

**BASIC DESIGN STUDY REPORT**  
**ON**  
**THE PROJECT FOR CONSTRUCTION OF BASIC SCHOOLS**  
**IN**  
**THE REPUBLIC OF YEMEN**

**AUGUST, 2002**

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**  
**KUME SEKKEI CO., LTD.**  
**MATSUDA CONSULTANTS INTERNATIONAL CO., LTD.**

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## PREFACE

In response to a request from the Government of the Republic of Yemen, the Government of Japan decided to conduct a basic design study on the Project for Construction of Basic Schools in the Republic of Yemen and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Yemen a study team from April 5 to May 4, 2002.

The team held discussions with the officials concerned of the Government of Yemen, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Yemen in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Yemen for their close cooperation extended to the teams.

August, 2002



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Takao Kawakami

President

Japan International Cooperation Agency

August, 2002

## Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Construction of Basic Schools in the Republic of Yemen.

This study was conducted by Kume Sekkei Co., Ltd., and Matsuda Consultants International Co., Ltd. Consortium, under a contract to JICA, during the period from March 28 to August 30, 2002. In conducting the study, we have examined the feasibility and rational of the project with due consideration to the present situation of Yemen and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



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Tetsuro Nishimura  
Project Manager,

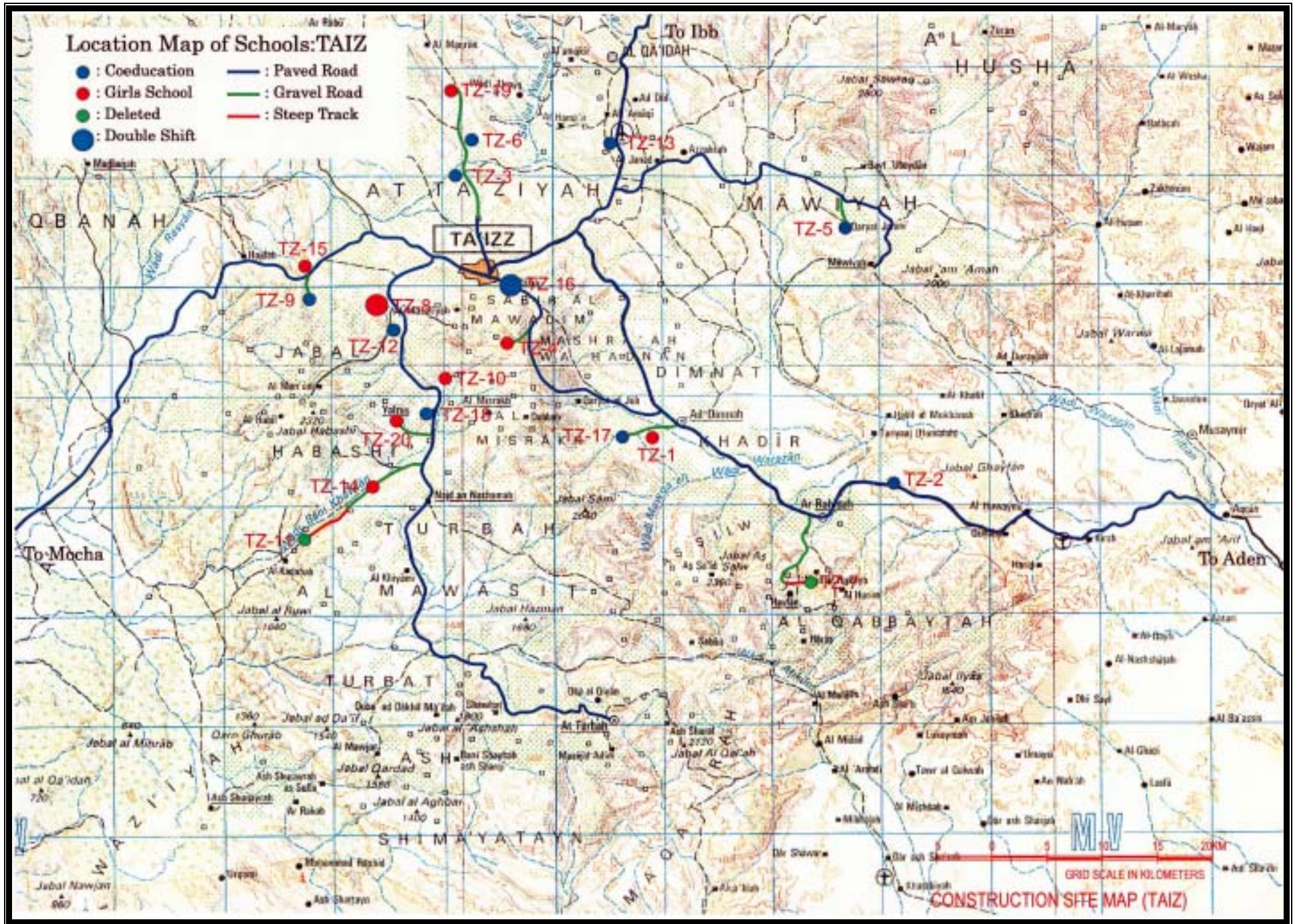
Basic Design Study Team on The Project for Construction  
of Basic Schools in the Republic of Yemen  
Kume Sekkei Co., Ltd. – Matsuda Consultants Co., Ltd.  
Consortium





### Location Map of Schools:TAIZ

- : Coeducation
- : Girls School
- : Deleted
- : Double Shift
- : Paved Road
- : Gravel Road
- : Steep Track

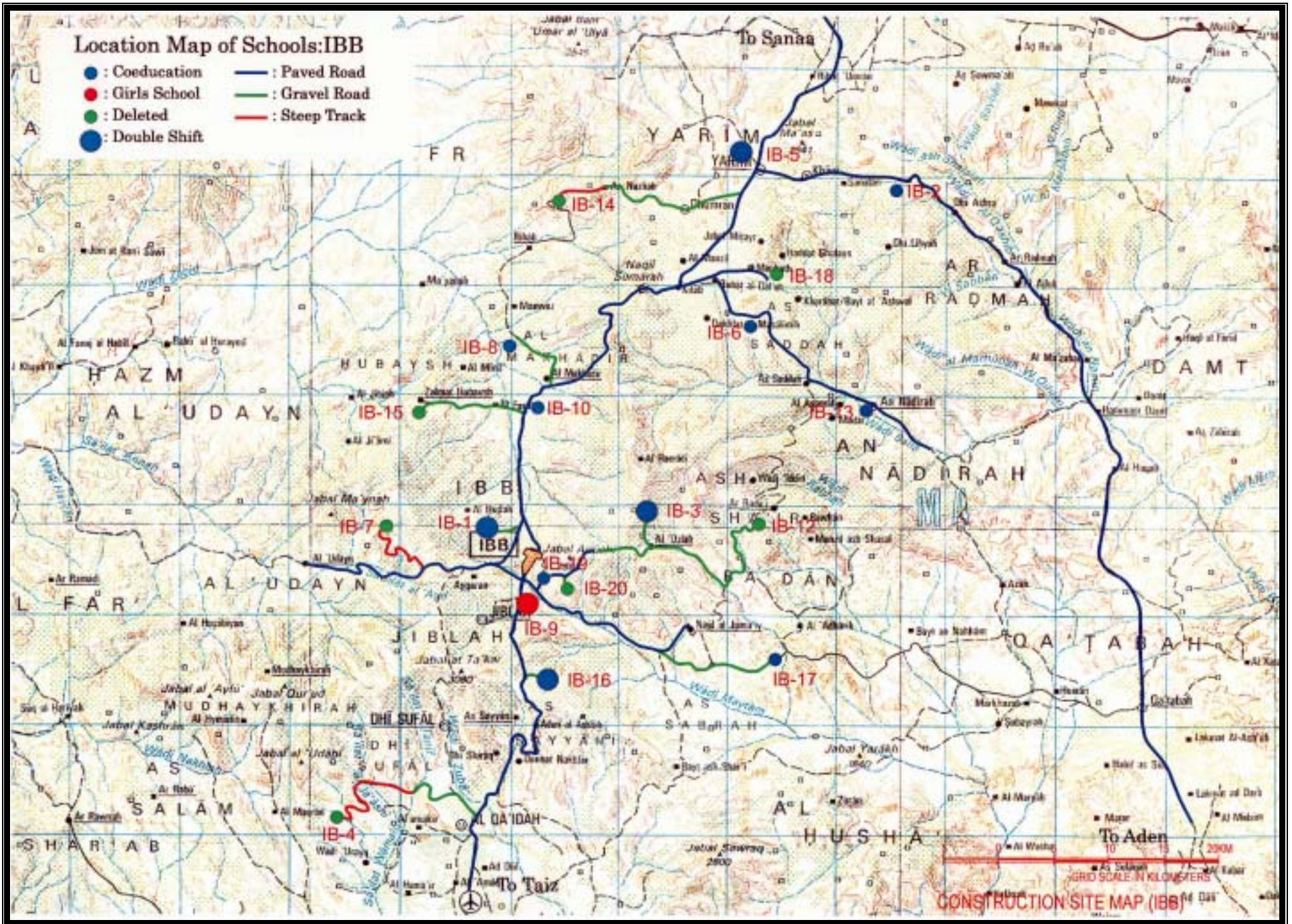


CONSTRUCTION SITE MAP (TAIZ)



### Location Map of Schools:IBB

- : Coeducation
- : Girls School
- : Deleted
- : Double Shift
- : Paved Road
- : Gravel Road
- : Steep Track



CONSTRUCTION SITE MAP (IBB)





**The Project for Construction of Basic Schools in the Republic of Yemen**



## The Project for Construction of Basic Schools Project in the Republic of Yemen

### **Abbreviations**

A/P	Authorization to Pay
B/A	Banking Arrangement
B/D	Basic Design
BEEP	Basic Education Expansion Project (WB)
BEP	Basic Education Project (WB)
BOD	Biochemical Oxygen Demand
CB	Concrete Block
CDP	Child Development Project (UNICEF)
CSO	Central Statistical Organization
D/D	Detail Design
DED	Deutschen Entwicklungsdienst (German Development Service)
DEO	District Education Office
E/N	Exchange of Notes
EFA	Education for All
ERDC	Education Research and Development Centre
ESIP	Education Sector Investment Project (WB)
FMC	Father's and Mother's Council
GCC	Gulf Cooperation Council
GEO	Governorate Education Office
GER	Gross Enrollment Rate
GTZ	Gesellschaft für Technische Zusammenarbeit
ITTI	In-Service Teacher Training Institute
KfW	Kreditanstalt für Wiederaufbau
Lux	Intensity of Illumination
MOE	Ministry of Education
MOF	Ministry of Finance
MOHE	Ministry of Higher Education
MOPD	Ministry of Planning and Development
MLVT	Ministry of Labor and Vocational Training
NER	Net Enrollment Rate
O&M	Operation and Maintenance
P/Q	Pre-Qualification
PC	Pre-cast Concrete
PTTC	Project Type Technical Cooperation
PWP	Public Works Project (WB)
RC	Reinforced Concrete
SFD	Social Fund for Development (WB)
TTI	Teacher Training Institute
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children Education Fund
WB	World Bank
WFP	World Food Program
WID	Women in Development
YR	Yemeni Rial

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## SUMMARY



## **SUMMARY**

The Republic of Yemen (here after as Yemen), located at the southwestern tip of the Arabian Peninsula, has a land area of approximately 528,000 km<sup>2</sup> (part of the national boundary remains unsettled) and a population of around 18,260,000 (as of 2000). The capital Sana'a is located at an altitude of 2,400 m, and the Project target areas of Ibb and Taiz Governorates are situated some 200 km south of here at altitudes ranging about 2,000 ms. Ibb has a population of 2,010,000, and Taiz a population of 2,290,000. The climate varies according to altitude but can be classified as ranging from subtropical to temperate. Annual average temperature is 21~24 , average humidity is 65%, and annual rainfall is around 800 mm.

Yemen unified its opposing states in 1990 and made ongoing efforts to promote unification under a new government. However, civil war resulting from differences between the north and the south broke out in 1994, and the south of the country suffered major setbacks. In 1995, the First Five Year Plan was formulated; the IMF and World Bank introduced structural adjustment policies; and administrative and financial reforms were advanced. In 2002, the Second Five Year Plan was compiled, and this aims to promote development of human resources in order to realize transition from over-dependency on petroleum (75% of state finances are derived from oil) to an industrial structure based on the manufacturing industry. Also, the Poverty Reduction Strategy Program (PRSP) was announced in May the same year, and this also aims to develop human resources with a view to promoting economic growth for reduction of poverty.

In Yemen, 78% of the population lives in rural villages. In mountain areas, communities are formed on mountain peaks or slopes; while in desert areas, communities are formed around wadis (valleys). The dispersed nature of communities makes it difficult to provide basic services concerning the BHN areas of education, public health and water supply, etc. As a result, education indices in Yemen are low with illiteracy as high as 71% among women of 15 years and over and the total enrolment rate in basic education 77.2% for boys but only 43.9% for girls (2000). Accordingly, disparities between the sexes and between regions are salient issues. Moreover, due to the high rate of population growth of 3.6%, construction of education facilities is unable to keep pace with the growing young population, and improvements are urgently needed.

Under these circumstances, the Government of Yemen in 1996 issued a request to the Government of Japan concerning the Basic Schools Construction Project aimed at building classrooms. In response to this, JICA dispatched the basic design study team from April 5 through May 4 (30 days), 2002. The study team carried out site surveys on existing schools and similar facilities, collected materials and held consultations concerning the activity plans and contents of facilities with government officials and related persons. It also conducted topographical investigation of proposed construction sites and examined needs in gatherings of community peoples and women's groups.

Upon returning to Japan, based on the findings of the site survey, the study team examined the optimum contents and scale of facilities and equipment, selected equipment and materials, carried out rough calculation of project cost, compiled the implementation schedule and prepared the basic design draft report. After this, JICA dispatched the study team to explain the basic design draft report from August 2 through August 13, 2002 to carry out consultations with the Government of Yemen and conduct further site investigations.

In compiling the Project, based on the findings of the site surveys, consideration was also given to natural and social conditions in Yemen, construction and procurement conditions, operation and maintenance capacity of implementing agencies, and the construction schedule based on the grant aid scheme.

Ibb and Taiz Governorates, which have high population density and extreme shortages of classrooms, were selected as the Project target areas as requested. The original request was for 26 schools, however, following additional requests and further discussions, site surveys were eventually implemented on 40 requested sites. Upon returning to Japan, as a result of analyzing site conditions and school-separate data, 10 schools were excluded from examination and the eventual target was reduced to 30 schools (18 in Taiz Governorate and 12 in Ibb Governorate).

Concerning the contents of facilities, in accordance with the request, classrooms, administration rooms (principal's rooms, teachers' rooms, workshops, storerooms) and separate toilets for boys and girls were planned based on the principal of establishing school facilities where students can continuously sit nine years of compulsory education. As for the scale of facilities, the necessary number of classrooms at each school was computed by dividing the existing number of students by the standard class size of 40 students. Construction of girls' schools was requested at 14 schools, however, it was decided to calculate the number of classrooms from the number of girl students in each grade and construct school buildings capable of accommodating all girl students at nine schools. As for the remaining five schools, since the number of girl students is small, these were treated as coeducation schools and the number of classrooms was calculated for the number of boys and girls in each grade.

As for organization, the Ministry of Planning and Development (MOPD) has supreme responsibility; the Ministry of Education (MOE) Planning Department is the central implementing agency; and Governorate Education Offices (GEO) and District Education Offices (DEO) are responsible for operation and maintenance on the school level. Moreover, parent's councils exist at each school, however, through the Project soft components, these shall be rearranged into FMC (Fathers' and Mothers' Councils) and be asked to implement maintenance and cleaning activities.

In the site surveys, discussions were held with officials from the MOE Planning Department and Design Department and the planning departments of each GEO. Also, the study team toured existing school buildings constructed as similar facilities by the



MOE, as well as school buildings based on standard designs of the World Bank (BEEP), Social Fund for Development (SFD) and Government of Germany (KfW/GTZ), and it held further consultations with local officials upon confirming conditions of usage of school facilities. As for construction of the requested girls' schools and girls' school buildings, plans were designed upon giving full consideration to current number of girl students, teachers (especially female teachers) and site conditions.

Many targeted schools are located in rural areas where infrastructure services such as water and power supply are not very advanced. Therefore, concerning toilets, it was planned to install water tanks so that users can flush by bucket of water. As for power supply, it was planned that schools (community peoples) provide power lines to those rooms where it is needed. In either case, these plans ensure that conditions at each school can be improved according as necessary with the minimum degree of self-effort by community peoples.

Concerning the equipment and materials plan, based on the examination during the site surveys and analysis in Japan in view of the contents of the request, 12 items were selected as basic teaching materials required in the lower grades of basic education. The Government of Yemen consented to these items. Concerning the additionally requested construction of science laboratories and experimental apparatus (1,430 items), it was decided not to include these in the scope of the Project after surveying conditions of use at existing laboratories. First of all, it is necessary to clarify experiment curriculums and necessary apparatus and then establish a setup whereby science teachers and assistants can perform model experiments and offer practical guidance.

Based on the above surveys and investigations, the main facilities and equipment contents are indicated as follows.

<Contents of facilities>

Structure:	Reinforced concrete, two-story
Total floor area:	21,487 m <sup>2</sup>
Room composition:	School building (classrooms, administrative rooms), Toilets (boys toilets, girl's toilets)
Furniture for classrooms (per classroom):	Students' desks and chairs (integrated, 20 sets), Teacher's desk and chair (one set), Blackboard (one)
Furniture for teachers (per school):	Principal's desk and chair (one set), Staff desks and chairs (for 12 people), Notice boards (two), Worktop and chairs (one set), Shelves (one per grade, nine in total)

<Contents of equipment and materials>

World map, globe, triangle set, weights and scales, measuring cups, wall thermometer, compass, magnets, clock, magnifying lens, chart of the human body (12 items, one set per school)

The scale of facilities in the Project is as follows.

	No. of School	No. of Classroom	No. of Adimn Office	Building Area (m2)	Floor Area (m2)	Toilet Area (m2)	Total Floor Area(m2)
Taiz Governorate	18	154	16	5,922.5	11,844.0	465.0	12,309.0
Ibb Governorate	12	117	11	4,441.0	8,883.0	295.0	9,178.0
Total	30	271	27	10,363.5	20,727.0	760.0	21,487.0

Implementing the Project under the Grant Aid Scheme of the Government of Japan, the phase-I works will require 15.0 months consisting of 5.0 months for Detailed Design and 10.0 months for construction and procurement, and the phase-II works will require 17.0 months consisting of 6.0 months for the Detailed Design and 11.0 months for construction and procurement. Rough total project cost is estimated as 1 billion 389 million yen (1 billion 384 million yen to be borne by Japan, and 50 million yen by Yemen).

The following specific effects can be anticipated as a result of Project implementation.

**1) Improvement in the learning environment through rebuilding of classrooms**

The Project target areas are densely populated mountain areas in Yemen faced with chronic classroom shortages due to the increasing population. Schools are currently forced to conduct lessons in classrooms with no roofs, temporary rooms made from galvanized iron or outdoor classrooms.

If 271 permanent classrooms currently in short supply are constructed at the 30 target schools, this will greatly improve the learning environment for children.

**2) Response to nine-year basic education**

The Government of Yemen has designated that nine years of basic education be compulsory and will not confer completion certificates unless students sit all nine years. However, many basic schools in the target areas only cater to six grades or seventh through ninth grades, or they have to send students to neighboring schools in order to sit some grades.

Therefore, through Project implementation, if learning environments are prepared whereby students can sit nine continuous years of education at existing classrooms, it is expected that the basic education completion rate will be increased.

**3) Increase in the number of enrolled girls**

Among the factors that hinder the school enrolment of girls, shortages of girls-only classrooms, absence of female teachers, and less development of women's' toilets and perimeter fences are pointed to. In the Project, schools and buildings for girls will be constructed at nine schools, and separate toilets for girls and boys will be provided at all the target schools. Also, it is scheduled for the Yemen side to construct perimeter fences.



Therefore, with the construction of separate classrooms and boy's and girl's toilets in the Project, it can be expected that less girls will drop out of school before completing their education and more girls will enroll.

**4) Benefit to local communities (indirect effect)**

At some schools in the target areas, facilities are currently used for literacy education and adult education mainly during off-teaching hours in the afternoon. In future, via the activities of FMCs, there are calls for classrooms to be used for school health activities, mothers and child health education or community education activities.

Accordingly, it is anticipated that schools can also function as community centers as a result of improvements to facilities in the Project. Moreover, if maintenance and cleaning activities are kept up by FMCs, school facilities will be recognized as community assets and will be further utilized for staging community activities.

In view of the above anticipated effects, it is considered appropriate to implement the Project as a grant aid undertaking. However, in order to realize the smoother and more effective implementation of work, it is necessary for the Government of Yemen to reassign 173 teachers to fill up the current shortages in teaching staff at the target schools.

Implementing of the Project, in direct terms, it will improve the learning environment for 10,840 students (40 students per class) using the newly constructed 271 classrooms. In indirect terms, increasing the school enrolment rate will benefit the local population of 4,300,000. In this way, improvement in local enrolment rates is compatible with the objectives of Yemeni Government plans and will contribute to realizing the target of education improvement in the densely populated central mountain region of Yemen.

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