitation systems were destroyed after constructed because the local authorities made a plan to construct other things on that area; the others were not completed because of a slow contribution from the local people.

- Among those that had sanitation systems, 74.8 % of the latrines were septic tanks and pour-flush ones; 10.1% were double vault latrines, 1% were ventilated improved latrines; and 14.1% were other types that were not sanitary (single vault, old design, etc.). Almost kindergartens had latrines in types of septic tank, pour-flush, double vault, but the primary schools still had 20% of the latrines that were not sanitary. Most unsanitary latrines were single vault ones, this was caused by the workers and school misunderstood about the techniques so they built single vault latrines instead of double vault latrines.

- Up to 20.6% of the latrines in the primary schools were single latrines. Although these schools had few pupils but with only one single latrine it is impossible to separate the use for males and females; in addition, it usually did not have a separate place to urinate and was not really friendly with children.

- Up to 54.5% of the sanitation systems had good quality; 31.3% medium and 14.1% bad. The proportion of sanitation systems with medium or bad quality in the primary schools was higher than that in the kindergartens.

- Almost sanitation systems in the kindergartens were usable (90.2%), while in the primary schools; the proportion of sanitation systems being seriously degraded was rather high (27.9%).

- 89.9% of the sanitation systems were used daily. Up to 10.1% of schools had sanitation systems that were not in use due to a lack of water to pour/clean or broken status. Most of these schools built septic tanks but no water supply. Another reason was that school leaders lacked responsibility on maintaining the sanitation systems or building water supply systems.

- Besides 11.2% of the schools that had all latrines not in use, up to 7.1% of the schools used only one latrine. The reason was that among those that used only one latrine, the school closed the other latrines so they did not have to clean them all.

- Almost schools did not have notices on the regulation to use latrines. More than 65% of them had no signs to separate latrine for girls or for boys and 42.9% did not have toilet paper available.

- Almost squatting slabs or seats were still in good conditions (unbroken). 17.3% of latrines did not have doors (with wing) for all cubicles and 3.1% did not have doors for some of their cubicles.

- More than two thirds of the latrines had smell. 19.4% of the schools had latrines clean, 48% rather clean, and 32.6% dirty or too dirty. Most of the latrines considered dirty were dry ones without ash to use.

- The sanitary situation of latrines in the kindergartens was better than that in primary schools. The reasons were that the surveyed kindergartens were located in less difficult regions (plains, midlands) while most of the primary schools were in mountainous areas; almost all of the latrines of the kindergartens were septic tanks so their maintenance was easier than that of dry latrines; teachers in kindergartens helped their children use the latrine so the latrines were maintained better.

#### **4.3. Child-friendly and safe designs of sanitation systems for children**

- Up to 11.2% of the schools built latrines in the area not safe and easy for children to walk, most at primary schools (14.7%).

- Up to 40% of the latrines in the kindergartens and 64.7% in the primary schools did not have enough light inside when them when the doors are closed.

- Almost squatting slabs of latrines in both primary schools and kindergartens were for adults; hence, they were larger than that for small children, especially for pupils in the kindergartens. The size of drop hole was a little too large at 12.2% of the schools.

- For latrines that need steps, 36.1% of them had steps inappropriate in height with children; furthermore, all of them had no handrail.

#### **4.3. Situation of water supply systems at schools**

- Up to 30.1% of the sanitation systems in the primary schools and 23.1% in the kindergartens did not have water to clean the sanitation systems. The most common water sources were dug-well (43.2%), followed by drilled-well (32.1%). The cleaning water collection tools were electric pump (30.9%), rope and bucket

(29.6%), water tap (18.5%) and the others (20.9%). At the survey time, among schools having water tanks to supply water, 17.5% of the water tanks in the primary schools and 26.1% in the kindergartens did not have water.

- Up to 31.3% of schools did not have water for hand washing after using the toilet, most of them were the primary schools (43.8%). In fact, 23.3% of the kindergartens and 44.1% of the primary schools did not have water for hand washing. Only 43.5% of the kindergartens had soap for hand washing; all the surveyed primary schools did not have

- 45.2% of the primary schools and 97.4% of the kindergartens supplied drinking water for pupils. Almost all (88.6%) of the drinking water containers had tap to use. All had the cover and were usually covered carefully. The quality of drinking water at the surveyed schools was good.

#### **4.4. Behavior of pupils on sanitation**

- At the survey time up to 15.1% of the primary schools had pupils who drank water not boiled; 83.1% of the schools had pupils who used the school urinating places, but 69.6% of these pupils did not pour water after using. The number of pupils who used the school latrines was very low.

- Up to 53.3% of the primary schools did not have any pupils who washed hands after using the toilet. For washing hand after using the toilet, no primary schools having pupils who washed their hand with soap while this proportion of the kindergartens was 47.4%.

- Most of the schools had schoolyard and classroom kept clean. However, up to 8.9% of the schools having pupils who litter on the schoolyard. 42.9% of the schools did not have waste bins, 30.4% did not have waste pit/burning areas. Waste was mainly treated by burning (79.5%) or removing to other places (15.2%).

#### **4.5. Fund to build sanitation and water supply systems**

- Most schools were funded by UNICEF to build sanitation and water supply systems, more than 50% of which received that fund.

- The money raised from pupils' parents and provided by the State and local budgets considerably contributed to building sanitation and water supply systems at schools.

#### **4.6. Impact of sanitation and water supply systems**

- The sanitation and water supply systems have really been "visual teaching materials" for teachers to give practical lectures on individual and environmental hygiene to the learners.



- Thanks to the sanitation and water supply systems pupils developed their behavior on individual and environmental hygiene and know how to use and maintain them.

- The sanitation and water supply systems were also the models for the pupils' parents, especially for those in mountainous and remote regions, to apply at their family to erase unsanitary habits.

## **5. RECOMENDATIONS**

### **5.1- To UNICEF Ha Noi**

- The Session of Water and Environmental Hygiene of UNICEF should be a representative to cooperate with MoET and other sessions of UNICEF in management of the school sanitation project.

- It is necessary to strengthen building sanitation and water supply systems for primary schools and kindergartens in poor regions. Funds may be from the project or from other sources.

- Mountainous, remote and poor regions should be supported with more money to reduce the contribution of the local residents to constructions.

- It is necessary to provide more budget for technical assistance, supervision and evaluation, and maintenance of the sanitation and water supply systems. For example, the project on environmental hygiene that was conducted under the cooperation of the Ministry of Health should have a budget line for supervision at localities, research at national level, and technical assistance of a central health agency.

- More money should be spent for sample designs of sanitation systems used for primary schools and kindergartens in accordance with the difference in geography, quantity of pupils, and investment of localities. Latrines for schools should be in the type of septic tanks (in regions easy to access water), double vault, and ventilated improved pit latrines (in regions difficult to access water). They have to meet the sanitary criteria, size corresponding with children, safe use, and good looking.

- More money should be spent for building some pilot sanitation systems at schools to get experience and consider them models to popularize.

- More money should be spent for improvement of the knowledge of teachers, parents and community on the operation and maintenance of sanitation systems via activities such as training courses, IEC material development, and mass media-based communication

- At primary schools and kindergartens, building sanitation systems should be synchronous with building water supply systems.

- Procedures of liquidation should be improved; there may be no need for purchasers to submit financial receipts (red receipts) of material procurement, especially for those in mountainous and remote regions. If schools purchased with financial receipts, UNICEF should accept a proportion of 5% (VAT) in the total budget of their procurement because the schools were not business agencies so they could not receive the tax return after purchasing.

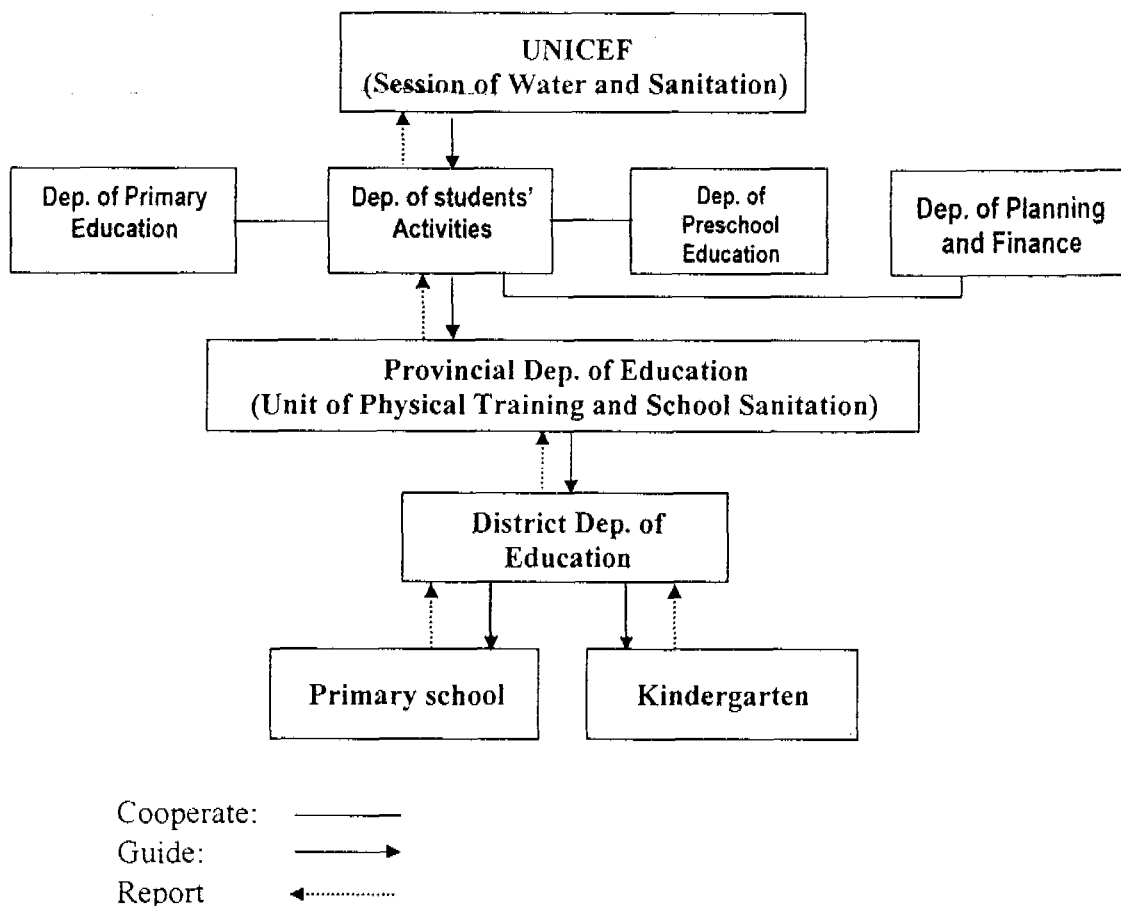
- It is necessary to conduct a survey on the current situation of sanitation systems and clean water systems at all primary schools and kindergartens at a nationwide level to make plan for further investment

## 5.2- To MoET

- Functionally, the Department of Students' Activities of MoET should be the managerial agency of the project to cooperate with UNICEF, other related department of the MoET, and Provincial Department of Education and Training. The Unit of Physical Training and School Sanitation of a Provincial Department of Education and Training should be the managerial agency of the project to cooperate with MoET, other related provincial organizations and with District Departments of Education and Training.

- At central level, the office of the project of school sanitation should belong to the Department of Students' Activities. In addition to the project management board, there should be a consulting agency in health area to help the management board in consultation, technical assistance, and supervision of the construction and operation of the sanitation and water supply systems at localities.

- At provincial level, the office of the project on school sanitation should belong to the Unit of Physical Training and School Sanitation of the Provincial Department of Education and Training. The management board should have a leader of the Provincial People's Committee as the project manager, a leader of the Provincial Department of Education and Training as the standing project deputy-manager; the director of the Department of Preventive Medicine, the director of the Center for Rural Clean Water and Environmental Sanitation, and the director of the Department of Construction should be the project deputy-managers. Additionally, the management board should have 4 more other members who are specialists of the 4 institutions mentioned above. The management board will approve the design, monitor, supervise and provide technical assistance to the construction of the sanitation and water supply systems to ensure the design follow-up and sanitary standards of the constructions. It is necessary to provide more budget for provinces and districts to supervise the construction of sanitation and water supply systems; it may be from the local or UNICEF budget.



**Figure 13. Managerial system of the UNICEF project on school sanitation**

- Before carrying the project, it is needed to visit schools and get comments from their teachers to select the type of latrine and its design suitable with the actual conditions of each school. This may avoid the problem that sanitation systems, after built, are not to be used because of no water supply or no allowance from the school board for pupils to use.

- In summer training courses, teachers should be given more knowledge and skills in using sanitation and water supply systems.

- MoET should provide money from the State budget and/or permit schools to use the fund raised from pupils' parents for drinking water, security, cleaning and maintenance of the sanitation and water supply systems at school.

- MoET should make regulations on the responsibility of school boards in using, maintaining sanitation systems to erase the fact that some schools did not permit their pupils to use sanitation systems to avoid troubles that they made when using them. Add indicators on the availability of sanitation and water supply systems e.g. latrine, basin for hand washing etc. to the National Standards for school

classification; besides, add the often use of sanitation and water supply systems to the criteria for the annual emulation awards given to schools and teachers.

- MoET should require the local educational branch that sanitation and water supply systems were included in the design for building any new school.

- Educational branch should effectively supervise schools, without informing before visiting, to ensure that after built, sanitation and water supply systems are really functioning and meet sanitary requirements.

- Health education activities should be more strengthened at schools to change the behavior of pupils. The schools that were funded to build sanitation and water supply systems should use some of that budget to buy soap, and to assist teachers to guide their pupils on operation and maintenance of the sanitation and water supply system as well as on hand washing after using the toilet