Education & Literacy Department The Government of Sindh Islamic Republic of Pakistan

PREPARATORY SURVEY REPORT ON THE PROJECT FOR UPGRADING PRIMARY GIRLS SCHOOLS INTO ELEMENTARY SCHOOLS IN NORTHERN RURAL SINDH IN THE ISLAMIC REPUBLIC OF PAKISTAN

March 2016

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MATSUDA CONSULTANTS INTERNATIONAL CO., LTD.

HM JR 16-022 Education & Literacy Department The Government of Sindh Islamic Republic of Pakistan

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Preface

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey and entrust the survey to Matsuda Consultant International Co., Ltd.

The survey team held a series of discussions with the officials concerned of the Government of the Islamic Republic of Pakistan, and conducted field investigations. As a result of further studies in Japan, 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.

Finaly, I wish to express my sincere appreciation to the officials concerned of the Government of the Islamic Republic of Pakistan for their close cooperation contributed to the survey team.

March, 2016

Takao Toda

Director General Human Development Department Japan International Cooperation Agency

Summary

1. Outline of the Country

The Islamic Republic of Pakistan (hereafter referred to as Pakistan) is located to the west of India, and a nodal point between Asia and the Middle East, and it has the world's sixth-largest population with 190 million people¹ residing in a land area (796,100 km2) which is about 2.1 times larger than that of Japan. The Indus River flows north-south through the middle-eastern part of the country and about 80% of the population is concentrated in the Indus plains formed in this basin. The north is a continuous mountainous area with peaks more than 8,000m high and a dry, mountainous area called the Balocchistan plateau sits on the western border with Afghanistan and Iran.

Sindh Province, the target province of the project, occupies the vast plains of the Indus River Basin in southeastern Pakistan. It contains the second largest population in the country (46.0 million) centered in the country's largest commercial city of Karachi. Between the Thar Desert that spreads to western India in the east and the Kirthar Mountains lying on the borders of the Balochistan to the west, the central land of the province, located downstream of the Indus River, is fertile. It is also in a dry area with annual rainfall of less than 200mm, so large-scale irrigation agriculture is developed.

Pakistan, with a nominal GDP of 271.0 billion U.S. dollars² and a GNI of 1,410 U.S. dollars per capita³, is positioned in the Lower Middle Income Countries by the DAC. Due to its geopolitical position and market size, Pakistan shows high potential for achieving rapid growth in the future. However, with serious issues impeding economic development, such as an unstable political and security situation, frequent damages by large-scale natural desasters and persistent deficits in tr ade and fiscal operations, the economic growth remains in unsastisfactory level. From 2000-2007 the country's real economic growth rate (GDP) achieved a relatively high annual average increase of 6.5 percent⁴ under a mild inflation. However in the following five years, economic growth dropped to a low of 0.4% (2009) with the average annual growth rate slowing to around 3% while CPI showing two-digit increase per year. This economic stagnation was caused by, in addition to the external factors of economic crisis brought about by the financial crisis in the United States, the impact of large-scale natural disasters such as major flooding in 2010 and 2011 as well as rises in consumer prices brought about by rises in international prices of food and fuel. While there is a need to maintain economic growth of 7%⁵ in order to provide sufficient jobs for the continuingly increasing population, the growth over the last five years has been far below this.

In terms of percentage of GDP, the industrial structure of Pakistan is 20.9% agriculture, 20.3%

¹ Pakistan Bureau of Statistics, 2015

² IMF estimates, 2015

³ World Bank, 2014

⁴ IMF World Economic Outlook Database, October, 2015

⁵ Asian Development Bank, Asian Development Outlook 2013

manufacturing, and $58.8\%^6$ service sector. The change to a service economy is progressing but agriculture focusing on rice and cotton is still a key industry for $43.5\%^7$ of the working population. In particular, the production of cotton as a raw material for textiles products accounts for 60% of exports and has a great influence on Pakistan's economy.

2. Background and Outline of the Requested Assistance

The education indicators of Pakistan are the lowest in South Asian countries, with the net enrollment ratio (2013-14) across the country being 57% in primary education (grades 1-5, 5-9 years old), and 21% for middle education (grades 6-8, 10-12 years old)⁸. Significant improvement has not been seen in any indicator over the past few years, and achieving the global development goals such as Education For All (EFA) and the Millennium Development Goals (MDGs) by 2015 has been left to the post-2015. In particular, the net enrollment ratio of rural girls is quite low with 48% in primary education and only 15% in middle education, therefore the disparities between genders and urban / rural areas is significant.

In response to these circumstances the Pakistan government, in the 18th Constitutional Amendment 2010, fixed "free and compulsory education to all children of the age of five to sixteen years" and enacted a basic program for education, the "National Education Policy 2009." In this program, the overriding goal called for "achieving universal and free primary education by 2015 and up to class 10 by 2025" and provincial governments that are administrating primary and secondary education were asked to achieve this goal.

Sindh Province, the target of this Project, is an important province with Pakistan's largest city, Karachi, at its center having the 2nd largest population in the country. It also boasts an economy which accounts for about 30% of the national GDP. However, many of its education indicators are below the national average, with disparities particularly large between urban and rural areas and between genders. The middle education net enrollment ratio for rural girls remained at only 6% compared to the province average of 17% and improvement here has become a pressing issue.

In response to these circumstances, the government of Sindh has carried out the "Sindh Education Reform Program (SERP)" aiming to improve access to and the quality of basic education. Thus, serious efforts were made to improve the access for girls in rural areas to middle education through the payment of stipends and the upgrading of existing primary schools, as one of the priority issues. Furthermore, they enacted "Sindh Education Sector Plan (SESP) 2014-18" in 2014, with the numerical target of achieving 50% NER in middle education by 2018, aiming at " increasing equitable access to primary and secondary education, focusing on marginalized groups, particularly girls", and promotes upgrading of the existing primary schools. Regarding school facilities,

⁶ Pakistan Bureau of Statistics, 2015

⁷ Pakistan Bureau of Statistics, 2014

⁸ PSLM (Pakistan Social and Living Standard Survey, Federal Bureau of Statistics, 2013-14

renovation to the existing facilities and repair of 1,000 schools per year were carried out from 2008-09, funded by donors such as the World Bank. However as there are more than 45,000 primary schools in the province, further cooperation is required.

In light of these circumstances, the Government of Sindh developed a plan to upgrade existing primary schools at 133 sites in 14 Districts in Sindh Province into Elementary Schools (providing education to G1 - G8)⁹. To realize this, in 2009 the government requested grant aid from Japan for the required expansion of facilities as well as provision of equipment and furniture.

3. Summary of the Study Results and Contents of the Project

In response to this request, the Japan International Cooperation Agency (JICA) dispatched a survey team from June 30 to July 17, 2010 to conduct field survey I. The survey found that many sites which did not meet the selection criteria were included and so a full revision of the proposed school list was made. A list of all 100 schools was re-submitted by the Department of Education & Literacy in Sindh Province (hereinafter called "the Sindh E&L Department") in late November, 2010. Following this, verification of the proposed school list was carried out through visiting all sites by local consultants in field survey I-2. Then assessments were made on 136 schools, including 36 added schools, based on selection criteria (minimum requirements) agreed in field survey I and 79 sites in 13 districts were finally evaluated as appropriate for further study.

Based on these circumstances, JICA decided to resume the survey and dispatched a survey team from August 24 to October 13, 2012. The survey team conducted consultations with the related parties on the Pakistan side, beginning with the Sindh E&L Department, and performed site surveys in accordance with the proposed criteria. The survey team then conducted analysis in Japan, taking into account the results of the field survey, and 57 out of the 79 sites proposed after consultation were confirmed as appropriate targets for cooperation. At the same time, a feasibility study based on the premise of implementation carried out through the grant-aid for community empowerment was examined. As a result of the study, various concerns were found such as 1) the difficulty for Japanese consultants to provide adequate construction supervision at multiple sites dispersed province wide, 2) the need to restrict the frequency and scope of movements of Japanese as a security measure, 3) and the fact that as there are many narrow sites, strict construction supervision will be required. Based on this, the north and south areas were separated and individual projects for each area were determined. The 31 sites over the 6 districts in the southern Sindh acted as the leading project followed by 26 sites over 6 districts in the northern Sindh as the second project. The contents of the Outline Design for the first project which outlined the construction of facilities required to upgrade existing primary schools to elementary schools, and the procurement of educational equipment and furniture was summarized in the Preparatory Survey Report. Then, the Project (hereinafter called "Southern Project") has proceeded to the implementation as a Japanese grant aid with the approval of the Japanese cabinet at December. This survey covers the

⁹ Pre-primary classes are also provided for age 3-5 children in most of public schools in Sindh province.

remaining 26 sites in 6 district in the northern Sindh to reconfirm the fiesibility of the Project, and based on the finalized request agreed by the both side, the outline design has been developed and this preparatory survey report was compiled.

An overview of the project, which is summarized on the basis of consultation with the Pakistan side, is as follows.

1) Components and Scale of the Requested Japanese Assistance

The field survey was conducted by visiting all 26 sites, which had been selected through the field survey II and the following analysis in Japan, to reconfirm the final evaluation by agreed criteria (whether or not there are problems that might hinder project implementation such as appropriate size of the construction sites, overlapping with another facility development plans, the needs of the facility's construction judged from enrollment demands in the school zones), and based on the results, selection and prioritization of the Project's target sites were established. Specifically, 1) the site where classroom construction for middle classes had been done was excluded from the Project, 2) for the remaining 25 sites, enrollment demand for middle education at the year of project completion was calculated based on the expected admissions from those attending primary schools in the catchment area. As a result, all sites can expect a number of students which exceeds 50% of classroom capacity and were evaluated as appropriate for the Project's target, 3)among them, three sites, where the calculated number of students for 3 classes (G6-G8) cannot exceed 60, for which only 2 teachers can be allocated to meet the criteria, were given the lower priority as sites for adjustment in case of shortage of the fund in the implementation stage.

Regarding the facilities component, the minimum required facilities for school management and implementation of the middle education curriculum are three general classrooms per site (for middle classes), a headmistress' office, a storeroom, and a lavatory. For existing primary school sites where continued use of an aging building is determined to be inappropriate etc., it was decided to include classrooms for primary classes in the Project. In addition, the minimum necessary furniture for these facilities were also included in the Project. Science/computer laboratories that were part of the request are often not used properly or undeveloped in most of the existing schools. Taking into account the government's efforts to promote computer education and the need for future initiatives, it was decided to develop the laboratories as multi-purpose rooms that can be used flexibly according to the status of computer dissemination in each area and school. The provision of minimum level computer equipment was included in the Project as a fourth priority. In addition, it was decided that compound walls and gates, which are essential to girls' schools due to religious circumstances, be put in place.

2) Outline of the Facility/Equipment Plan

The content and scale of each facility was based on the minimum scale set by the Sindh E&L Department and similar facilities by other donors. The specifications conformed to those of existing facilities constructed in the local standard specifications. Finally the plan was established

after implementing investigations into cost reduction and functional improvement. The floor plan takes a simple form of a rectangular-open side corridor style which is based on standard spans of 3.12m. The plan includes a variety of facilities such as L shaped and two-story buildings so that it will be adapted to the various conditions of the narrow grounds. The structure method will incorporate a RC frame structure with high earthquake resistance in accordance with local standards. The dimensions of the structural members were determined through a structure study conducted based on the Japan's Arhitectural Standards with reference to the Building Code of Pakistan. In addition, as the target area is in lowlands downriver of the Indus River Basin, many of the sites are frequently subject to flooding. Therefore, sufficient consideration was given, including to set the first floor height higher than the past flood level. For facilities, a range of contents commonly installed in existing schools with no problem in terms of maintenance were chosen, including the required minimum lighting, outlets, and ceiling fans for intense heat weather conditions. Also devices and wiring were planned to be installed above the maximum flood level. For equipment, the required minimum furniture and educational computers required for the facilities developed in the plan to function properly were planned.

Table 1 shows details on the content and scale of facilities subject in this plan. Table 2 shows details on the educational furniture to be provided. Table 3 shows details of the educational equipment to be provided.

NO.	Site (School Name)	Facility Components				Total	
	GGPS: Govt. Girls Primary Sch.	Classroom Block			Lavatory	Floor Area	
						Block	(m ²)
		No. of	Class-	Multi-	Headmis	No. of booths	
		stories/blocks	rooms	purpose	-tress's		
				rooms	office		
First Pr	iority Group						
Kh01	GGPS Wapda Colony	2-story/ 1 block	3	1	1	3	263.17
Kh02	GGPS Hadi Bux Laghari	2-story/ 1 block	6	1	1	5	404.68
Kh03	GGPS Haji Ali Dad Jogi	2-story/ 1 block	3	1	1	5	269.89
Kh06	GGPS Ameen Patho	1-story/ 1 block	3	1	1	5	241.44
Kh07	GGPS Wazirabad Rajper	1-story/ 1 block	3	1	1	3	234.72
Kh08	GGPS Gambal Shah	2-story/ 1 block	3	1	1	5	243.04
Kh09	GGPS Jani Boro	2-story/ 1 block	3	1	1	3	236.32
Su02	GGPS Miandad Khoso	2-story/ 1 block	6	1	1	5	380.72
Su03	GGPS Sorho	2-story/ 1 block	3	1	-	3	218.25
Su04	GGPS Moto Mirbahar	2-story/ 1 block	3	1	1	3	236.32
Gh01	GGPS Officer Colony Ghotki	2-story/ 1 block	3	1	1	3	263.17
Gh02	GGPS Aminani	1-story/ 1 block	3	1	1	3	234.72
Gh03	GGPS Gharib Abad Radhan	1-story/ 1 block	3	1	1	3	234.72
Gh04	GGPS Wali Muhammad Gorar	2-story/ 1 block	6	1	1	5	380.72
Gh06	GGPS Aminani	2-story/ 1 block	3	1	1	5	243.04
Sh01	GGPS Khanpur-II	2-story/ 1 block	3	1	-	-	208.17

Table 1Outline of Facilities

NO.	Site (School Name)	Facility Components				Total	
	GGPS: Govt. Girls Primary Sch.	Classroom Block L			Lavatory Block	Floor Area (m ²)	
		No. of stories/blocks	Class- rooms	Multi- purpose rooms	Headmis -tress's office	No. of booths	
First Pr	iority Group						
La01	GGPS Gund	2-story/ 1 block	3	1	1	5	243.04
La02	GGPS Nai Gudd	2-story/ 2 blocks	7	1	1	5	478.06
La03	GGPS Model Comm. Tharecha	2-story/ 1 block	6	1	1	3	374.00
Da03	GGPS Deh - 294	1-story/1 block	3	1	1	3	234.72
Da04	GGPS Kachelo Farm	2-story/ 1 block	3	1	1	3	236.32
Da05	GGPS Chodhri Bhag Din	2-story/ 1 block	3	1	1	5	243.04
Second Priority Group					-		
Kh05	GGPS Bajeed Fakir	1-story/ 1 block	3	1	1	3	234.72
Kh11	GGPS Bachal Pitafi	2-story/ 1 block	6	1	1	3	397.96
Da01	GGPS Kamaluddin Vill. Kanhiri	2-story/ 1 block	3	1	-	3	218.25
Total	25 sites	26 blocks	94	251	22	92	9,096.23

Table 2Outline of Furniture

Room	Contents of furniture	Quantity	
		(per room)	(Total)
Classroom/multi-purpose	Teacher's desk and chair	1 set	164 set
room	Student's double desk	15	2,460
	Student's chair	30	4,920
Headmistress's office	Headmistress's desk and chair	1 set	24 set
	Chair for guest	4	96
	Cabinet	2	48
Storeroom	Cabinet	2	48
	Meeting table with 4 chairs	1 set	24 set

Table 3Outline of Equipment

Category Item		Quantity		
		(per room)	(Total)	
Educational Equipment	Desk-top computer with accessories	10	310	
(PC for practicals)	Laser printer (for A4 size, black & white)	1	31	

4. Implementation Schedule and Project Cost Estimation

For the construction of project facilities, it was decided, based on the abilities of local construction companies, to integrate the construction of roughly 8 to 9 sites into one contract lot. The whole then consists of three lots. The standard construction period of each lot was set as six months for single-story construction and eight months for two-story construction in accordance with the actual performance of local construction works. Consideration was then given for sites requiring

site development such as earth filling etc. as well as work efficiency degradation during Ramadan and the rainy season. And adjustments were made for skilled workers and temporary equipments sliding between each site to progress construction, resulting in a total period of 12 months. The period for bidding from public notice, material distribution, bid opening, bid evaluation, approval of bid result and contract is five months including a one month preparation period. Bidding will be carried out promptly for Lots 2 adjusting the range of cooperation according to the order of precedence established after the bidding results of the preceding Lot 1. Considering better supervision on the dispersed sites, construction of the third lot for facility construction (Lot 5) will be started after the completion of the Lot 1 to avoid overlapping of the works, and total construction period is set at 24 month. The bidding for equipment procurement will be held so that the equipment is supplied immediately after the completion of construction of the relevant lot. In this project, equipment for facilities other than of Lot 1 will be put togather in a lot each for furniture and equipment to make the procedures more efficient. The period for bids for equipment procurement, from preparation, public notice until signing of contract is four months. The procurement time from order, delivery, initial setup to acceptance is expected to be five months.

From the above, bidding for first lot takes 5 month and construction of the entire project is expected to total 24 months. After including the time required for setting up and closing of the procurement agent's office (1 month for each), the total becomes 31 months. The part of the project costs to be borne by the Pakistani side is estimated at 4.72 million yen.

5. Project Evaluation

The Project aims to improve access to middle education for girls and mitigate the disparities between genders and regions in school attendance. The Project intends to provide the minimum required facilities to upgrade existing primary schools to girls' elementary schools in the rural area in the northern Sindh (including some rural towns). Therefore beneficiaries will be residents of the general public across a wide section of the target area. The middle education enrollment ratio of girls in the target area is only 6% (net enrollment ratio, 2013-14), much lower than Pakistan's national average (21%) and urgent improvement is needed. The Government of Pakistan set in its overall goal middle education as part of 12 years of free and compulsory education, targeting its full dissemination followed by primary education by 2025. Upon this policy, the Government of Sindh set a target of middle level net enrollement ratio of 50% in 2018, working to increase access to middle education by upgrading existing girls' primary schools with a focus on rural girls. The Project is consistent with this and will contribute directly to the achievement of the overall goal.

The expected quantitative effects through the outputs of the Project are as follows.

- In 25 girls' primary schools in 6 districts in the northern Sindh, new facilities for middle education (75 classrooms) will be developed so that the number of middle education female students will increase from 100 (2015-16, field survey) to 2,028 (target in 2021).
- In 25 girls' primary schools in 6 districts in the northern Sindh, dilapidated existing classrooms,

which cannot be used continuously, will be reconstructed and 17 classrooms (target in 2021) will be newly available for continuous use.

In addition, the following qualitative effects are expected through the implementation the Project.

- In 6 girls' primary schools of 6 districts in the northern Sindh, 17 existing classrooms, which have safety concerns with dilapidation, will be replaced by newly constructed classrooms so that learning environment of female primary students will be improved.
- Facilities necessary for girls' enrollment such as a compound wall lavatory etc. are put in place and a reduction of the number if girls who are not enrolled in education can be expected in rural areas.

The Project can be expected to achieve such effects and support the realization of the Government of Sindh's priority policy to "spread middle education to rural girls," which is based on the overall goal of the Government of Pakistan. In addition, it is intended to contribute to the stability of Pakistan's socio-economic situation through achieving parity between regions and genders. Thus its relevance as a target for Japanese grant aid is high and its effectiveness is clear.

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Location Map



Perspective



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Abbreviations

A/A	Agent Agreement
ADB	Asian Development Bank
ADOE	Assistant District Officer, Education
A/M	Agreed Minutes on Procedural Details
AVR	Automatic Voltage Regulator
AY	Academic Year
BPS	Basic Pay Scale
СРІ	Consumer Price Index
DEEP	Decentralized Elementary Education Project
EFA	Education for All
EIA	Environmental Impact Assessment
E/N	Exchange of Notes
G/A	Grant Agreement
GDP	Gross Domestic Product
GNI	Gross National Income
HST	High School Teacher
IEE	Initial Environmental Examination
IMF	International Monetary Fund
JICA	Japan International Cooperation Agency
JST	Junior School Teacher
MDGs	Millenium Development Goals
NGO	Non-Governmental Organization
PC	Personal Computer
PEC	Pakistan Engineering Council
PST	Primary School Teacher
PSLM	Pakistan Social and Living Standard Survey
PQ	Pre-Qualification
RC	Reinforced Concrete
RSU	Reform Support Unit
SEMIS	Sindh Education Management Information Systen
SERP	Sindh Education Reform Program
SMC	School Management Committee
SPPRA	Sindh Public Procurement Regulatory Authority
SSB	School Specific Budget
USAID	United States Agency for International Development
WB	World Bank

Chapter 1 Background of the Project

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1.1. Background and Outline of the Request

The education indcators of Pakistan are the lowest in South Asian countries, with the net enrollment ratio (2013-14) across the country being 57% in primary education (grades 1-5, 5-9 years old), and 21% for middle education (grades 6-8, 10-12 years old). Further, significant improvement has not been seen in any indicator over the past few years, and such global education goals as "Universal Primary Education by 2015,"stated in EFA and mentioned in the MDGs which the Government of Pakistan is committed to, have not been achieved before 2015. In particular, the net enrollment ratio of rural girrls is quite low with 48% in primary education and only 15% in middle education, therefore the disparities between genders and urban / rural areas is significant.

The target province of Sindh is an important province boasting an economy which accounts for about 30% of the national GDP and has the second largest population in Pakistan. However, it is below the national average in numerous education indicators, with large disparities between rural and urban areas as well as between genders. The middle education net enrollment ratio of rural girls is only 6%, compared to the provincial average of 15%, thus improvement has become a pressing issue.

In response to these circumstances the Pakistan government, in the 18th Constitutional Amendment 2010, fixed "free and compulsory education to all children of the age of five to sixteen years" and enacted a national-level strategy for education, the "National Education Policy 2009." In this strategy, the overriding goal called for "achieving universal and free primary education by 2015 and up to class 10 by 2025" and provincial governments that are actually administrating primary and secondary education were asked to establish and implement an action plan to achieve this goal.

In response to this, the Government of Sindh enacted "the Sindh Right of Children to Free and Compulsory Education Act" in 2013 to strengthen efforts to achieve the universal free and compulsory education. At the same time, it is working on implementing the "Sindh Education Reform Program (SERP)" formulated in 2006-07 with the goal of improving access to and the quality of elementary education. In 2014, "Sindh Education Sector Plan (SESP) 2014-18", a basic plan for the education sector in the Province, was formulated. SERP was integrated in it at the middle of implementation of phase II. Improved access to middle education for rural girls who have the lowest enrollment ratio is one of the priority issues throughout those plans/programs, and this is underway through the upgrading of existing primary schools by expanding facilities and the payment of stipends. Regarding school facilities, funded by donors such as the World Bank, upgrade of 1,000 schools per year was carried out from 2008-09. However as there are more than 45,000 primary schools in the province, further cooperation is required.

In light of these circumstances, the Government of Sindh developed a plan to upgrade existing primary schools at 133 sites in 14 Districts in Sindh Province into Elementary Schools (primary and

middle education). To realize this, in 2009 the government requested grant aid from Japan.

In response to this request, the Japan International Cooperation Agency (JICA) dispatched a survey team from June 30 to July 17, 2010 to conduct field survey I. The survey found that many of selected sites did not meet the selection criteria and so a full revision of the proposed school list was made. A list of all 100 schools was re-submitted by the Sindh E&L Department in November, 2010. Following this, verification of the proposed school list (by visiting all the sites) was carried out by local consultants. Then assessments were made on 136 schools, including 36 added schools, based on selection criteria (minimum requirements) agreed in field survey I and 79 schools in 13 districts were finally selected.

Based on these circumstances, JICA decided to resume the survey and dispatched a survey team from August 24 to October 13, 2012. The survey team performed site surveys in accordance with the proposed criteria. The survey team then conducted analysis in Japan, taking into account the results of the field survey, and 57 out of the 79 proposed schools were confirmed as appropriate for cooperation. At the same time, the feasibility of the Project was examined assuming implementation through Grant Aid for Community Empowerment. After which, in order to reduce as much as possible the risk to securing safety and supervising construction in a fluid security situation, the requested target area was split into north and south areas to narrow the number of sites with each area set as separate projects. In accordance with this, the outline design of the project for southern area was developed first as the leading project due to a relatively low degree of difficulty in implementation with the location close to the provincial capital. Then, the Project (hereinafter called "Southern Project") has proceeded to the implementation as a Japanese grant aid with the approval of the Japanese cabinet at December 2013. This survey covers the remaining 26 sites in 6 district in the northern Sindh to reconfirm the fiesibility of the Project, and based on the following scope of the request agreed by the both side, the outline design was developed:

- Facility Construction: Construction of facilities necessary to upgrade 26 primary schools to elementary schools in six districts in southern Sindh
 - Facilities for Middle Classes (per school): general classrooms (3), a science room, a computer room, a headmistress's office, a teachers' room
 - Facilities for Primary Classes: general classrooms (only sites that require rebuilding)
 - Shared facilities: Lavatory block, compound wall and gate
- Educational furniture and equipment procurement: Procurement of computer equipment and educational furniture required for the facilities

1.2. Natural Conditions

(1) Topography/Geology of the Target Sites

Located on the plains of the Indus River basin, many of the sites are mostly on flat terrain. However, in many cases raised ground has been established through banking/embankment to avoid inundation in public facilities, private homes and roads at times of flood. As a result, some sites are lower than the surrounding land which may cause influx of rainwater resulting in long term flooding. In addition, some sites planned for land extension with cultivated land such as paddy fields requires soil stabilization and earth filling.

For the terrain of the site, it is important to understand in detail the conditions of the boundary, topographical features and obstacles, etc. in order to conduct the optimal design for each site. Therefore a topographic survey was carried out in 28 of the 30 sites visited during Field Survey II (excluding the two sites to be clearly excluded in light of the selection criteria agreed upon with the Pakistan side). The survey was sub-contracted locally and a level and plane survey was performed centered on the existing school plot and the planned extension area, including the scope of those whose surrounding situations were figured out. Survey pitch (grid) and contour were set as 10m and 0.5m, respectively. A topographic survey map that contains latitude and longitude, direction, site and planned extension boundaries, location of existing buildings, trees, obstacles, and information on infrastructure was compiled (A3 version). In addition, those conditions have been updated at the Field Survey V by visiting 26 sites which had been selected through the analysis in Japan. In case of changes on site boundaries or other conditions which may affect the facility planning, the survey map was revised by making supplementally survey by team members or the local surveyer.

(2) Soil/Geotechnical Conditions of the Target Sites

It is necessary for developing the outline design to have soil bearing capacity as well as geological condition on the site to be used for foundation design. For such a purpose the following tests were performed on 26 sites out of the 30 target site, excluding the four sites that were determined to be clearly excluded in light of the selection criteria agreed upon with the Pakistan side.

- Dynamic cone penetration test (DCP): to grasp the bearing capacity and type and property of the soil, six locations per site, and tested for up to 5.0m depth from the current ground level.
- Sampling and laboratory tests of soil: collected undisturbed soil sample at two places per site, and two points (total of four samples per site) at 0.8m-1.5m depth from the current ground level, and conducted lab tests to understand the physical, chemical and mechanical properties of soil (Consistency limit, Particle size distribution, Specific gravity, Porosity, Moisture contents etc.).

The result of the survey made it clear that the major types of the soil of the target sites are relatively soft, so that more precise data on geotechnical characteristics of the supporting soil is required for analysis in the detailed design. Thus, plate loading tests for 22 sites were performed at the points on the planned building position and at the bottom of the planned foundation level. This also aims to verify the result of investigations at the Field Survey II.

According to the survey results, although differences can be seen in each site, soil at the assumed supporting layer of 0.8-1.2m below the ground surface is mostly relatively soft silty clay or sedimentary silty sand and it was confirmed that bearing capacity of the layer is expected to be about 50 to 75kN/m2 depending on the site. In addition, it should be noted that for the sites where the groundwater table level is high, level of supporting soil will be set at higher level in the detailed design. Since there is a possibility level of the groundwater table varies depending on seasons, careful observation is needed for foundation work.

(3) Climatic Conditions of the Target Area

The majority of Sindh belongs to the subtropical monsoon region and there are four seasons in general. One year consists of the cool and dry winter (December to February), hot and dry spring (March to June), summer rainy season (July to September), and the transition to the cool and dry season (October-November). The Province is divided into three climatic zones of the northern inland (Upper Sindh), southern inland (Lower Sindh), and southern coastal. Compared to the relatively mild sea climate of the coastal areas, the inland areas are mostly dry, high-temperature areas with annual rainfall of less than 200mm. With heat waves of an average maximum temperature exceeding 40°C during April-June, the temperatures can also fall close to freezing point during the colder months. Thus it is a climate of great daily/annual variation. In particular in Upper Sindh, the fourth highest temperature in the world (53.5°C in 2010) has been recorded at Mohenjo-daro in Larkana district, and temperatures of higher than 50°C were recorded in seven locations including Larkana, Nawabshah, Dadu and Sukkur. The wind direction from the end of the cool season in mid-February through to the end of September is strongly influenced by the southwest monsoon, while from October-January cool northerly winds are dominant. The figure below shows the climates in the central cities of Upper Sindh, Lower Sindh, and the coastal area.



Source: www.weatherbase.com

Figure 1-1 Climate in Sindh Province

(4) Natural Disasters

Earthquakes

In Pakistan earthquakes causing great human suffering have occurred frequently including a large earthquake in the northern region in 2005 (M7.6) which resulted in more than 70,000 deaths and caused extensive damage to buildings. The damage caused by these earthquakes is generally concentrated in the mountainous north and west regions. Some perceptible earthquakes occur in the target area, however there is no record of earthquakes causing damage to buildings. In response to the earthquake in 2005, the "Building Code of Pakistan" was developed and Sindh was classified as being between Seismic Zones 2A and 2B (2nd to 3rd of 5 zones, with zone 1 assumed to have the least seismic movement), excluding sections of the coastal area. All of the target sites of the Project are located in the zone 2A.

• 2A: Peak ground acceleration (horizontal direction) 0.08 - 0.16g (1g = 981gal)

Floods and Storms

The most serious natural disasters in Sindh, which is almost entirely plane land, is heavy rain due to monsoon and the accompanying floods. The great flood of 2010 destroyed 560,000 homes across the country, created more than six million refugees, and in Sindh alone 6,847 school facilities were either destroyed or partly damaged (breakdown below).

- Damage caused by flood: 2,934 schools
- Damage caused by heavy rain: 1,206 schools
- Problems arising from Internally Displaced Persons (IDP): 2,311 schools
- Damage due to complex factors: 396 schools

Almost every year, the plains of the Indus River basin in Sindh have been affected by floods during the rainy season and in 2011 serious damage and human suffering was caused by heavy rains. After confirming the disaster situation in the schools targeted in this study, out of all 25 sites 15 sites have no history of flood. Cimperatively, in nourhern region of Sindh there are more safer land available than southern part. Even in the site having the history of flood, the highest level of water was not exceeding +0.6m above ground level. For the Project, in order to enable the use of school buildings at times of flooding or otherwise enable easy recovery, it is necessary to make designs with consideration given to the flood history of each site.

1.3. Environmental and social considerations

(1) Effects of Project implementation on the natural and social environment

A large portion of the Project involves adding small-scale facilities such as classroom blocks and lavatory blocks. These facilities will be either one or two-story building constructed on existing primary schools sites (including planned expansion sites) located in existing villages, towns or neighboring areas. These sites have already been developed, and there are no ecologically special or environmentally protected areas. The area planned for facility construction is roughly 500 m² in average. The topography is nearly flat, but for land that is lower than the surrounding land and roads, it is necessary to adjust the ground level through a landscaping plan to allow for rainwater drainage on the site. Although effects on the natural and social environment on and off the site are anticipated due to tree cutting, construction work, and the installation of wastewater treatment facilities, environmental standards prescribed by Pakistan will be observed. The Project will make the following considerations to decrease undesirable effects on the environment to the greatest extent possible.

- Site preparation will be limited to the required scope of facility construction. The ground level height will be set in the overall landscaping plan so that rainwater does not drain out to the surrounding land, with building floor levels placed higher than previously recorded flooding levels.
- Removal of existing vegetation will be limited to the required scope of facility construction. Tall trees will be preserved to the greatest extent possible, and alteration of the existing natural environment will be kept to a minimum.
- Rainwater on the site will be drained by installing continuous gutters leading to offsite drainage channels. Considerations will be made so that soil runoff and erosion does not occur due to rainwater both on and off site.
- Following Pakistani standards, wastewater will be drained through a simple septic tank, from which processed water will be directly discharged to off-site drainage channels or treated in the intra-site percolation method. The floor height of the lavatory block will be set so that the level of discharge from the septic tank is not lower than the maximum flood water level for each site. By doing this, even if the site is flooded during the rainy season, there will be no overflow of unprocessed wastewater.
- It is necessary to approach most of the sites on access roads within the villages coming off the main road. For sites with private residences between the road and the site, consent will be obtained to allow access for construction vehicles. A route will also be set to keep the effects on the residential environment to an absolute minimum.
- Since many of the sites are located within or adjacent to existing villages, measures against noise, dust and waste material processing, and safety measures will follow the guidelines of the Sindh Environmental Protection Agency. A construction plan will be formulated so that negative effects on the living environment of surrounding residents are kept to an absolute minimum.

(2) Systems and procedures pertaining to the Environmental Assessment Impact

The Environmental Protection Agency was established based on the Pakistan Environmental Act

of 1997 and controls environmental protection administration. Environmental Impact Assessments (EIA) fall under the jurisdiction of this agency, with specific procedures stipulated in the Pakistan Environmental Agency Regulations, 2000. Projects requiring EIA and IEE (Initial Environment Examinations) are listed in these regulations, but even if a project does not fall into this category, the following procedures are necessary.

- For projects where negative impacts on the environment are anticipated: Submission of EIA is required.
- For projects pertaining to buildings and their operation as stipulated in Environmental Protection Agency guidelines: Submission of advance authorization application is required with attached affidavit and written oath to adhere to applicable guidelines. In order to verify compliance with the guidelines, submission of an Environmental Management Plan is also required.
- If instructed by the Environmental Protection Agency based on recommendations of the Environmental Assessment Advisory Committee: Instructions will be followed and the submission of EIA or IEE is required.
- If falling under the category of Environmentally Sensitive Area as specified by the Environmental Protection Agency: Submission of EIA is required.

According to discussions with the Sindh Environmental Protection Agency, under whose jurisdiction the Project falls, the second provision described above will be applied for the Project. Specific procedures are shown below.

- A clause for "Acquisition of environmental approval" should be added to PC-1 documents (project approval) stating that "Environmental approval will be obtained from the Sindh Environmental Protection Agency prior to the start of construction work for the Project."
- An Environmental Management Plan will be drafted by the implementing organization. It will primarily outline measures for waste materials and noise during construction and isolation measures for the construction site.
- An environmental approval application with the Environmental Management Plan attached will be submitted by the implementing organization.
- The Environmental Protection Agency will inspect the site as necessary within 15 days of receiving the application. The applicant may be requested to submit additional information.
- An approval certificate will subsequently be issued, with the conditions to be observed attached as necessary.

Chapter 2 Contents of the Project

Chapter 2. Contents of the Project

2.1. Basic Concept of the Project

(1) Overall goal and project purpose

Among South Asian countries, where education is rather under-developed, the educational indicators in the Islamic Republic of Pakistan (hereinafter called "Pakistan") fall far behind. The nationwide net enrollment ratio (AY 2013-14) is 57% for primary education (grade 1~5), and has stopped at 21% for middle education (grade 6~8). Furthermore, significant improvements have not been seen in the past several years in each of major indicators, thus global development goals such as EFA (Education for All) and MDGs (Millennium Development Goals) have not been achieved before 2015. In particular, the net enrollment ratio for girls in rural areas is low at 48% for primary education and 15% for middle education, with a remarkable disparity between genders, as well as urban and rural areas.

In response to these conditions, the Government of Pakistan stipulated in the 18th Constitutional Amendment that "the state shall provide free and compulsory education to all children of the ages of five to sixteen years." Provincial governments are working on achieving this through the National Education Policy 2009, which is a basic strategy in the education sector. The overarching priorities of this policy are widening access and improving quality, and it requires provincial governments to affirm the goal of achieving universal and free primary education by 2015, and up to class 10 by 2025.

Sindh Province, the target of this project, has the second largest population in Pakistan, with 46.0 million (2015) residing mainly in the nation's largest city of Karachi. It is also an important province in economic terms, accounting for approximately 30 percent of the national GDP. However, some education indicators are the lowest in Pakistan, with a large disparity between urban and rural areas, as well as between genders. The net enrollment rate for girls in rural areas (AY 2013-14) is only 6%, compared to the provincial average of 17%. Improvement of this rate is an urgent issue.

Under such circumstances, with donors' assistance, the Government of Sindh implemented the Sindh Education Reform Program (SERP) to improve access and quality of basic education and, in 2014, formulated the Sindh Education Sector Plan (SESP) 2014-2018, a basic plan for the education in the province, before other provinces. In the program and plan, particular focus has been placed on the improvement of "access to elementary education for girls in rural areas" as an especially serious issue, and improvement measures such as upgrade of existing girls' primary schools to elementary schools through facility expansion and provision of stipends to elementary level girl students have been taken. In SESP, construction of 20,455 classrooms is planned mainly in disadvantaged areas to achieve 50% net attendance by 2018.

This Project will support these efforts of the Government of Sindh and implementation of a upper level plan, SESP, with the goal of improving the educational environment and widening access to middle education for girls in the target areas by constructing the new facilities needed to provide middle education at the existing girls' primary schools in these areas.

(2) Basic concept of the project

In order to contribute to the overall goal of the Government of Pakistan which aims to reduce the disparity between genders and areas by widening girls' access to middle education in rural Sindh, the Project is designed to target rural towns and areas in Sindh Province, where the gender disparity is large and net enrollment rate for girls in middle education is particularly low, and to build additional facilities, including provision of furniture and equipment, necessary for upgrading existing girls primary schools into elementary schools. 25 schools in 6 districts in the northern Sindh were selected as the target where enrollment demands can be sufficiently confirmed within the catchment area. The Project will expectedly lead to an increase of girls' enrollment in middle education in the target area, with a reduction in the gender disparity for school enrollment.

2.2. Outline Design of the Japanese Assistance

2.2.1. Design Policy

(1) Basic policy

1) History of the survey

Upon receiving the request from the Government of Pakistan, the first field survey (Field Survey I) was conducted in 2010. Based on the results of the survey, a complete revision of requesting schools was conducted. At the end of November in the same year, a list with a total of 100 schools was resubmitted by Sindh E&L Department. This list of requesting schools was examined, with local consultants conducting field investigations at each site. Subsequently, 136 schools, including 36 that were added during this process, were evaluated based on the selection criteria (minimum required conditions) agreed upon in Field Survey I. Ultimately, 70 schools in 13 districts were classified as "recommended" as candidate sites, while nine were judged to be "borderline cases."

Based on the results, the survey was started with a plan to conduct a series of operations from the establishment of outline design to the creation of reference documents for tendering with a view of implementation as Grant Aid for Community Empowerment, and Field Survey II was conducted from August to October 2012. During Field Survey II, 69 schools – all of the above-mentioned 79 requesting schools except for 10 schools where survey was not conducted for security reasons, etc. – were surveyed, and after analysis in Japan, 31 schools in the 6 southern districts and 26 schools in the 6 northern districts – a total of 57 schools – were selected as the target schools of the Project. Furthermore, the following issues were identified for the outline design and implementation stages.

• Since multiple sites are spread over a wide area, it is very demanding for Japanese engineers to visit all of the sites to supervise construction, making it difficult to carry out their assignments

with sufficient consistency required for quality control and schedule management.

- Many of the target sites are small, with large differences in their respective surrounding conditions and configurations. This makes it necessary for outline designs and project implementation to be based on the individual conditions of each site. Therefore, further consistency in design and construction supervision is required to carry out their assignments.
- For Japanese engineers conducting field operations, safety measures (limiting travel, police escorts, etc.) will be required on occasion corresponding to the security situation, making it easier for unforeseeable time loss to occur.

In past projects using Grant Aid for Community Empowerment, a high proportion of geographically-dispersed projects incurred construction work delays. Based on the constraints on construction supervision as described above and an unstable security situation, there was a concern that this Project has a higher risk for delays than other projects. As a result of discussions held by relevant parties on the Japanese side, it was decided that the target area would be divided into north and south and carried out as separate projects in order to allow closer supervision by limiting the number of sites of a project and to reduce risk and implement the second project in a more efficient way by using experience and lessons from the first project.

Following the decision, the project was divided and a separate project, "Project for Upgrading Primary Girls Schools into Elementary Schools in Southern Rural Sindh" (hereinafter called "Southern Project"), was formed for the southern area, which is relatively close to Karachi, and did not seem to cause difficulty with construction, and the project was implemented ahead with E/N and G/A signed in February 2014. On the other hand, "Project for Upgrading Primary Girls Schools into Elementary Schools in Northern Rural Sindh" (hereinafter called "Northern Project") for the northern area was put on hold as the decision of its implementation was to be made according to the progress of the Southern Project. Six months after the commencement of the construction of the issues for project implementation that were identified in the Southern Project and to reconfirm the feasibility of the Northern Project, and Field Survey V was conducted.



Figure 2-1 History of the Project

2) Basic policy

The target sites for the survey will be the sites of which conformity with the criteria of selection and need for assistance can be verified with objective data, and they will be selected from among the 26 sites that were selected through analysis in Japan during Field Survey II from among the 79 sites (40 sites in the northern area) agreed upon as the final requested sites through discussion with the Sindh E&L Department .

In selecting the project components, facilities indispensable for operating schools and for implementing curriculum at a middle-level education are given first priority. In regard to other requested facilities, the policy will be to include the minimum required range of facilities selected from those that are normally installed and effectively used in existing schools and in schools being developed by the Government of Pakistan. Facility and equipment specifications will be based on standard design for similar local facilities, and set after revising them from the aspects of cost reduction and improvement of basic performance including durability and functionality. In addition, the Project will add necessary facilities to existing girls' primary schools so that they may be upgraded into elementary schools, combining primary and middle sections. In case the continuous use of existing facilities is considered inappropriate due to aging etc. as a result of Field Survey V, rebuilding of primary school facilities will be included in the assistance.

Following the policies described above, the six districts in the north will be the target area for this second Project, and the scope of the outline design will be formulated as shown below.

(2) Conditions and criteria for selection and prioritization of sites/components

1) Target sites

40 sites in 7 districts were confirmed as the final requested sites when Field Survey II was started. Within this, field investigations could not be conducted at nine sites due to worsened security conditions, etc. during the field survey stage. As a result of analysis in Japan after Field Survey II, a total of 14 sites were excluded from the target sites because they did not satisfy the agreed-upon criteria. After these 14 sites were eliminated, 26 sites will be reevaluated in Field Survey V in terms of conformity with the criteria and priority and target sites will be selected and prioritized in the survey.
E	District	No. of	Field survey I-2 evaluation		Field St	urvey II	Remarks
		requested	Recommen-	Borderline	Visited	Schools	(Schools not visited and reasons for
		sites	ded		schools	meet	such.)
						criteria	
No	rth	40	36	4	30	26	
1 Da	du	8	8	-	6	5	Access road closed (Da07), survey on
							school operation not conducted (Da06)
2 Sul	kkur	5	5	-	4	3	Request withdrawn due to overlap with
							district development plan (Su01)
3 Kh	airpur	11	10	1	10	9	Worsened security situation (Kh04)*
4 Gh	otki	6	3	3	6	5	
5 Lar	rkana	3	3	-	3	3	
6 Shi	ikarpur	1	1	-	1	1	
7 Kas	shmore	6	6	-	0	0	Worsened security situation.
Tot	tal	79	70	9		69	

 Table 2-1
 Target schools for the field surveys

2) Conditions and criteria of selection and prioritization of sites

This Project will be implemented through the use of the Grand Aid for Community Empowerment scheme of the Japanese government. The sites and components targeted for assistance will be selected in accordance with the "List of target sites/components and prioritization" drawn up in the Outline Design. The list will use sites and components requested by the Pakistan side as a base. Additionally, through analysis of data obtained from site surveys, etc., the necessity, urgency, and relevance of the Project will then be confirmed and evaluated for each site, and the possibilities for implementation using Grant Aid for Community Empowerment will be examined to draw up the list. Confirmation and evaluation of necessity, urgency, and relevance, as well as implementation possibilities for the Project will be conducted in accordance with the following criteria agreed upon through discussions with the Pakistan side. Based on those results, sites targeted for assistance will be selected and prioritized.

Table 2-2 Conditions and criteria of selection and prioritization of sites

Required Conditions for Selection

- 1. Primary education is currently provided and a sufficient number of students are expected to enroll to the Project facilities.
- 2. Land ownership or proper land-use rights for school construction are legally secured with written evidence and site boundaries are clear.
- 3. No other plan exists for current/ongoing facility improvement by the Pakistani Government, other donors, or NGOs, etc.
- 4. Land that is topographically/environmentally safe and appropriately sized for construction is secured.
- 5. Access roads for construction vehicles are properly provided.

- 6. Allocation of teachers is secured.
- 7. There are no security concerns such as conflicts among villages/communities around the site.
- 8. Documentation of legal land ownership by the concerned District Government is to be submitted to the Team. If the land for expansion is donated by a private individual, a copy of the affidavit shall be submitted.

Criteria for Prioritization

- 1. Facility improvement of the school is identified as necessary in the national/regional plan.
- 2. School management and operation budgets are to be properly secured and to be allocated on schedule.
- 3. Extensive site preparation work such as site leveling, reclamation, removal of obstacles from the site will not be required for construction of the Project facilities.
- 4. Present and future demand can be quantitatively estimated by data such as numbers of school-aged children within the catchment area.
- 5. The need for elementary schools and the possibility of support provided by surrounding communities is high.
- 6. The primary school environment has been developed, and there are sufficient classrooms and furniture with appropriate maintenance operations in place.
- 7. Target districts and target schools are not located in remote areas and/or isolated areas.

Furthermore, prioritization of the sites will be decided by using the enrollment demand for middle-level education within the school catchment area, which is directly related to project outcomes and can be assessed by objective numerical values. The catchment area enrollment demand will be calculated for the project completion year (2018-19) to evaluate the relevance and necessity of the planned facilities (3 classrooms with 30-person capacity each).

3) Conditions and criteria of selection and prioritization of components

The final requested components and their details determined through discussions with the Sindh E&L Department are shown in Table 2-3.

This department has prescribed the minimum range of standard facilities to be installed when primary schools are upgraded to elementary schools (Table 2-4), and facility development using government funds based on provincial or district Annual Development Plans (ADP) is implemented accordingly. The components shown below generally follow these standards, and have been strongly requested by the department as they are deemed necessary for the school operation and curriculum implementation at a the middle-level education, as well as being standard components when the government upgrades schools to encompass elementary education.

		Component	No. per site	Details			
Facility	For middle section	Classrooms	3 rooms	30-person capacity per classroom, minimum of 16 x 20 sq. ft.			
		Science lab	1 room	Same as above			
		Computer lab	1 room	Same as above			
		Headmistress's office	1 room	If there are no existing facilities that can be continued to be used.			
		Teachers' room	1 room				
	For primary section	Classrooms	3 or more	Only for sites to be rebuilt. The number of classrooms is set based on the existing classrooms.			
	For common	Lavatory block	1 block				
	area	Compound wall and gate	1 set	If there are no existing facilities that can be continued to be used.			
Furniture	Classroom	Student desks/chairs	30 sets per CR				
and	furniture	Teacher desks/chairs	1 set per CR				
Equipment	Headmistress's office furniture	Office furniture	1 set	Desk, chair, meeting table, storage shelves			
	Computers	Personal computers	15 sets per sch.				

 Table 2-3
 Requested components and details

Table 2-4 Standard facilities when upgrading primary schools to elementary schools

Room name	No. of rooms	Area measurements
Classroom (30-person capacity)	3	16ft x 20ft = 320 ft ² (4.88 m x 6.10 m = 29.77 m ²)
Computer lab	1	16ft x 20ft = 320 ft ² (4.88 m x 6.10 m = 29.77 m ²)
Science lab	1	16ft x 20ft = 320 ft ² (4.88 m x 6.10 m = 29.77 m ²)
Teachers' room	1	16ft x 20ft = 320 ft ² (4.88 m x 6.10 m = 29.77 m ²)
Headmistress's office	1	16ft x 12 ft = 192 ft ² (4.88 m x 3.66 m = 17.86 m ²)
Lavatory	1	16ft x 8ft = 128 ft ² (4.88 m x 2.44 m = 11.91 m ²)

Based on the above, the facilities for the Project will be selected from among the requested components shown above, using criteria (shown in following table) agreed upon through discussions with the Sindh E&L Department. For each facility, the minimum required furniture such as tables and chairs will be provided for use at the facility.

Table 2-5 Conditions and criteria of selection and prioritization of components

- 1. They are basic and minimum educational facilities for elementary schools.
- 2. The necessity of construction for non-educational facilities can be justified based on policy, purpose, and frequency of utilization, etc.
- 3. They are standard facilities in government elementary schools and utilized effectively
- 4. They are easily and effectively maintained and operated by the government and the schools.

(3) Policies regarding natural environment conditions

1) Management of weather conditions

Sindh Province is located in the southwest portion of Pakistan with a subtropical monsoon climate. In terms of climate, the province can be broadly divided into three areas: Upper Sindh (main city: Jacobabad), Central Sindh (main city: Hyderabad), and Lower Sindh (main city: Karachi). The coastal Lower Sindh has a relatively mild climate, but the target area of the Project lies in the inland areas from Upper Sindh to Central Sindh. A large portion of this area is a hot-arid region with yearly rainfall not reaching 200 mm. April to June is intensely hot, with average high temperatures exceeding 40°C. Conversely, the weather from November to March is relatively cool, with nighttime temperatures dropping below 10°C. July to August is the rainy season, affected by the monsoons of the southwest. During this time, torrential rains trigger frequent flooding.

In regard to these weather conditions, facility planning for the Project will be conducted with the following policies.

- Following the standard local design, buildings will generally be built on an east-west axis. By installing deep eaves and a wide outside corridor (veranda) on the south side of the buildings, the indoor environment will be protected from direct sunlight and rain.
- In response to the hot and arid climate, while taking into account that construction work will be conducted by local companies, roof and wall will use specifications with high thermal insulation performance.
- While considering cost reduction for maintenance, the minimum amount of required equipment such as ceiling fans, etc. will be installed to combat the high temperatures of summer.

2) Management of natural disasters

The most prominent type of natural disaster that occurs in the target area is flooding due to torrential rain and/or rising water levels of rivers. The average annual rainfall of Sindh Province is approximately 180 mm, but since rainfall is concentrated in short periods of time, rainfall over the upper reaches of the Indus River causes rivers and irrigation canals to overflow, causing damage almost every year. According to interviews conducted during site visits, many schools have a history of damage caused by flooding. There are also cases of standing water that remains on the grounds of schools in low-lying areas due to a lack of drainage channels, which has obstructed school operations. In response to this, facility planning for the Project will be conducted with the following policies.

- For sites where there is concern for submersion due to land shape during strong rains of the rainy season, facilities will be designed taking into account rainwater drainage for the entire site area, including the installation of open ditches, etc.
- The standard building floor level will be set above the average yearly flood water level. For sites

with flooding history above this level, floor levels will be set taking into account these past flood levels.

• To prevent a reverse flow of rainwater into the septic tanks of the lavatory blocks, the level of the discharge pipes will be set higher than the height of the highest recorded flood water level.

Although there has been no recorded damage to buildings due to earthquakes in the plains area of Sindh Province, Pakistan is a country that does have earthquakes. Accordingly, earthquake resistant design standards have been prescribed in the Building Code of Pakistan, with the target areas of the Project classified as 2A (peak horizontal acceleration of 0.08-0.16g) and 2B (peak horizontal acceleration of .016-0.24g for a portion of Badin District and Dadu District). Facility planning for the Project will thus comply with this code and take the appropriate amount of seismic force into consideration.

3) Management of topographical and ground conditions

The majority of the planned sites (areas planned for construction) are on flat land, but some sites are lower than the surrounding area, including land that is easily flooded when there is rain. Additionally, there are also sites with soft ground, such as sites where land borders are planned for extension into rice paddies and cropland. In regard to these topographical and ground conditions, facility planning will be conducted for the Project with the following policies.

- At sites that are lower than the surrounding land or facing road and submersion is possible, the building floor levels will be set higher than estimated submersion levels. An appropriate height for the approach to the school and the minimum area required for travel using passageways between school buildings will be secured by adding soil, etc.
- At sites where flooding from surrounding areas is expected, appropriate rainwater drainage channels such as open ditches will be installed to drain water off the site.
- At sites with soft ground, appropriate bearing soil will be placed to ensure sufficient ground bearing capacity, with soil stabilization to be conducted as necessary.

(4) Policies regarding socioeconomic conditions

Pakistan is an Islamic country, and thus there are various customs and restrictions following Islamic law. It is a country where the structure of traditional tribal society still remains deeply entrenched. Additionally, there is a particularly wide gender gap in rural areas, with women living under various religious precepts that dictate their clothing and restrict their movement. In regard to this traditional society structure, facility planning for the Project will be conducted with the following policies.

- The implementation schedule will be drawn up while thoroughly taking into account the effects of Islamic observances such as Ramadan.
- Facility planning will consider the development of an environment to promote enrollment in

school for girls.

(5) Policies regarding construction/procurement conditions

1) Building standards, permits, etc.

Construction work for public facilities in Sindh Province falls under the jurisdiction of the Provincial Works and Services Department (W&S), which offers various technical services including the development of design drawings, technical specifications, and quantity survey forms. Since primary/elementary school facilities are normally controlled at the district level, an Educational Facilities Team is organized as part of the District W&S Department. This team works under the E&L Department on the design and supervision pertaining to facility construction. For private construction work in the province, the Sindh Building Control Authority makes technical assessments and issues building permits. However, for public works, drawings/structural calculations and technical specifications are submitted to the W&S Department instead for the required technical assessment. After discussion with the Sindh E&L Department and the W&S Department, it has been confirmed that the Project will be exempt from technical assessment.

For the preparation of reference materials for drafting tender documents, including the Detail Design for the project, the local consultants that are familiar with local conditions will be maximally utilized and the facilities will be designed following local standards.

2) Construction and procurement conditions

Sindh Province is home to the top commercial city in Pakistan, the city of Karachi. The condition of the main roads in the province is good, and there are no problems with locally procuring and transporting general construction materials. Additionally, there are many construction-related companies based in Karachi and the major city of Hyderabad, which is located in the inland areas of the province. These companies include large construction firms and consultants that are involved with large-scale projects in neighboring countries. Conversely, in Sukkur, the major city in the northern area, most of the construction companies are small-scale, individually operated companies, making it difficult to procure a company with the capacity necessary to implement the Project. Additionally, in regard to construction materials, since a large amount of industrial products will be procured over land routes from Karachi, there are risks in terms of cost and construction period with difficulties in road passage during the rainy season, and increased transport costs due to high fuel prices. A policy will thus be followed for construction planning that establishes the construction period and calculated costs by accurately estimating these risks.

(6) Policies regarding the use of construction supervision consultants

In order to maintain consistency with the Outline Design while conducting efficient construction supervision for the Project, the Japanese consultant who was in charge of the Outline Design will be recommended to the implementing organization to continue supervising construction. In Sindh Province, there are several large consultant companies in the city of Karachi that are involved with projects domestically and abroad. There are also multiple consultants with experience with other donors in construction supervision for projects with multiple sites. For this project, large constraints in the activities of the Japanese consultant are foreseen due to security problems and the spread-out nature of the sites. Additionally, since this region is deeply entrenched in traditional culture and social structure, the use of local consultants familiar with various regional conditions is necessary for construction supervision at the sites to proceed smoothly. On the other hand, based on the experience with the Southern Project, key operations such as quality control should be conducted under the direct responsibility of Japanese consultants. For the Project, the construction supervision system will be established with appropriate use of local consultants after division of roles is clarified while making sure the deployment (number and range of activities) of Japanese consultants will be minimized.

(7) Policies regarding the use of local construction contractors

Facility construction for the Project will follow JICA's former Procurement Guidelines of Japan's Grant Aid for Community Empowerment. In general, selection of construction contractors will be conducted through open competitive tendering among companies from the recipient country. In Pakistan, companies that are involved in public works are registered with the Pakistan Engineering Council (PEC) and divided into eight categories from CA to C6, according to the contract amounts they are able to accept. However, most of the highest ranking companies are involved in large-scale private sector work both domestically and abroad, and although they have a high capacity for financial management and quality/process control, they do not have experience in small/medium-scale educational facility construction, nor are they motivated to accept such contracts. Most public works such as school construction are conducted by C3-C6 class companies. However, as most of such works are ordered in small lots for a single or a few sites, such companies do not have sufficient management ability or financial strength to cover about 10 target sites of the Project that are widely dispersed. All the bidding companies for the Southern Project were in CB class or above. For the Project, there will be general competitive tendering with some conditions targeted for CB class companies based in Karachi, the capital of the province, or Hyderabad for the selection and utilization of the most suitable construction contractors. Using the experience with the Southern Project, there will be no pre-qualification process to shorten the tendering period.

(8) Policies regarding the use of furniture suppliers

There are many large suppliers in Karachi and the surrounding area that have experience in educational furniture provision for projects implemented by the Sindh E&L Department . In addition to import procurement of third-country products (ready-made), there are also specialty companies that are engaged in production themselves. Much of the classroom furniture is produced and supplied by these companies. According to past results of supplying other projects, there are no problems with capacity when procuring furniture necessary for this Project. Nor are there problems

with the level of quality or technology for school furniture. Conversely, since there are multiple sites spread throughout the province, it is necessary for the fabrication, procurement, and transport of furniture to be done to match the progress of construction at each of the sites. There are concerns regarding overall management capacities for this type of operations. For the Project, furniture suppliers will be selected through general competitive tendering with conditions in line with the local standard procurement methods. However, orders will be divided into small lots depending on the procurement period so that the workload for procurement management will be lightened and furniture will be accurately supplied for each site with the appropriate timing.

(9) Policies for operation and maintenance

Operation and maintenance of primary/elementary schools is conducted by the headmasters/mistresses and School Management Committees (SMC) at each school under the guidance and supervision of the District E&L Department. At the government level, the Office of ADO (Assistant District Officer)-Elementary, currently being converted to Taluka Education Office, is placed under the District E&L Department, separately for boys and girls and for each county (taluka), and the Taluka Education Officer (TEO) controls primary and secondary education in their area. At the level of Union Council (UC) are several Supervisors, who visit schools in their area to provide guidance. The budget related to school-level operation and maintenance is distributed directly from the Provincial RSU (Reform Support Unit) to the account of each school's SMC. In addition to this SMC fund, financial resources allotted for non-salary budget for school operation is appropriated for each school unit as School Specific Budget (SSB) form the 2011-12 academic year. However, these funds are all small amounts, and are insufficient for the maintenance of existing deteriorated schools. For this Project, new schools will be strong, with designs that are easy to maintain using local standard construction methods and specifications that do not require special skills for maintenance. In this way, the maintenance burden for school facilities will be kept to a minimum. Additionally, special training for operating equipment will not be necessary, as it is planned to include standard equipment that can be easily managed and operated by local personnel at schools and Taluka Education Offices.

(10) Policies regarding the grade establishment of facilities and equipment

The grade of the facilities will be based on the grade of similar project implemented by the provincial government in Sindh as standard primary/elementary school facilities. The specifications of the major portions will be compared from the aspects of functionality, economy, and ease of maintenance, etc., and a grade that can ensure the functions and durability needed as school facilities will be adopted. Additionally, furniture will all be basic items that are standardly supplied at existing schools using the same specifications and grade normally procured by the Government of Sindh.

(11) Policies regarding the period of construction

For this Project, facility additions and improvements will be conducted at existing primary school sites that are distributed over a wide area in six districts in northern Sindh. The planned components will be kept simple and are to include a classroom block, lavatory block, compound wall, furniture, and computer equipment. The sites are small, with areas ranging from 210 m² to 480 m² at the largest. The local standard period of construction for one site is approximately six months for a one-story building and approximately eight months for a two-story building. However, if each contract has ten or so sites using CB class companies, which are the most suitable for the Project's construction, it is necessary to add approximately five months to the construction period, taking into account the appropriation of temporary materials and skilled labor. Additionally, work efficiency will drop during the rainy season of June \sim September, with progress estimated at 60% of the normal rate. Also considering delays in bringing in materials due to closed roads, the procurement plan and construction period must be set to avoid the rainy season to the greatest extent possible. Since many of the sites in existing villages or adjacent to existing villages are small, various problems regarding construction work are anticipated such as limitations on areas set up temporarily for moving in and storing materials and equipment, as well as constraints on work using heavy machinery. Based on the above conditions, the Project will follow a policy of formulating a realistic construction schedule upon thoroughly examining the unique conditions at each site.

2.2.2. Basic Plan (Construction Plan/Equipment Plan)

Since there has been no standard design developed locally, the basic plan for facilities and equipment will be formulated based on the design content and specification of standard schools built through other donors or government funds. This plan will be further improved upon by reflecting information on the usage and maintenance conditions of completed facilities that was obtained during field surveys.

(1) Selection and prioritization of sites

Selection and prioritization of the target sites will be carried out through reevaluation (second evaluation) of conformity with the selection criteria and demand for facilities in Field Survey V so that the changes in conditions caused by delays in implementation can be considered for the 26 sites that were considered eligible in the first evaluation based on the results of Field Survey II. The selection in primary and second evaluation will be carried out according to the criteria of selection and prioritization shown in Table 2-2. In addition to this, tangible aspects such as site conditions and accessibility, as well as intangible aspects such as enrollment demand for middle education in the catchment area, and operating conditions of existing primary schools will be taken into account. Finally, the possibilities for implementation of facility construction using Grant Aid for Community Empowerment will also be examined.

1) Evaluation of site conditions related to feasibilities of the project

The selection criteria for sites shown in Table 2-2 (land, access, and infrastructure conditions, etc.) will be used to assess the presence of problem for each site. Sites where the presence of any problem critical for project implementation is expected will be excluded from the project. The evaluation results for each item and sites that do not meet the necessary conditions (excluded from project) are shown below.

Assessment of selection criterion 1:

At all of the sites, co-education or girls-only primary schools are in operation. Although some existing schools that were surveyed have not secured an appropriate learning environment due to the deterioration of the facilities (from natural disasters or age), both in primary and second evaluation, all sites were determined to be in conformance, and it was decided through discussion that the Project would include rebuilding existing schools building where necessary.

Assessment of selection criteria 2 and 8:

As for the proof of legal land ownership and affidavits regarding donations of land to be used for expansion, which are prerequisites for project implementation, all necessary documents were submitted after the completion of Field Survey II. However, as the documents were not accompanied by drawings, etc., that show the concrete land plots, plots had to be changed in some sites during Field Survey V. To avoid such a situation, notes of confirmation with lot survey drawings were collected by the Sindh E&L Department and notes for all sites have been submitted to the Japanese side by the end of December 2015.

Assessment of selection criteria 3, 4, and 5:

The following three conditions must be met for project implementation: not overlapping with other facility development programs, having the land necessary for the envisaged facilities (size, shape, natural disaster possibilities), and accessibility for construction vehicles. The sites that were not in conformance (Table 2-6) were excluded from the project. At some sites where field investigations were conducted, it may be difficult to access the site after branching off from the main roads during rainy season, but there are no sites where construction was judged to be impossible.

Table 2-6	Assessment of site conditions	related to feasibilities	of the Project (Selection	criteria 3-5)
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District	School (site)	Results of field survey
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[Assessment b	by Field Survey	II]
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1) Overlap with facility development programs

Sukkur	Su05	Kot Sher Muhammad	Classrooms are currently being built by the district government and no other land is available for further construction.
Ghotki	Gh05	Miraani Muhalla Darwesh Naich	Overlap of catchment area with Gh04 causes duplication as the target. Gh05 was selected with better site conditions for construction.

2) Securing of land necessary for facility construction

Dadu	Da08	Kandiay Chukhi	The site is located in flood-prone area, having highest record of flood of 2.0m or higher. Inappropriate as a school land.
Khairpu r	Kh10	Bhelar	The site is small and confined by private compounds, with no possibility of expansion. Eaven carrying materials into the site may be restricted.

[Assessment by Field Survey V]

1) Overlap with facility development programs

Dadu	Da02	Chhano-	The school has middle classes as the branch of nearby GHS, for which new							
		Shahabad	classrooms are nearly completed. There are also sufficient primary classrooms.							

Assessment of selection criterion 6:

It is difficult to perform a quantitative assessment of the possibility of securing teachers, but the E&L Department has promised to allocate teachers within three months of completion of the facilities for the Project. At the time of the survey, there were no sites where teachers could not be allocated.

Assessment of selection criterion 7:

No sites at which field investigations were conducted had security problems.

2) Analysis and evaluation of enrollment demand surrounding the sites

For the sites other than those considered not to satisfy the criteria in the primary and second evaluation, demand for enrollment in elementary school (number of class-VI students) in the catchment area in the year of project completion (2015-16 or 2018-19) was calculated so that the result could be used as criteria for the validation of assistance in each site and prioritization for site selection. The result was evaluated on the 4-point scale from A to D as shown below. Considering the current situation of the schools in the rural areas of Sindh Province and the budget of the Japanese side, D-rated sites were disqualified and excluded from the target sites.

Evaluation criteria

- A: The number of class-VI students is 30 or more at the time of project completion. (Classrooms are expected to be used at full capacity.)
- B: The number of class-VI students is 21~29 at the time of project completion. (22-29 for the first evaluation. The allocation of three teachers based on the norm of STR=30 or less can be expected.)
- C: The number of class-VI students is 15~20 at the time of project completion. (16-21 for the first evaluation. Usage exceeding 50% of classroom capacity is expected.)
- D: The number of class-VI students is 14 or less at the time of project completion. (15 for the first evaluation. Effective use of facilities is not expected.)

In the first evaluation, all 26 target sites were considered eligible with rates from A to C, and the final validation and prioritization of the sites will depend on the result of the second evaluation that will reflect the latest operational status. The trial calculation of the number of class-VI students in the year of project completion for the second evaluation was based on the following conditions and assumptions.

Calculation methods and conditions

- The catchment area is within a radius of about 1.5km. Existing primary schools should be identified through interviews and the number of students should be based on SEMIS data.
- The number of students in target schools in the 2015-16 academic year (AY) will be determined through interviews at the sites. The number of student that could be enrolled in surrounding schools will be determined for the 2014-15 AY using data from the Sindh Education Management Information System (SEMIS).
- If the completion date for the project set for 2018, the number of students in primary classes will be calculated using the rate of increase of existing students at the target school and surrounding schools. Considering that fact that the number of students is not increasing, population increase will be considered as the only factor for the increase of students.
- The population growth rate will be determined for each district, based on the growth rate of the estimated school age population (5-9 years old) from 2010 to 2014, officially adopted by the Sindh E&L Department.
- The average number of students of each grade calculated from the number of students of class
 I-V students except for Kachi classes, which are operated in different forms at different schools,
 will be used as the number of class-V students. The number of class VI students at the
 elementary level will be calculated by multiplying the number of class-V students by the
 transition rate.
- Based on the actual transition rate of 57% in 2013-14 and assuming the annual growth rate is 5%, the intermediate value of SESP's target growth rates (4-6%), the transition rates from primary to elementary school level are forecasted as shown in the following table. As most schools said in the interviews that all of their students go on to a school of higher grade if the conditions are right, the transition rate is set at 90% for the target schools and 65% for the surrounding schools.

	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Set value
All of Sindh Province	57%	62%	67%	72%	77%	82%	Target school: 90% Surrounding schools: 65%

 Table 2-7
 Setting transition rates from primary to middle education

- The projected number of the students at the target schools has been calculated from the provisionally calculated number of class-VI students on the conditions that the maximum

number of students in each grade (classroom capacity) will be 30 and all grades will have the same number of students while considering the current distribution of the students where there are more students in upper grades.

[Calculation Results]

The calculation results are shown in the table on the next page. As a result of calculation, no sites are rated D and all the sites are considered eligible for the assistance. The following three sites are considered to have comparatively low demand for enrollment in the catchment area (rated C).

District	School name		Current primary s	school enrollment	Remarks		
			Total	I-V Girls			
Khairpur	Kh05	GGPS- Bajeed Fakir	252	67	Mixed		
Khairpur	Kh11	GGPS- Karim Bux Bhambhro	84	30	Mixed, single teacher		
Dadu	Da01	GGPS- Kamaluddin Village Kanhiri	87	48			

 Table 2-8
 Sites with Lower Demand for Enrollment in the Commuting Area (Rated C)

In case the number of target sites has to be reduced for fund adjustment according to the contract price, etc. with comprehensive consideration of such factors as the positioning in the construction plan and regional balance, the above-listed sites will be the first candidates for elimination as low-priority sites.

District	S. No	No. School		Enrollment (2015/16)			Enrollment (2014-15)			cted enrol	lment at tl	ne project	complet	ion (2018	8-19)	Rating	Expected
			in	target sch	lool	in	in catchment area										enroll
			Girls			No. of Girls			Increase of Girls' enrollm			rollment	Girls	enrollm	ent VI		Target
						schools			school-a	iged pop.	I-	V				school	
					í .	-			(ages	s 5-9)		1 _					
			Kachi	Total	Average		Total I-V	Average	2015	2014	Target	Surr.	Target	Surr.	Total		VI-VIII
				1-V	(I-V)/5			(I-V)/5	-18	-18	school	schools	school	schools			
771 .	171.01	COR W. LOL	14	a	17	2	b	14	C	d	a*c=e	b*d=t	g	h	g+h=x	D	x*3
Khairpur	Kh01	GGPS- Wapda Colony	14	82	17	2	66	14	1.084	1.114	89	74	16	10	26	В	78
	Kh02	GGPS- Hadi Bux Laghari	15	42	9	8	178	36	1.084	1.114	46	198	8	26	34	A	90
	Kh03	GGPS- Haji Ali Dad Jogi	23	35	7	10	123	25	1.084	1.114	38	137	7	18	25	В	75
	Kh05	GGPS- Bajeed Fakir	69	67	14	3	22	5	1.084	1.114	73	25	13	3	16	С	48
	Kh06	GGPS- Ameen Patho	40	83	17	5	94	19	1.084	1.114	90	105	16	14	30	A	90
	Kh07	GGPS- Wazirabad Rajper	45	36	8	12	148	30	1.084	1.114	39	165	7	21	28	В	84
	Kh08	GGPS- Gambal Shah	22	44	9	3	83	17	1.084	1.114	48	92	9	12	21	В	63
	Kh09	GGPS- Jani Boro	20	52	11	3	151	31	1.084	1.114	56	168	10	22	32	A	90
	Kh11	GGPS- Karim Bux Bhambhro	3	30	6	5	68	14	1.084	1.114	33	76	6	10	16	С	48
Sukkur	Su02	GGPS- Miandad Khoso	15	84	17	1	41	9	1.073	1.099	90	45	16	6	22	В	66
	Su03	GGPS- Sorho	13	57	12	4	145	29	1.073	1.099	61	159	11	21	32	Α	90
	Su04	GGPS- Moto Mirbahar	49	82	17	4	151	31	1.073	1.099	88	166	16	22	38	Α	90
Ghotki	Gh01	GGPS- Officer Colony Ghotki	26	115	23	6	1052	211	1.088	1.119	125	1177	23	153	176	Α	90
	Gh02	GGPS- Nawab Khan Pitafi	24	65	13	4	156	32	1.088	1.119	71	175	13	23	36	Α	90
	Gh03	GGPS- Kamoon Shaheed	8	67	14	2	92	19	1.088	1.119	73	103	13	13	26	В	78
	Gh04	GGPS- Belo Naich	11	35	7	9	135	27	1.088	1.119	38	151	7	20	27	В	81
	Gh06	GGPS- Sheroo Mahar	10	51	11	7	135	27	1.088	1.119	55	151	10	20	30	Α	90
Shikarpur	Sh01	GGPS- Khanpur-II	20	289	58	0	0	0	1.045	1.061	302	0	54	0	54	Α	90
Larkana	La01	GGPS- Gund	60	91	19	2	44	9	1.087	1.118	- 99	49	18	6	24	В	72
	La02	GGPS- Nai Gudd	30	105	21	4	134	27	1.087	1.118	114	150	21	20	41	Α	90
	La03	GGPS- Model Comm. Tharecha	50	60	12	2	233	47	1.087	1.118	65	260	12	34	46	Α	90
Dadu	Da01	GGPS- Kamaluddin Vill.Kanhiri	39	48	10	5	46	10	1.071	1.095	51	50	9	7	16	С	48
	Da02	GGPS- Chhano Shahabad	50	120	24	7	696	140	1.071	1.095	128	762	23	99	122	-	0
	Da03	GGPS- Aminani	42	82	17	3	47	10	1.071	1.095	88	51	16	7	23	В	69
	Da04	GGPS- Gharib Abad Radhan	30	115	23	4	457	92	1.071	1.095	123	501	22	65	87	Α	90
	Da05	GGPS- Wali Muhammad Gorar	16	52	11	4	587	118	1.071	1.095	56	643	10	84	94	Δ	90

 Table 2-9
 Verification and evaluation of enrollment demand

3) Selection and prioritization of sites

The final sites selected for the Project based on the results above are as shown in Table 2-10. As described above, these target sites have met the selection criteria and have rated C or above in terms of enrollment demand in the catchment area for middle education for the year of project completion. However, in order to accommodate adjustments of the scope of the Project according to the results of tenders and/or fluctuation of the exchange rate when implementing the Project under Grant Aid for Community Empowerment, overall priority may be decreased for sites that were rated C for enrollment demand. (3 sites.)

Region	District	S. No	Taluka	Union council	SEMIS Code		School name	Rating
SUKKUR	KHAIRPUR	Kh-01	Khairpur	Shahdi Shaheed	415030332	GGPS-	Wapda Colony	
		Kh-02	Mir Wah	Hindyari	415060527	GGPS-	Hadi Bux Laghari	
		Kh-03	Mir Wah	THARI	415060557	GGPS-	Haji Ali Dad Jogi	
		Kh-05	Faiz Ganj	Bhangu Behan	415010517	GGPS-	Bajeed Fakir	С
		Kh-06	Faiz Ganj	Razabad	415010100	GGPS-	Ameen Patho	
		Kh-07	Faiz Ganj	Pakka Chand	415010356	GGPS-	Wazirabad Rajper	
		Kh-08	Kot Diji	Fateh Pur	415050251	GGPS-	Gambal Shah	
		Kh-09	Kot Diji	Lyari	415050286	GGPS-	Jani Boro	
		Kh-11	Nara	Chondiko	415070028	GGPS-	Karim Bux Bhambhro	С
	SUKKUR	Su-02	Sukkur	Rahuja	418050063	GGPS-	Miandad Khoso	
		Su-03	Pano Akil	Nidapur	418010560	GGPS-	Sorho	
		Su-04	Pano Akil	Dadloi	418010225	GGPS-	Moto Mirbahar	
	GHOTKI	Gh-01	Ghotki	Ghotki-I	419010151	GGPS-	Officer Colony Ghotki	
		Gh-02	Daharki	Dad Kaghari	419050268	GGPS-	Nawab Khan Pitafi	
		Gh-03	Daharki	Kamoon Shaheed	419030149	GGPS-	Kamoon Shaheed	
		Gh-04	Mirpur Mathelo	Dhangro	419020096	GGPS-	Belo Naich	
		Gh-06	Khan Garh	Mithar	419040100	GGPS-	Sheroo Mahar	
LARKANA	SHIKARPUR	Sh-01	Khanpur	Khanpur	414020104	GGPS-	Khanpur - II	
	LARKANA	La-01	Dokri	Badah-II	413010040	GGPS-	Gund	
		La-02	Bakaarni	Puranno abad	413040145	GGPS-	Nai Gudd	
		La-03	Bakaarni	Gerello	413040177	GGPS-	Model Community Tharecha	
HYDERA-	DADU	Da-01	Dadu	Mian Yar Muh.	402010282	GGPS-	Kamaluddin Village Kanhari	С
BAD		Da-03	Dadu	Khudaabad	402010272	GGPS-	Uminani	
		Da-04	Mehar	Radhan Station	402040151	GGPS-	Garib Abad Radhan	
		Da-05	Mehar	Thariri Muhabat	402040143	GGPS-	Wali Muhammad Gorar	

Table 2-10 Project sites

(2) Review of components and setting priority

Following the criteria described in Table 2-5 in "2.1. Design Policies", the facilities and equipment components requested by the Pakistan side were reviewed in terms of relevance to the Project and suitability of content and scale, upon which, the scope of assistance and prioritization was set. The results of this review of each component and design policies are shown below.

1) Facility components

Classrooms (for middle section)

These facilities are necessary for conducting middle education. In accordance with facility standards set by the Sindh E&L Department, three classrooms per school will be built. The classroom size will be large enough to reasonably hold 30 people, and will use the minimum standard indicated by the E&L Department as a base.

Classrooms (for primary section)

In order for the middle level classes developed by the Project to be used effectively, an appropriate number of classrooms for primary education is necessary. At sites where the existing classrooms cannot be used because of severe deterioration due to age or natural disasters, it is planned to rebuild the existing facilities. The scale (planned number of classrooms) of each site will have a minimum of three classrooms, where it is possible to hold classes combining a maximum of two grade-year levels from all of the primary classes (5+1 grade levels), including pre-primary (kachi) classes. The scale will be set by using the number of existing classrooms actually being utilized as a base, and then further taking into account the various circumstances at each site including the number of teachers and the number of existing students, etc. In the three years from Field Survey II to Field Survey V, conditions of three school buildings deteriorated and cannot be used any more. Including these three schools, six schools (17 classrooms in total) need reconstruction.

District	Schoo	ıl	Existing CRs	Existing teachers	Existing students *1	No. of CRs used	No. of planned CRs	Remarks
Assessmen	nt by Fie	eld Survey II	•	•		•	•	
Sukkur	Su02	Miandad Khoso	3	2	93	2	3	Set using minimum no. of classrooms.
Ghotki	Gh04	Belo Naich	2	1	57	0	3	Set using minimum no. of classrooms.
Larkana	La02	Nai Gudd	4	5	191	4	4	Set using the no. of utilized existing classrooms.
Assessmen	nt by Fie	eld Survey V (addit	ion)					
Khairpur	Kh02	Hadi Bux Laghari	3	7	57	0	3	Set using minimum no. of classrooms.
Khairpur	Kh11	Karim Bux Bhambhro	2	1	33	0	3	Set using minimum no. of classrooms.
Larkana	La03	Model Comm. Tharecha	3	2	110	2	3	Set using minimum no. of classrooms.

 Table 2-11
 Sites requiring primary section classroom construction and planned scale

*1 The existing number of students is the total of female primary school students, including the kachi class.

Science lab and computer lab

The necessity of both rooms has been confirmed from curriculum and policy aspects, but most middle-level existing schools are not equipped with these functions, or the rooms are not being used

according to their intended purpose. Based on determinations made by looking at current facility development conditions and operating conditions at similar schools, it is difficult to justify the need for both rooms. However, it is anticipated that the necessity of computer education will increase sharply in the future. Additionally, from looking at specifications of existing schools, it has been determined that special equipment such as water supply facilities in the science laboratory is not necessary. Therefore, by building multipurpose rooms that can also be used as regular classrooms, effective usage is possible once such usage methods become more widespread at each school and community.

The results of reviews of each of the rooms are summarized below.

- Computer lab
- Computer education was introduced into middle education as a part of the 2006 curriculum revision, with three hours per week and 100 hours per year of study prescribed. Of this, 50% (60% for class-VII) is allocated to practical classes, thereby making the installation of PC equipment essential for conducting classes according to the curriculum.
- However, most of the schools that have computer rooms with the necessary equipment installed are Government High Schools (GHS). These schools include middle section classes (VI-VIII) and conduct computer education according to the curriculum. On the other hand, there are not many elementary/middle schools that have been upgraded from primary schools with computer rooms, and the only a portion of the school are currently conducting computer education.
- The Sindh E&L Department has made computer education compulsory from middle education and specified computer rooms as standard facilities for middle schools. Facilities and equipment continue to be installed under this policy, which is being promoted through various projects.
- The prevalence and necessity of computer education is certain for the future. When considering that the basic method for operating PC equipment will be a necessary skill for gaining employing after graduating, it is predicted that this type of education will become an incentive for female students to enroll in school.

From the above, it can be seen that necessity is high from the standpoint of implementing curriculum. The relevance of its inclusion in the project is also recognized with the assumption that it will be effective as an incentive for girls to enroll in school. Conversely, introduction of computer education at the middle level has just begun, thereby making it preferable to keep the project details flexible to accommodate the conditions of each community.

- Science lab
- Although science labs have been built in most higher secondary schools, with teachers of natural science allocated, there are not many schools where experimental labs are conducted. In addition, only 0.8% of middle schools and 1.9% of elementary schools (primary + middle) are equipped with science labs (2014-15 SEMIS).

- The specifications of science labs differ by school. In similar projects (ADB supported Decentralized Elementary Education Project (DEEP), etc.), there are many schools where science labs do not have water supply facilities, thus having the same specifications as normal classrooms. There are also schools where science labs are being used as normal classrooms.
- USAID is providing facility development (remodeling, etc.) and equipment for experiments for science education in Sindh Province, but there are not many schools where the supplied equipment is being used effectively.

From the current state of facilities and their usage at similar existing schools, it can be concluded that the necessity for full-specification science labs equipped with water supply facilities, etc. is not high. Also, usage rates are not expected to be high for science labs at schools with only one classroom per grade. Therefore, this Project plans to build highly-versatile spaces that can also be used for other purposes, in addition to being used basic science labs as needed.

Headmistress's office

This room is necessary for school operations; therefore, one headmistress's office will be built at sites where there are no existing facilities that can be used. The scale will be a large enough to accommodate a work space with a desk, chair, and storage shelves, and a space to greet visitors. The size will be half the size of a classroom.

Teachers' room

There are not many schools that have a dedicated room for teachers and other staff, but some schools in urban areas with many teachers have turned classrooms into teachers' rooms. Additionally, since most rural schools have only a few teachers, including the headmistress, the necessity of a dedicated teacher's rooms is low. If highly specialized teachers such as computer or science teachers are allocated, they may need a teacher's room as space to prepare lessons during their non-teaching times. However, this need will be met by placing meetings tables and chairs in the storeroom for double functionality.

Storeroom

The necessity of a storeroom for the appropriate storage of teaching equipment and management documents is high; therefore, in addition to a headmistress's office, a one storeroom will be built at sites where there are no existing facilities that can be used. The scale will be large enough to be used as a teachers' room, in addition to being used for storage. The size will be half the size of a classroom.

Lavatory

This facility is essential for a school to function, and lavatories are planned for installation in a building separated from the classroom block in order to combat odors and contamination. For small sites, the lavatory block will be made as small as possible due to the necessity of securing an

appropriate distance from water sources and other buildings. Three booths per three middle section classrooms (1 booth per classroom) will be used as a base standard. If there are no existing facilities that can be used, two additional booths will be installed, taking into account usage by primary class students for a total of five booths. Additionally, to decrease the required amount of space, the same lavatories will be used by both students and teachers.

Compound wall and gate

To prevent strangers from entering from the surrounding area and to ensure privacy, a wall around the compound is an essential element in boosting enrollment at girls' schools in Islamic countries. Many Project sites are small, with some require outer fences to be incorporated into the buildings. Therefore, fences and gates will be included a part of the project components. If there are no existing fences, or if there are portions in the existing facility that cannot be used, fence and gate construction will be included in the Project.

2) Equipment components

Furniture

The Project will provide the minimum required furniture, which includes classroom furniture (student/teacher desks and chairs) and office management furniture (headmistress's desk and chair, guest chairs, meeting table and chairs, and cabinets). This furniture is necessary for school facilities to function properly. However, considering the intention of the Sindh E&L Department, who places priority on facility construction, the furniture will get lower priority than facilities and preparation of the furniture by the recipient country might be considered as required for fund adjustment.

Equipment

The only requested equipment was educational computers. Based on the status of supply at similar facilities, the minimum required number of computers for implementing middle education curriculum will be provided by the Project. This includes enough computers for the estimated usage, assuming use by groups of six students per one class of 30 students each (one computers per group = 5 computers per site), plus one printer. The priority has been made lower than facilities and furniture, and the Project will adjust project costs by equipment corresponding to the results of facility construction tendering.

(3) Establishing the scope of assistance

A list summarizing results of the reviews described above for Project sites and components is shown in the following table.

Since the Project will be implemented using Grant Aid for Community Empowerment, the final scope of assistance will follow the priority for sites and components shown on this list, with adjustments made during the project implementation stage. The scope of the assistance was set with

four levels of priority, taking into account limitations on the Japan side budget in the Outline Design and the possible necessity for project cost adjustments.

- First priority group: Facility components for sites rated as priority level A-B in the enrollment demand evaluation.
- Second priority group: Facility components for sites rates as priority level C in the enrollment demand evaluation.
- Third priority group: Furniture components

Forth priority group: Equipment components (computer equipment)

Priority	District	Site	No. of	Project components						
			sites		Facilities		Comp-	Furni-	Equip	oment
				CR block	(No. of	Lavatory	ound	ture	(PC equ	ipment)
					CRs)	block	wall			
							1	1		
1st		Kh01, Kh02, Kh03,	7	1	27+7	1	~	3rd	4th	35 sets
priority	Khairpur	Kh06, Kh07, Kh08, Kh09						priority	priority	
	Sukkur	Su02, Su03, Su04	3	1	12+3	1	1			15 sets
	Ghotki	Gh01, Gh02, Gh03, Gh04, Gh06	5	1	18+5	1	1			25 sets
	Shikarpur	Sh01	1	1	3+1	-	1			5 sets
	Larkana	La01, La02, La03	3	1	16+3	1	1			15 sets
	Dadu	Da03, Da04, Da05	3	1	9+3	1	✓			15 sets
2nd	Khairpur	Kh05, Kh11	2	1	6+2	1	1			10 sets
priority	Dadu	Da01	1	1	3+1	1	1			5 sets
						1	I			
	Total		25		94+25					125 sets

 Table 2-12
 Project sites and components and priority level

*The number of classrooms includes regular classrooms and multipurpose rooms.

(4) Building Design

1) Standard design for project facilities

Although Sindh E&L Department has stipulated the facility criteria and minimum scale for upgrading primary schools to elementary schools and a prototype plan has been developed, the Department of Works and Education or the hired consultant produces a design taking into consideration the conditions of each site during the implementation stages. Standard specifications and design standards are not established, with the system of developing a particular detail design for each project.

Bases on this, the Project will refer to the project design of similar projects such as the ADB-supported DEEP project implemented in Sindh Province and the specifications of existing

facilities while independently designing a few prototypes to develop an Outline Design to apply at each site. Since many Project sites are small, it is necessary to accommodate various limitations concerning the building sites. A base of seven design types will be used for the classroom blocks including two-story buildings. Two design types (small and large) for the lavatory blocks will be used to match the number of classrooms. Most buildings in Pakistan use a masonry structure with bricks or concrete blocks, but for this Project, all facilities will be a flat roof type (low-pitched shed roof) using a reinforced concrete frame construction with brick walls and reinforced concrete slabs.

		Туре	No. of		Room con	nposition	Area	Remarks	
			blocks	Class-	Headm-	Store-	Multi-	(m ²)	
				rooms	istress's	room	purpose		
					room		room		
Class-	1-story	1F-3CR-HSM	6	3	1	1	1	224.64	
room	2-story	2F-6CR-HSM-a	2	6	1	1	1	387.88	
block		2F-6CR-HSM-b	3	6	1	1	1	363.92	L-shaped floor plan
		2F-3CR-HSM-a	4	3	1	1	1	253.09	
		2F-3CR-HSM-b	7	3	1	1	1	226.24	Outside staircase
		2F-3CR-M	3	3	_		1	208.17	
		2F-4CR	1	4	_		_	208.17	
Lavatory	Flush type	F3	14	3 booths				10.08	
block		F5	10	5 booths				16.80	

Table 2-13Project facility design types

2) Facility layout plan

The facility layout plan within the site will follow the general principles described below, optimized by comprehensively considering the fixed conditions for each site (scope of land, shape, topography, access road conditions, surrounding environment, existing on-site structures, vegetation, etc.).

- Buildings will be built along an east-west axis wherever possible. In order to avoid direct sunlight into the rooms from the south side, an open corridor will be placed on the south side.
- The facility layout will use the current shape of the land to the greatest extent possible. Buildings will be optimally placed along slopes so that soil preparation work and the area for ground leveling is kept to a minimum.
- The necessary distance from the lavatory blocks to water sources and water pipes will be secured, and the location will be determined so that there are no effects from odors, etc. by taking prevailing wind direction and land sloping into consideration. Additionally, consideration will be given to the Qibla¹⁰ for layout planning.

 $^{^{10}}$ The direction that should be faced when a Muslim prays. It is currently the direction of the <u>Kaaba</u> in <u>Mecca</u>.

- As the minimum facilities required for proper functioning, the following exterior elements will be constructed.
 - <u>Compound walls:</u> Since there are many small sites for the Project, the connection between existing perimeter walls and facility construction is expected to become a critical element, thereby making it necessary to execute works on a finely detailed plan that takes into account the temporary facilities and scheduling constraints. Since the compound walls are necessary facilities for a girls' elementary schools, they will be built as a part of the Project if there are no existing fences that can be used.
 - <u>Wells:</u> Water from on-site wells (shallow wells) is planned to be used for toilet flushing. In order to avoid using a separate contractor for digging new wells on small sites, it is generally accepted that well-digging will be included in the works contract. If the work is conducted by the recipient country, construction delays and risks that come with having multiple contracts work simultaneously on a small site can be expected. Therefore, well-work will follow local methods and be included in the Project.
 - <u>Rainwater drainage facilities:</u> In the target area, road levels tend to be higher than residential areas to avoid submersion. This creates a structure where it is easy for water to accumulate in residential areas. Thus, there are sites at which facilities are rendered unusable for long periods of time as the land is flooded throughout the rainy season. Taking into account the height difference with the adjacent land, soil will be added as needed and open culverts will be installed for rainwater drainage. This will stop the inflow of rainwater, as well as prevent water from accumulating within the site.
 - <u>On-site passageways:</u> During periods of rainfall or flooding during the rainy season, the ground within the site becomes very muddy. Therefore, in order to provide access to the school building and between facilities, the minimum required on-site passageways (paved) will be constructed. This is necessary to allow the facilities to function properly during the rainy season, and at most existing schools, passageways have been created using concrete pavement. Since an integrated configuration corresponding to the floor level of the building is necessary, these passageways will be included with facility construction.
- For many of the sites, the dismantling and removal of buildings, structures, and trees that obstruct construction must be completed prior to the start of the main construction work. If this work is to be undertaken by the recipient country, it may bring risks for construction delays, similar to those for well digging. Also, depending on the contractor, dismantling and removal work may not be executed properly, which has a large impact on the main construction work. Considering the merits of having a clear delineation of construction responsibilities, as well as ensuring quality under the supervision of a Japanese consultant and having flexible scheduling, the dismantling and removal work necessary prior to the start of construction will be included in the Project to reduce risks in project implementation.

3) Floor plan

The floor plan for each block has been formulated as shown below.

Classroom block

For both one-story and two-story buildings, rooms will be arranged in a simple floor plan with rooms connected by an outside corridor (locally referred to as a standard "veranda"). Although the minimum size for classrooms designated by Sindh E&L Department is 16 ft. x 20 ft. (4.88 m x $6.10 \text{ m} = 29.77 \text{ m}^2 = 0.99 \text{ m}^2$ per student), these classrooms will be widened slightly so that there is ample room to place furniture. The dimensions will thus be 5.28 m x 6.24 m (32.95 m² = 1.10 m² per student), with the lengthwise measurements made uniform using standard spans of 3.12 m. Additionally, for smaller sites with numerous constraints, two-story buildings will use plans with staircases included at the ends of outside corridors and plans that arrange classrooms in an L-shape.

The various rooms, including classrooms, multipurpose rooms, headmistress's office, and storerooms, will be composed of standard spans that are configured as necessary. The details for these rooms have been set as shown in the table below.

Room	Plan details	Floor area
Classroom	Assuming 30-person capacity, space sufficient to place double desks and 30 chairs and a teacher's desk/chair will be secured. The local standard is 0.99 m^2 per student, with similar grant aid projects having 1.1-1.5 m ² per student. The rooms for primary classes will be the same size, with only the size of the furniture to be changed.	32.95 m ² (1.10 m ² / student)
Multipurpose room	This will be the same size as a classroom. Assuming use as a computer room, the layout will allow for the placement of 5 PCs (6 students per 1 PCs). Additionally, for the type with a storeroom, this storeroom will be placed adjacent to the multipurpose room and a door will be installed for use as a preparation room/office.	32.95 m ² (1.10 m ² /students)
Headmistress's office	In addition to space for office work (desk, chair, cabinets), a reception and meeting space is also necessary. Although the dimensions are slightly smaller than local standards (17.86 m^2), sufficient functional space is secured.	16.48 m ² (classroom×0.5)
Storeroom	Space that is sufficient to place tables and chairs will be secured so that this room can function as a simple teacher's room or a preparation room connected to the multipurpose room in addition to providing storage for educational materials, books, and management documents.	16.48 m ² (classroom×0.5)
Outside corridor	Although there are many existing primary schools where this corridor is used as a temporary classroom, for this Project, a width necessary for functionality as a corridor will be secured. (Usable width = approx. 1.8 m)	-

 Table 2-14
 Room composition

Lavatory block

Using the local standard facility design as a base, two types of lavatory blocks are planned, corresponding with the number of planned classrooms at each site. These two types are large (5 booths) and small (3 booths). In general, for the added middle section facilities (3 classrooms), three

booths will be built (1 booth/classroom). If there are no existing lavatories that can be used, two more booths will be added for a total of five booths. For the following site for which construction according to standards are difficult due to land constraints, usable lavatories, including existing facilities, will be secured and no lavatory will be newly constructed.

- Sh01 GGPS Khanpur-II in Shikarpur District

Since there are many small sites, and it is necessary to avoid interfering with wells that provide water, the size of the buildings will be kept as small as possible. They will have simple floor plans, and will not be divided into student-use and teacher-use facilities. A simple septic tank will be integrated underneath.

Facility details and floor area based on the above plan is shown by site and facility type in the table on the next page.

Table 2-15 H	Facility pla	n details	by	site
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S N	School			Diannod I	Eacilition				Lifilition				0+	hor Itoms	
0.11		Classroot	n hlo	r iai ii ieu i	aciliues	v Blook	Total	Electrical	Water	Drainaga	Compound	L and for	Embook	Coil	Domoliah/Romay al
		Duilding Tung		UN	Duilding	y Diock	Гізаг		vvalci	Dialitage	Compound		Linibalik-	otobili	Demoistrittemoval
		Building Type		Area	Building	Alea		suppry	suppry	system	waljs+	extension	ment	Stabili-	
Khaim	- (0 - 1)	("1)		[a]	Type	[0]	[c]=[a]+[b]	ieau-in (2)	source		gale			Zauon	
Khairpu		05 00 D U OM -		050.00	F2 D	40.00	000.47	Marrie	Marris and	O salvait	Enter ded	Mar	Desident		
KNUT	GGPS Wapda Colony	2F-3CR-HSM a	ט	253.09	F3-K	10.08	203.17	New	New Well	Soak pit	Extended	res	Requirea	-	Part of perimeter wall
1000	000011	05 00 D 110 M	_	007.00		40.00	101.00	connection			area				
Kh02	GGPS Hadi Bux	2F-6CR-HSM a	в	387.88	F5-K	16.80	404.68	Connected	New well	Soak pit	Extended	Yes	Required	Required	CR bldg., lav atory, part of
	Lagnan							(Sihfting)			area, etc.				perimeter wali
Kh03	GGPS Haji Ali Dad Jogi	2F-3CR-HSM a	A	253.09	⊦5-L	16.80	269.89	Connected	New well	lo existing	Extended	Yes	Required	-	Temporary bldg. tree, part of
								(Sihfting)		drainage	area				perimeter wall
Kh05	GGPS Bajeed Fakir	1F-3CR-HSM	Α	224.64	F3-L	10.08	234.72	New	New well	Soak pit	Extended	Yes	Required	Required	Part of perimeter wall
								connection			area, etc.				
Kh06	GGPS Ameen Patho	1F-3CR-HSM	A	224.64	F5-R	16.80	241.44	New	New well	Soak pit	Entire	Yes	Required	-	Lavatory, trees, part of
								connection			perimeter				perimeter wall
Kh07	GGPS Wazirabad	1F-3CR-HSM	A	224.64	F3-R	10.08	234.72	New	New well	Soak pit	Extended	Yes	Required	Required	Part of perimeter wall
	Rajper							connection			area				
Kh08	GGPS Gambal Shah	2F-3CR-HSM b	В	226.24	F5-R	16.80	243.04	New	New well	Soak pit	Part	-	-	-	CR bldg., lav atory, part of
								connection							peri. wall, pavement, trees
Kh09	GGPS Jani Boro	2F-3CR-HSM b	В	226.24	F3-L	10.08	236.32	New	New well	Soak pit	Part	Yes	Required	-	Part of perimeter wall
								connection							
Kh11	GGPS Karim Bux	2F-6CR-HSM a	В	387.88	F3-R	10.08	397.96	New	New well	Soak pit	Three	Yes	-	-	Temporary bldg., trees, part of
	Bhambhro							connection			sides				wall
Sukkur	(3 sites)														
Su02	GGPS Miandad Khoso	2F-6CR-HSM b	Α	363.92	F5-R	16.80	380.72	New	New well	Soak pit	Two	-	-	-	CR bldg., lav atory, part of
								connection			sides				peri. wall, trees
Su03	GGPS Sorho	2F-3CR-M	С	208.17	F3-R	10.08	218.25	New	New well	Soak pit	(existing)	—	-	—	Pavement, trees
								connection							
Su04	GGPS Moto Mirbahar	2F-3CR-HSM b	Α	226.24	F3-R	10.08	236.32	New	New well	Soak pit	Extended	Yes	_	_	Lavatory, trees
								connection			area, etc.				Part of perimeter wall
Ghotki	(5 sites)														
Gh01	GGPS Officer Colony	2F-3CR-HSM a	Α	253.09	F3-R	10.08	263.17	New	New well	Soak pit	Extended	Yes	Required	_	Temporary bldg., trees,
	Ghotki							connection			area				part of perimeter wall
Gh02	GGPS Nawab Khan	1F-3CR-HSM	A	224.64	F3-R	10.08	234.72	New	New well	To existing	Entire	Yes	Required	Required	Trees, part of perimeter wall
	Pitafi							connection		drainage	perimeter				
Gh03	GGPS Kamoon	1F-3CR-HSM	A	224.64	F3-R	10.08	234.72	New	New well	To existing	Extended	Yes	Required	Required	Trees, part of perimeter wall
	Shaheed							connection		drainage	area				
Gh04	GGPS Belo Naich	2F-6CR-HSM b	A	363.92	F5-L	16.80	380.72	New	New well	Soak pit	Entire	_	Required	_	CR bldg., lav atory, part of
								connection			perimeter				peri. wall, pavement, trees
Gh06	GGPS Sheroo Mahar	2F-3CR-HSM b	A	226.24	F5-L	16.80	243.04	Connected	New well	Soak pit	Extended	Yes	Required	_	Liavalory, part or pen: wall,
								(Sihftina)			area. etc.		·		pavement, trees, play
Shikar	bur (1 site)							(,				eauioment
Sh01	GGPS Khanpur-II	2F-3CR-M	A	208.17	_	-	208.17	New	_	_	(existina)	-	_	_	Trees
	P.				Small land			connection							
Larkana	ı a (3 sites)														
La01	GGPS Gund	2F-3CR-HSM b	A	226.24	F5-R	16.8	243.04	New	New well	Soak pit	Extended	Yes	Required	_	Llavatory, part of peri, wall
	· · · · ·							connection			area				pavement, trees
La02	GGPS Nai Gudd	2F-3CR-HSM a	A	253.09	F5-R	16.80	478.06	New	New well	Soak pit	Entire	Yes	Required		CR bldg, trees, perimeter
2002		2F-4CR	A	208.17		10.00		connection		o our pre	perimeter		r toquirou		walls, temporary bldg.
1 203	GGPS Model	2E-6CR-HSM h	A	363.92	F3-I	10.08	374.00	Connected	New well	Soak nit	Part				CP bldg_part of peri_wall
Luoo	Community Tharecha			000.02	102	10.00	014.00	(Sibfling)	iten wen	o our pr	i uit	_	_	_	payement, trees
Dadu (/	(sitos)							(Siriung)							par onioni, tooo
Dauu (-	CCBS Komoluddin		D	200 17	E2 D	10.09	210.25	Nov	Now well	Cook nit	(oviofina)		Doguirod		Lavatas, tanaana, kida
Davi	Villago Kanbiri	21-301(-10)	Ы	200.17	1.5-1	10.00	210.23	NGW		Suak pit	(existing)	_	INEquireu	_	cavalory, temporary blog,
De02				004.64	F21	10.00	024 70	Connection	New well	C columit	Eutonded	Vee			part of wall
Daus	GGPS Aminani	1F-30-R-F1-51VI	A	224.04	FJ-L	10.06	234.72	New	New well	50aк рі	Exterided	res	-	-	Lav atory, temporary blog
D. O.	0000 01-11-11	05 00 D U 014		000.01		10.00	000.02	connection	N	Territor	area		Duri i		-
Da04	GGPS GRAND ADAD	2F-3UK-HSM b	U	226.24	г <i>3</i> -К	10.08	236.32	Connected	New well	to existing	Part	-	Required	-	rees, part of perimeter wall
	Radnan	05 00 D		0000.0			0.000	(Sintting)		arainage					
Da05	GGPS Wall Muhammad	∠F-3CR-HSM b	A	226.24	+5-R	16.80	243.04	New	New well	Soak pit	Extended	Yes	Required	-	Lavatory, trees, part of
	Gorar							connection			area				perimeter wall, pavement
				6,644.08		309.12	6,953.20					1			

(*1) Suffix "A, B, C..." to building types identifies the location and direction of the entrance stairs.

General coding rule of building type is as follows:

2F-3CR-HSM b (2 story building composed of 3 classrooms, a headmistress's room, a storeroom and a multi-purpose room, with outdoor staircase)

[Number of story]-[Number of Classroom]-[Av ailability of other rooms: H (Headmistress's room,, S (Store room), M (Multi-purpose room)]-[a or b, depends on the shape of plan]

(*2) Shaded parts indicate the items to be undertaken by Pakistani Side.

4) Elevational and sectional design

Classroom block

- Floor height: In order to clear the height at which all the sites have experienced flooding, the standard floor height will be set at the DGL + 600 mm.
- Story height/ceiling height: Based on weather conditions of the hot and arid project area, the indoor environment will be improved by ensuring sufficient air volume and providing natural ventilation. For this, the story height will be set at 3.4 m for the first floor and 3.43 m for the lowest part of the second floor. The ceiling height of 3.2 m or more will be secured.
- Roof structure: In Sindh, low-pitched (1/20) shed roofing using concrete slabs is normally used. Compared to the pitched roof with profiled steel sheeting normally used in other areas of Pakistan, it has better insulation, wind resistance, and durability performance. However, in similar projects, unsatisfactory waterproofing and flaking concrete on roof soffits thought to be caused by insufficient concrete covering on reinforcing bars has been observed. Therefore, caution must be paid to specifications for waterproof detailing and concrete joint treatments and concentrated supervision shall be conducted to guarantee quality.
- Ceiling: False ceilings will not be installed to ensure maximal air volume.
- Openings: While allowing breezes and natural light to enter the rooms, the width of windows will be limited in order to prevent excessive heat. Windows will be wooden casements with steel frames, which is common in the country. On the side of the outside corridor, there will be inward opening windows. On the opposite side of the outside corridor, there will be outward opening windows and large eaves over the upper portion of the windows will be continuously installed. This will maximally prevent sunlight from entering the room, while the top of the eaves will have a ventilation opening to the bottom of the beam to ensure sufficient ventilation.

Lavatory block

- Floor height: To prevent the outflow of contaminated water during flooding, the processed water discharge outlet of the septic tank will not be placed lower than the floor height of the classroom block. With this requirement, the standard floor height for the lavatory block will be set at the DGL + 900 mm.
- Roof structure/ceiling: This will be the same as the classroom block, but in order to supply water for flushing toilets, a plastic water tank will be installed on top of the roof slab.
- Openings: With an emphasis on blocking view from the surrounding area, there will be no opening up to eye level. Lateral openings will be made from the top of the wall to the bottom of the crossbeam to secure necessary light and ventilation.
- Underground structure: Underneath the lavatories, a two-section septic tank system will be installed integrated with the above-ground structure, following the local standard configuration.

5) Structural Design

The Structural Design will be based on the standard design of similar facilities in Pakistan and Sindh Province while respecting structural criteria applicable to the target area of the Project.

Structural configuration

- Main structure: For one-story buildings, the normal local structural configuration is a frame structure with RC columns and beams or a masonry structure using bricks or concrete blocks. For two-story buildings, a frame structure with RC columns and beams is used. Although Sindh Province has no history of damage from large earthquakes, damage caused by several large earthquakes in Pakistan has led to the formulation of structural design standards. As most of the buildings to be constructed in the Project will be two-story, all buildings including one-story buildings will have the highly earthquake resistant RC frame structure with columns and beams. The cross section and dimensions of structural members will be determined through structural analysis in accordance with the Japanese building standards while the building code of Pakistan is also referred to.
- <u>Nonbearing walls</u>: For walling of RC frame structures, bricks or concrete blocks are used locally. Although concrete blocks take less work to use in construction, with quality relatively easily secured, they are difficult to procure outside of major cities and their surrounding areas. Thus, the bricks that are widely used throughout Sindh will be used for the Project.
- <u>Foundation</u>: The continuous footing configuration or the raft foundation will be used depending on the expected soil baring capacity.
- <u>Roof:</u> Concrete slab roofing (low-pitch shed roof) that is most used in similar project in Sindh Province will be used.

Structural standards

Following the UBC (Uniform Building Codes), Pakistan has developed their own building code, in which guidelines pertaining to structural design are indicated. In the Southern Project, structural design was carried out according to the building code of Pakistan. However, due to difference in concepts for testing and constructions from Japanese standards, it was difficult to carry out some portions of testing. Therefore, for the Project, structural design will be carried out in accordance with the Japanese architectural standards with a reference to the building code of Pakistan.

- Soil bearing capacity: According to geotechnical investigation results, although there are differences depending on the site, the soil quality 0.8~1.2 m below the ground surface that is assumed to be the bearing ground is composed of the relatively soft silty clay and silty sand. The expected bearing capacity is approximately 50 75 kN/m².
- Wind load: Having obtained data from the weather bureau on the maximum wind speeds for the past 30 years for the target area, there is no record of violent windstorms. Following the

Building Code of Pakistan, the standard wind speed will be set at 33m/s (120km/h) to calculate the wind pressure.

• Seismic force: Compared to other area of Pakistan, Sindh Province is an area with few earthquakes. The target sites are designated as Zone 2A (regional coefficient Z=0.15) by the Building Code of Pakistan. Since results of laboratory tests on soil samples done for geotechnical investigations show that the soil type corresponds to seismic design is "SD", the base shear coefficient will be set at 0.32.

Structural materials

The structural materials will follow the ASTM and BS standards that are widely used in Pakistan. Cement will be domestic cement conforming to BS12, and deformed reinforcing bar and round steel bar will be Grade 40 products conforming to ASTM A615.

6) Building services design

The building services for Project facilities will be based on installation and usage conditions at existing schools or similar schools developed with other donors' funding. Taking into consideration the standard content and specifications for standard elementary school facilities in Sindh, weather conditions of the target area, and the state of electricity and water supply, the following building services design is planned.

Electrical installations

Electricity is available at all of the target sites, and low voltages can be drawn from the existing power grid in the surrounding area. Following the installation conditions of similar facilities, the following items are planned.

- Lighting fixtures: Public primary/elementary schools in Sindh are normally operated on full-time basis and night time use of the facilities is not expected. However, religious customs dictate that even during the daytime, windows must be closed to block people from looking inside. At similar schools, the use of lighting fixtures to attain the necessary light levels has been observed. Therefore, as the minimum required lighting equipment, four lights per classroom, plus two lights for the headmistress's office and storeroom will be installed for the project using fluorescent bulbs.
- <u>Electrical outlets</u>: In classrooms at similar schools, lessons using electricity are not conducted. However, a light switches will be installed for each classroom, with a portion of the rooms having one electrical outlet included as a standard specification. Since an independent conduit is not required for this electrical outlet, it can be installed relatively easily. Also, the installed location of the outlet will be at the same height as the light switch, which is effective in preventing trouble during flooding. As the minimum required electrical outlet installation, one outlet per classroom and one combined outlet/light switch per headmistress's office and

storeroom will be installed. Additionally, the required number of outlets (8 outlets) will be installed in the multipurpose room in accordance with the expected load.

 <u>Ceiling fans</u>: Under severe hot and arid weather conditions, most of the existing schools have ceiling fans installed. Following similar facilities, two fans per classroom and one fan per headmistress's office and storeroom functioning as a teacher's rooms will be installed. A variety of Pakistan-made ceiling fans can be procured easily in the city.

Plumbing installations

- Water supply system:

For this Project, water is necessary for flush-type lavatories and for hand washing. As city water is not available at any of the sites, the water supply source for all the sites will be wells and drilling of shallow wells and construction of pumps will be planned. Water from the well is send through a pump to the elevated water tank (plastic, ready-made water tank product) mounted on the roof of the same building. It shall be notified that well water will only be used for hand washing, not for drinking.

- Sewerage and drainage systems:

At sites located in city areas, open culvert-type drainage ditches have been installed along roads. Wastewater from the site goes through the septic tank and then into these connected drainage ditches. Conversely, in areas where there are no drainage ditches, fluid from the septic tank will be discharged onto ground surfaces such as adjacent rice paddies. For the Project, the percolation method will be used with soak pit installed within the site. The size of soak pit will be determined properly according to the result of the percolation test conducted by a local sub-contractor. The standard height of the top of soak pit will be the design GL + 600 mm so that they will not be submerged in water and clogged.

- Sanitary fixtures:

Sanitary fixtures will be modeled after similar facilities using ceramic Turkish-style toilets and high-mounted flushing tanks both for students and teachers. Additionally, considering the actual usage conditions of the lavatories, water faucets with buckets will be placed inside each booth, with no sinks to be installed. Water faucets will be installed outside the lavatories for cleansing before prayer.

7) Building Material Plan

With reference to the contents of similar projects in Pakistan and the implementation status of the Southern Project, construction specifications for each building element with necessary improvements are planned as shown below.

		Reconstruction of Schools (2006: Japan's Non-Project Grant Aid)	Similar facilities in Sindh (Elementary schools)	This Project (proposed)	
Province		NWFP	Sindh	Sindh	
Capacity p	per classroom	40 people	30 people (Sindh standard)	Same as left	
Area per classroom		44.65 m ² 20'x24'(6.10m x7.32m)	29.77 m ² 16'x20'(4.88m x 6.10m)	32.95 m2 (5.28m x 6.24m)	
Main structure	Foundation	RC continuous footing	RC continuous footing	RC continuous/raft foundation	
	Floor	RC slab on grade	RC slab on grade	Structural floor slab (GFL=DGL+600mm)	
	Walls	Brick masonry	Brick masonry	Same as left	
	Main frames	Reinforced concrete	Reinforced concrete	Same as left	
	Roof frame	Steel frame truss	-	-	
Exterior finish	Floor: corridor	Trowel finished concrete	Marble tiling Cement tiling	Trowel finished mortar	
	Exterior base- boards	Mortar + paint	Mortar + paint	Exposed concrete + bitumen coating	
	Walls	Mortar + paint	Mortar + paint (some tiling)	Mortar + paint	
	Windows	Wooden windows + paint	Steel frame/wood double windows + paint + security bars Wood frame/wood double windows + paint + security bars	Steel frame/wood double windows + paint + security bars	
	Doors	Wooden doors + paint	Steel frame/wooden door + paint Wood frame/wooden door + paint	Steel frame/wood door + paint	
	Ceiling	Wooden boards + paint	Exposed concrete + paint	Thin mortar layer + paint	
	Roof	Galvanized corrugated iron sheet	RC slab + protective mortar	RC slab + bitumen coating + protective concrete t=50mm	
Interior	Floor	Trowel finished concrete	Marble tiling	Marble tiling + mortar	
finish	Walls	Mortar + paint	Mortar + paint	Same as left	
	Ceiling	Wooden boards + paint	Exposed concrete + paint	Thin mortar layer + paint	

Table 2-16	Comparison of main specifications for classroom blocks
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NWFP: North West Frontier Province, RC: Reinforced concrete

(5) Furniture plan

Corresponding to the usage and functions of each room, the minimum required furniture for education and office management purposes will be supplied. The specification will follow standard specifications for similar local facilities. The details and quantities are as described below.

• Classrooms: For the planned capacity of 30 people, 15 sets of two-person desks with two chairs and one teacher's desk and chair set will be supplied. There will be three types of student furniture for middle section classes and upper grades/lower grades of primary section classes. The size of furniture for primary classes is determined taking into account kachi classes and

multiple grade classes.

- Multipurpose rooms: For the planned capacity of 30 people, 15 sets of two-person desks (also to be used as computer desks) with two chairs and one teacher's desk and chair set will be supplied. Assuming usage as multipurpose room, the specifications will be the same as for classrooms (middle section classes).
- Headmistress's office: One office desk and chair set, four chairs for guests, and two cabinets with lockable doors will be supplied.
- Storeroom: Assuming combined usage as a preparation room and/or break room, one work table and four-chair set, and two cabinets with lockable doors will be supplied.

Category	Item	Quantity	Remarks			
Classroom furniture	2-person student desks + 2 chairs	15 sets/room	Same for multipurpose room			
	Teacher's desk + chair	1 set/room				
Headmistress's office furniture	Headmistress's desk + chair	1 set/room				
	Chairs for guests	4 chairs/room				
	Cabinets	2 per room				
Storeroom furniture	Cabinets	2 per room				
	Meeting table + 4 chairs	1 set/room				

Table 2-17 Furniture list

(6) Equipment plan

Assuming computers for students will be used in the multipurpose room by one class with a maximum of 30 people, in contrast to the requested quantity (1 unit per 2 students = 15 computers/room), 5 computers per room (6 students per unit) will be provided as the minimum quantity required for effectively conducting practical classes. Together with this, one black and white laser printer (A4 paper size) will also be supplied for use in practical classes. The use of stand-alone models is envisaged, with a composition that take the area's unstable power supply into consideration as follows.

- Main unit: Desktop type (DVD drive, 19" LCD display, ethernet, keyboard, mouse), extension cable
- Software: Windows 7, MS Office preinstalled
- Individual AVR for computers (Automatic voltage regulator, with UPS function)

2.2.3. Outline Design Drawings

(1) Location map of the project sites

(2) Building layout plan

Northern Sindh: 25 sites

Kh01	GGPS Wapda Colony	Gh01	GGPS Officer Colony Ghotki
Kh02	GGPS Hadi Bux Laghari	Gh02	GGPS Nawab Khan Pitafi
Kh03	GGPS Haji Ali Dad Jogi	Gh03	GGPS Kamoon Shaheed
Kh05	GGPS Bajeed Fakir	Gh04	GGPS Belo Naich
Kh06	GGPS Ameen Patho	Gh06	GGPS Sheroo Mahar
Kh07	GGPS Wazirabad Rajper	Sh01	GGPS Khanpur-II
Kh08	GGPS Gambal Shah	La01	GGPS Gund
Kh09	GGPS Jani Boro	La02	GGPS Nai Gudd
Kh11	GGPS Karim Bux Bhambhro	La03	GGPS Model Community Tharecha
Su02	GGPS Miandad Khoso	Da01	GGPS Kamaluddin Village Kanhiri
Su03	GGPS Sorho	Da03	GGPS Aminani
Su04	GGPS Moto Mirbahar	Da04	GGPS Gharib Abad Radhan
		Da05	GGPS Wali Muhammad Gorar

(3) Floor plan, elevation/cross-sectional plan

Classroom block

- 1. 1F-3CR-HSM type
- 2. 2F-6CR-HSMa type
- 3. 2F-6CR-HSMb type
- 4. 2F-3CR-HSMa type
- 5. 2F-3CR-HSMb type
- 6. 2F-3CR-M type
- 7. 2F-4CR type

Lavatory block

- 1. F-3 type
- 2. F-5 type

Location map of the project sites



NORTHERN PROJECT

KHAIRPUR	R (9 sites)
Kh01	GGPS Wapda Colony
Kh02	GGPS Hadi Bux Laghari
Kh03	GGPS Haji Ali Dad Jogi
Kh05	GGPS Bajeed Fakir
Kh06	GGPS Ameen Patho
Kh07	GGPS Wazirabad Rajper
Kh08	GGPS Gambal Shah
Kh09	GGPS Jani Boro
Kh11	GGPS Karim Bux Bhambhro
SUKKUR (3	3 sites)
Su02	GGPS Miandad Khoso
Su03	GGPS Sorho
Su04	GGPS Moto Mirbahar
GHOTKI (5	sites)
Gh01	GGPS Officer Colony Ghotki
Gh02	GGPS Nawab Khan Pitafi
Gh03	GGPS Kamoon Shaheed
Gh04	GGPS Belo Naich

GHOS	00.5	Ranne		Jinanie
CHOA	CODO	Dele	NI-:	- -

Gh06 GGPS Sheroo Mahar

SHIKARPUR (1 site)

Sh01 GGPS Khanpur-II

LARKANA (3 sites)

- La01 GGPS Gund
- La02 GGPS Nai Gudd
- La03 GGPS Model Community Tharecha

DADU (4 sites)

- Da01 GGPS Kamaluddin Village Kanhiri
- GGPS Aminani Da03
- Da04 GGPS Gharib Abad Radhan
- Da05 GGPS Wali Muhammad Gorar





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	5. NO.	DWG.No.
SITE:		
GGPS Hadi Bux Laghari	Kh-02	02



SIIC FLAN 癿且凶	5. No.	DWG. No.
SITE:		
GGPS Haji Ali Dad Jogi	Kh-03	03



GGPS Bajeed Fakir	Kh-05	04
SITE:		
SITE PLAN 配置図	5. No.	DWG. No.


SIIE FLAN 癿直因	S. No.	DWG.
SITE:		
GGPS Ameen Patho	Kh-06	05



GGPS Wazirabad Rajper	Kh-07	06
SITE:		
SITE PLAN 配置図	S. No.	DWG-No-







Kh-11 GGPS Karlm Bux Bhambhro







GGPS Sorho	Su-03	11
SITE:		
SITE PLAN 配置図	5-No-	DWG. No.





SITE PLAN 配直因 5.1k SITE: GGPS Officer Colony Ghotkl Gh-01





15r

SITE PLAN	记置図	
SITE:		
GGPS Kamoon Shaheed		





SITE	
GGPS Belo Nalch Gh-04	16



SITE:		47
GGPS Sheroo Mahar	<u>Gn-06</u>	1/



SITE: GGPS Khanpur-II Sh-01 18





Nal Gudd	La-02	20
LAN 配置図	S. No.	DWG. No.

SITE: GGPS



GGPS Model Community Tharecha	La-03	21
SITE PLAN 配直凶 SITE・	5. No.	DWG.No.







SILFLAN FLEID	S. No.	DWG.No.
SITE:		
GGPS Aminani	Da-03	23



SITE PLAN 配置図	
SITE:	
GGPS Gharlb Abad Radhan	





	S. No.	DWG, No.
SITE:		
		9E
GGPS Warl Muhammad Gorar	Da-05	20

























X1

(X2)

(X3) (X4) 15600 (X5)

(X6)







SEPTIC TANK PLAN



ELEVATIONS





ROOF PLAN











ROOF PLAN







ELEVATIONS



2.2.4. Implementation Plan

2.2.4.1. Implementation policy

(1) Basic items for project implementation

After obtaining cabinet approval from the Government of Japan, an Exchange of Notes (E/N) is signed between the governments of both countries regarding project implementation. Also, a Grant Agreement (G/A) is concluded between the Government of Pakistan and JICA based on the E/N, and the project will be implemented in accordance with the framework of Japanese Grant Aid. Subsequently, the Government of Pakistan will conclude an Agent Agreement (A/A) with a Japanese Procurement Agent (hereinafter called "the Agent") based on the G/A and the Agreed Minutes on Procedural Details (A/M) attached to the E/N and implement the Project. So that the project can be implemented smoothly, the Agent will work as an agent for the Government of Pakistan and implement the project in their place, conducting the fund management and contract management (supervision consultant, contractors, specialized furniture/equipment suppliers) pertaining to the Project and manage its progress.

(2) **Project implementation structure**

Committee

After concluding the E/N and G/A, the governments of both countries will establish a committee to conduct discussions and make adjustments necessary for appropriate and effective Project operations. The Committee will mainly consist of the Sindh E&L Department, which will be the implementing organization, and the JICA Pakistan office, with a representative of the Agent participating as an advisor. If necessary, the Embassy of Japan may participate as an observer, and the Officers from the target regions/districts may also participate.

Pakistan side implementation structure

The responsible and implementing organization for the Project on the Pakistan side will be the Sindh E&L Department. Under the Special Secretary (Education), this department takes charge of overall coordination with relevant agencies within the provincial government including the Planning and Development Department, Works and Services Department, and Finance Department. In addition to managing the overall project, it will also be in charge of contacting and coordinating with the Economic Affairs Division, Ministry of Economic Affairs and Statistics, which controls the foreign aid at a federal level. Also, it will supervise the DEO (District Education Officer) and TEOs (Taluka Education Officers) of the target districts and talukas that supervise the management of elementary education, ensure the implementation of works to be borne by the Pakistan side such as distribution of electrical power supply to the sites, as well as obtain the permits and/or agreements necessary for project implementation from relevant agencies. Matters pertaining to the E/N between

the governments of both countries as related to Project implementation will fall under the jurisdiction of the Federal Ministry of Foreign Affairs.

Japan International Cooperation Agency (JICA)

The Japan International Cooperation Agency (JICA) is responsible for concluding the G/A with the Pakistan side implementing agency and monitoring and supervising the Project to be carried out pursuant to Japan's Grant Aid scheme.

Procurement Agent (the Agent)

The Procurement Agent will conclude an A/A with the Sindh E&L Department, which is the implementing organization on the Pakistan side. In accordance with this agreement, the Agent will select the Japanese consultant in charge of construction supervision, the contractors and the furniture/equipment supplier, and make contracts with each of them for Project implementation. The Agent will establish a structure as shown below to execute operations. The local base of the Agent will be Karachi, taking into account the ease of contact and coordination with the Sindh E&L Department.

- Project Manager (Japanese: operations on a spot basis)
 - As the representative from the Agent, the Project Manager will supervise the entire project and oversee tendering, the conclusion of various contract, and will manage funds. In addition, he will conduct necessary discussions and coordination if a design change becomes necessary due to funds situations and handle the procedures for the change.
 - He will travel to Pakistan at the commencement of the project implementation, between tender evaluation and conclusion of work contracts, and for the time between work completion and the end of operations, and report to relevant organizations as necessary regarding tender evaluations and construction work progress, etc.
- Deputy Project Manager (Japanese: operations in-residence)
 - He will remain in-residence in Pakistan during the period from the commencement to completion of the Project. He will act as the resident representative of the Agent to contact and coordinate with various relevant organizations, contractors, suppliers and the supervision consultant.
 - In the selection of local contractors and equipment suppliers, he will assist the Project Manager in overall management by conducting operations form tendering to signing of contracts (checking tender documents, preparation/execution of tendering, evaluation of tenders, and reporting to the Pakistan side).
 - He will check the status of construction supervision by the consultant, and will provide guidance, advice, and directions for improvement as necessary.
 - He will periodically report to relevant organizations regarding the progress and problems of the Project, and coordinate with the relevant organizations as necessary.

- He will receive, inspect, and confirm the reports on intermediate inspections, completion inspections, and defect inspections conducted by the consultant, as well as perform work pertaining to the payment for contractors.
- Domestic Staff (Japanese: operations in Japan, in charge of documentation and administrative works necessary in Japan)
 - He will confirm tender documents (contracts) and obtain approvals in Japan.
 - He will support the Project Manager and Deputy Project Manager from Japan, confirm contracts, and coordinate operations in Japan related to contract procedures and payments.

Supervision Consultant

For the Project, a Japanese consultant will conduct construction supervision and provide technical support for the Agent during tendering stage, based on the service agreement made with the Agent. The system for the supervision will be established with the use of local engineers and consultants under a Japanese resident consultant/engineer. The Japanese consultants will conclude a contract with the Agent based on a recommendation by JICA.

Contractors and furniture/equipment suppliers

Based on a works/procurement contract concluded with the Agent, contractors and furniture/equipment suppliers will complete facility construction and furniture/equipment procurement within the period of execution of work in accordance with contract.

Project implementation structure

The relationship between each organization and the structure of flow in the project implementation stage are shown in the following diagram.



Figure 2-2 Project implementation structure

2.2.4.2. Implementation conditions

(1) General construction/procurement conditions and regional characteristics

1) General conditions

As the target area of the Project, Sindh province has Karachi city, the biggest commercial city in Pakistan and arterial highways in the province are in good condition, there are no issues in procurement and transportation of the construction materials and equipment that are commonly used in the area. Many construction-related companies including major construction companies and consulting firms engaged in large projects in neighboring countries are based in Karachi, the provincial capital, or Hyderabad, the central city in the inland area of the province. However, concerning materials and equipment, there are risk factors associated with cost and construction period such as difficulty passing through during the rainy season and increase in transportation cost due to rising fuel cost because many industrial products will be procured from Karachi or the industrial district between Karachi and Hyderabad and transported by land over a long distance of about 350-500 km to the northern area where the project sites are located. For construction planning, construction period and estimated cost will have to be determined with consideration for such risks.

2) Transportation conditions

As the planned sites are located along National Highway 5, National Highway 55 or a provincial road, there will be no major problems for access and materials and equipment can be transported by large vehicles all the year around. However, some sites have issues with a branch road from an arterial road in the rainy season and some measures, e.g. transportation of major materials before the rainy season, will have to be taken.

3) Construction companies

In Pakistan, construction companies involved in public works are registered at the Pakistan Engineering Council (PEC) in 8 categories of CA, CB and C1-C6, according to the contract amounts they are able to accept, etc. Many of the construction companies in the highest class carry out large private projects inside/outside the Pakistan. While they are highly capable of financial management and quality control, they have no experience with or are not willing to take small to mid-sized projects for school construction like the Project. Such small to mid-sized public works are mostly carried out by those in CB class and below and some of the companies in C3 class and above have sufficient capabilities for constructions of the size of the Project. However, none of the construction companies in C1 class or below did make a bid for the preceding Southern Project. There are various possible barriers to international projects, such as a boom in the domestic construction market, weak financial base, currency and language. However, breaking up the Project into smaller orders, e.g. by site, is not desirable from the viewpoint of assurance of the quality level required of Japan's grant aid project, and it is more realistic to select construction companies mainly

from among those in CB class who are considered to be capable of taking an order for a similar size lot, based on the experience in the Southern Project. It is difficult to find construction companies with required capacities outside Karachi and Hyderabad because in other areas many of the companies registered in higher classes are small private companies and hire staffs for each project. Therefore, it is appropriate to allow a tender by those based in either of the two cities.

Regarding labor, although there are no problems in procuring common labor, it will be difficult to procure technicians and engineers from within the area for types of works that are not common in the area. Thus, it is essential to make a plan that considers ensuring quality by avoiding the use of special methods and specifications so that labor can be procured locally.

4) Construction delay

During the interviews, W&S, local consultants and construction companies said that construction delay is common regardless of the PEC registration class of the company, mainly for such reasons as 1) delay in payment from the orderer, 2) deterioration in financial conditions of the construction company, 3) lack of resources such as materials and workers, and 4) impact of the rainy season. Possible measures to prevent such delay include 1) close investigation of the financial conditions of construction companies at the time of tender evaluation, 2) efficiency improvement of approval procedures from billing to payment, and 3) consideration of the rate of advance payment. It is important to assume a firm attitude to not easily allow extension of the deadline as well as to request the construction company to develop a thorough quality control plan in advance so that there will be no reworking.

5) Matters to be reflected from the Southern Project

Below are the major matters and issues identified from the construction status of the Southern Project, which has been implemented for 6 months, that should be reflected in the Project.

- A 12-month period is actually like 10 months because it includes Ramadan and two Eid holidays as well as other cultural holidays.
- It is difficult to hire skilled workers in rural areas. Limited manpower has to be used at multiple sites.
- Due to a delay in construction at preceding sites in an originally planned "staggering" method, the same type of work had to be carried out in all sites at the same time, causing even longer delays.
- The volume of foundation work in the Southern Project is larger than the local standard and it is taking longer than it would normally take.

Considering that the works in the Project will be carried out in more remote and dispersed locations compared with the Southern Project and the construction conditions are poor, it is important to establish an appropriate construction schedule based on the results and lessons from the Southern Project when the implementation schedule is formulated.

(2) Furniture/equipment procurement conditions

There are many large furniture suppliers and factories located in and around Karachi-Hyderabad, and many of the companies have experience in supplying furniture for educational facilities. From looking at the results of similar projects, it was determined that these contractors possess a sufficient capacity to fabricate and supply the furniture for a project of this size. Assuming there will be fund adjustment according to the result of tendering for facility construction, furniture suppliers will be selected through single stage tendering in line with the standard procurement method in the local area.

In the Project, the only equipment to be supplied is computer equipment. As the equipment cost will also be adjusted according to the result of tendering for facility construction, suppliers will be selected through single stage tendering as is the case with furniture. There are several specialized suppliers in Karachi, and there are no problems in supplying and technical capacities, including maintenance. Although it will be necessary to adjust delivery times for batches depending on facility construction progress, this type of management is fully possible.

(3) Other points for consideration

1) Ensuring security

Pakistan is not included among the countries described by JICA as a "country or region where security risks are remarkably high, and it is necessary to implement operations in an environment that differs from normal conditions," nor is it considered eligible for added expenses related to safety measures. However, in addition to the presence of 1) acts of terrorism by radical Islamic groups, 2) conflict between religious sects and tribes, 3) acts of terrorism and kidnappings by anti-government tribes, and 4) conflict with the neighboring India, the security situation has also worsened considerable due to the epidemic of general crime. Because of this, various travel restrictions and added measures are necessary for the activities of Japanese staff members. This may include prohibiting entrance into designated areas, constant protection by a private bodyguard or armed police officer, and/or safety measures for residences. Since the target sites are distributed throughout a wide area for the Project, the Japanese supervisor must travel around a broad area, with long commute times in order to properly conduct supervision. In order to avoid safety risks to the greatest extent possible, the following points must be considered for the project.

- The number of Japanese staff members working locally and their travel time must be kept to a minimum, and an implementation system will be created to maximally utilize local resources (local consultants, security companies, police, etc.).
- The project will incorporate additional measures necessary for safety such as anti-crime measures for offices and residences, allocation of suitable anti-crime vehicles, and the hiring of armed security guards.
- Local Japanese government agencies and the Pakistan-side counterparts will be kept in close communication in order to be aware of changes in the security situation. Movements will be

made while observing the items confirmed as important safety measures.

2) Exemption from taxes

The procurement of all materials, equipment, and services pertaining to the Project will be exempted from taxes, as based on Pakistani tax laws. An outline of the taxes anticipated for project implementation and the tax exemption measures are shown in the table below.

Item/timing	Type of tax		
	General Sales Tax Generated when procuring materials and equipment	Federal Excise Generated when procuring materials and equipment	Sindh Sales Tax on Services Generated when contracting services
Eligible category	Sales tax when subcontractors purchase materials and equipment (16%)	Sales tax when subcontractors purchase materials and equipment (percentage depends on goods)	Orderer pays when payment for services is rendered (generally 16%)
Eligible transactions	Subcontractor and company selling materials, Procurement Agent and equipment supplier	Subcontractor and company selling materials	Sindh E&L Dept. and Procurement Agent
Procedures (after PC-1 approval)	Request made to the E&L Dept. to have the EDA order the issuance of an SRO by the FBR.	Request form including rejection/acceptance inquiry for tax exemption is issued by the Sindh E&L Dept. to the Karachi regional tax bureau.	Request form including rejection/acceptance inquiry for tax exemption is issued by E&L Dept. to the Sindh Revenue Board for the eligible transaction.
(before work contract)	EDA orders issuance of an SRO by the FBR. FBR issues an SRO ↓		*Subcontracts for public facility construction are eligible for tax exemption (SRB notice of April 30, 2012)
(purchase/ payment)	Subcontractor presents a copy of the SRO and the contract with the Procurement Agent to purchase items at the tax-exempt price.		

 Table 2-18
 Outline of tax exemptions

* EAD: Economic Affairs Division, FBR: Federal Board of Revenue, SRO: Statutory Regulatory Order

3) Contract and dispute settlement

For disputes related to construction work in Pakistan, the order of settlement method is: 1) settled by consultation between contracted parties, 2) mediated through the arbitration agency designated in the contract, and 3) settled in a court of law. However, if there is no established arbitration agency, dispute settlement is normally handled by arbitrators. Many of the disputes pertaining to works contracts involve delayed payment by the ordering side, but for this Project, there is almost no possibility of this problem occurring. However, since there have been cases of dispute in similar projects, an advisory contract will be concluded with an attorney as a minimal system for receiving legal assistance during consultations or mediations if disputes occur, and for checking contracts, etc. from a legal aspect. It is also important to move forward with the project under a close cooperative relationship with the Sindh E&L Department . The attorney will be selected from those who have experience working with the implementing organization of the
recipient country, foreign aid agencies, Japanese companies, and/or Japanese diplomatic establishments.

2.2.4.3. Scope of Works

(1) Scope of Works

When implementing this project with Japan's Grant Aid, demarcation of works between Japanese side and Pakistani side are as follows. Note that the general obligations to be done by Pakistani side within grant aid projects are as per the following chapter.

a) Obligations of the Japanese side

Facility Construction	-	In 25 sites in the northern Sindh, construction of 26 classroom blocks (a total of 119 classrooms and ancillary rooms) and 24 lavatory blocks
	-	Installation of plumbing and electrical systems on the premises of the above facilities
	-	Procurement of educational furniture for use in the above facilities
Equipment Procurement	-	Procurement and installation of computers for educational use (a total of 125 sets) on the 25 sites

b) Obligations of the Pakistani side

The following works within the required sites (details are as per the next chapter)

- Securing land for the construction of facilities (all sites)
- Securing temporary classrooms on the sites where the existing classrooms will not be usable during construction
- Provision of land for temporary facilities for construction (e.g. temporary offices, places to store material/equipment, workshops) where necessary
- Leading-in electricity (three phase low-voltage of 220/400V) and supplying power to the existing facilities
- Removal of obstacles before construction

(2) Division of lots for contracts and plan of tendering

1) Composition of tender batches and contract lots

The Project focuses on a wide area that covers six districts in northern Sindh, and will upgrade the facilities of 25 schools spread throughout the area. The components of assistance are the classroom blocks, lavatory blocks, boundary walls, educational furniture, and computer equipment. The scale of each site is a maximum of seven classrooms, and while the floor area is less than 500 m^2 , many sites have different locational conditions such as being narrow, their shape and situation of the surroundings. It was hence decided that in order to guarantee the expected quality, it will be necessary to develop the design and supervise construction works taking into account the individual situations of each site. Likewise, in coping with the fluid local law and order situation, various restrictions on the activities of the Japanese nationals are anticipated, and therefore to ensure that the project is implemented on time, number of lots and sites must be narrowed down for limiting the scope of the Japanese supervisor's activities, and a construction scale in each contract lot must be set enabling the Japanese supervisor's cyclic and periodical visits to the sites.

Based on the above conditions, after narrowing the focus of the Project to the northern Sindh (6 provinces and 25 sites), the composition of the units of tender (batches) and contract lots is planned as follows:

- Neighboring districts will be grouped. Each lot will be for 7-9 sites so that CB class construction companies who have experience in the Southern Project can easily participate in tendering. There will be 3 lots in total.
- When lots are determined, each supervision (management) team should not be in charge of 10 or more sites so that there will not be too much workload concerning supervision (management).
- Khairpur (9 sites), which is a single district and can be approached either from Hyderabad or Sukkur, will be the first lot (facilities) where pilot works will be carried out to identify particular issues in the northern area, and measures will be used for later lots.
- The construction period for each lot will be set at 12 months. Lot 2 (facilities) will be started 6 months after Lot 1. Lot 3 (furniture for Lot 1) and Lot 4 (equipment for Lot 1) will be started when Lot 1 is about to be completed. Lot 5 (facilities) will also be started in a phased manner when Lot 1 is completed. In this way, there will not be more than two lots of works at the same time. (Two lots is the maximum that two supervision teams can manage.)
- Educational furniture and PC equipment will be separated from facility construction as they
 might be buffers for project cost adjustment depending on the result of tendering for facility
 construction. They will be divided into lots of required quantities according to the scale of each
 facility lot (Lot 3/4 for Lot 1 facilities, Lot 6/7 for Lot 2/5 facilities).
- If it is necessary to adjust the project cost depending on the results of the tender for each batch, options will be considered and discussed in the following order; 1) adjustment or reduction of equipment quantity, 2) adjustment or reduction of furniture quantity, and 3) elimination of priority C sites from the sites included in tendering. In case of 1) or 2) above, adjusted/reduced furniture/equipment will have to be prepared by the recipient country.
- In case the estimated amount of raised funds that will be determined after transfer of funds and completion of detailed design is severely short due to foreign exchange fluctuations, adjustment with priority C sites in the first lot will be considered.

The collective tender batches and composition of contract lots above are shown in the table, and a diagrammatic plan on the next page.



Figure 2-3 Map of the Target Sites by Tender Batch and Contract Lots

Tender Batch	Contract Lot	Component	School/Site	No. of Schools	Component for adjustment
Batch 1	Lot 1	Facility	9 schools in Khairpur District	9	Schools with priority rank C: Kh05, Kh11
Batch 2	Lot 2	Facility	3 schools in Sukkur District 5 schools in Ghotki District 1 schools in Shikarpur District	9	
Batch 3	Lot 3 Lot 4	Furniture Equipment	Schools in lot 1	9	 Computer equipment Furniture
Batch 4	Lot 5	Facility	3 schools in Larkana District 4 schools in Dadu District	7	3) Schools with priority rank C: Da02
Batch 5	Lot 6 Lot 7	Furniture Equipment	Schools in lot 2 and 5	16	 Computer equipment Furniture

 Table 2-19
 Composition of Contract Lots and Tender Batches

2) Plan of Tendering

The tendering will take into account the regulations and guidelines of Pakistan for public

procurement as well as the local practices and requirements of tender, and will be executed in accordance with JICA's "Procurement Guidelines for Grant Aid for Community Empowerment." It is determined that contractors for the facility construction will be selected through competitive tender focused on "contractors from the recipient country," while the supplier for equipment will be selected based on competitive tender either domestically or with no restrictions on nationality. As for tender documents, The E&L Department will receive reference materials for preparation of tender documents from JICA and hand them over to the procurement agent after checking the contents. The procurement agent will review the materials, obtain approval from the E&L Department after making adjustments as necessary, and put the final tender documents together.

(3) Public Procurement Criteria and Standard Tendering Conditions in Sindh Province

In Sindh Province, the Public Procurement Regulatory Authority (SPPRA) stipulates the regulations related to public procurement as well as the guidelines related to standard tender documents and their usage. While the construction of educational facilities as far as the design, tender and supervision of works is generally the responsibility of the District Works & Services Department (W&S Dept.), in this instance the tender will also be implemented in accordance with SPPRA guidelines. Likewise, the PEC also individually stipulates the standard tender documents, and the composition and contents are more or less the same. Regarding the facility construction, depending on the scale of the contract amount, three types of form are stipulated: 1) small-scale construction based on a lump-sum contract (a contract value of 2.5 million Rs. or less), 2) small-scale construction based on a unit-price contract (2.5 million to 50 million Rs.), 3) large-scale construction (over 50 million Rs.). Tendering for the Project will be conducted in accordance with Japan's own guideline. It has been confirmed with SPPRA that tendering will be conducted on the conditions and in the procedures shown in the following table.

Item	Details
Applied regulation	- JICA Procurement Guidelines of Japan's Grant Aid for Community Empowerment
Notification of Tender	- To be advertised in 3 newspapers (English/Sindhi/Urdu) and HPs of the implementing agency/ SPPRA (English)
Pre-Qualification (PQ)	- Notification to deadline: minimum 15 days for domestic tender/45 days for international tender Evaluation to approval (no rules), generally around 60 days from notification to approval
Tendering documents	- Tender instructions, bidding forms, contract drafts, conditions of contract, technical specifications, bill of quantities (BQ), drawings
Circulation deadline	- Notification to deadline: minimum 15 days for domestic tender/45 days for international tender Generally around 30 days from notification to tender opening
Tender security	1% to 5% of the bid value (normally around 1% for the present case)To be issued by a bank or a surety company
Tender evaluation	 Organization of the Evaluation Committee by the related agencies Evaluation period: no rules (evaluation to issue of awards - on average 30 to 45 days) Public notification of the result of evaluation: on HPs of the implementing agency/SPPRA, 7 days before the awards are issued

 Table 2-20
 Application of SPPRA Procurement Regulations

Advance security	- Standard 10%, maximum of 15%
Liquidated damage	- 0.05% to 0.10% of the contract amount per day, to a maximum of 10%
Performance	- Less than 10% of the contract amount
security	

In the tendering for construction of educational facilities conducted by other donors and the E&L Department in the past, PEC classes were specified according to the estimated bidding price, and general competitive tendering with conditions was conducted for the companies in the specified classes. Qualification and technical evaluation processes were conducted with a pass-or-fail decision or with point rating showing the minimum base point. Of those who passed that condition, the tenderer who submits the lowest tender price shall be designated as the prioritized negotiator for the contract. The following table shows the normal qualification screening criteria and the criteria used for the Southern Project.

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Item	Details (the specific values are for reference)	"Southern Project"
Eligibility	- Valid PEC registration in the applicable area and bidding potential class	3 years registration in PEC with Class 3 or upper in the field of General building construction (CE-10)
Nationality		To be a domestic company
Business history/construction track record	 A track record of construction as the prime contractor (more than 1-3 projects over the past 5 years) Works of similar nature, in function of facilities, in type of works, or in geographical conditions 	Same as left (more than 2 projects over the past 10 years)
Capabilities of required personnel	 Personnel plan (Qualifications and career history of main personnel and other technical personnel) Academic record (qualifications held) Professional record (no. of years' experience and track record of similar work) 	Same as left (only for Project manager, Chief engineer and Electrical engineer)
Equipment possessed	 Possession of necessary equipment or plan to lease/purchase, etc. 	Same as left
Financial situation	- Financial documents (last 2-3 years)	Same as left (last 5 years)
	- Construction in hand/summary of contracts	Same as left (assessement of bid capacity)
	- Annual sales volume (past three years, 1-2 times the scheduled price or more)	Same as left (About the same amount of the scheduled price or more)
Others	- History of disputes/mediation, and black listings (if any)	Same as left

 Table 2-21
 Normal Qualification Screening Criteria (PEC)

For the Southern Project, being a Pakistani firm was added to the requirements for eligibility and the bid capacity is also added to the criteria for evaluation. Although all the criteria are more lax than the standard criteria, tailored to the actual conditions of the construction companies in Pakistan, so that as wide range of companies as possible would participate, it had no effect. For the Project, more creative measures seem to be required so that construction companies can participate in tendering in a less burdensome manner while the quality of participating companies is maintained.

Eligibility for participation shall be determined by the Procurement Committee (Committee for the Project) for each project.

(4) Selection of Construction Contractors

For the Project, construction companies will be selected through competitive tendering in accordance with Japan's Grant Aid Procurement Guidelines (former Procurement Guidelines of Japan's Grant Aid for Community Empowerment) in view of the local procurement standards and common tendering methods (procedures and conditions). Although the pre-qualification (PQ) process was conducted to preselect companies with appropriate capabilities for Lot 1 of the Southern Project, selection of construction companies for Lot 2 and Lot 3 (Batch 2) was conducted in a more simple method without PQ where participants submitted price quotation and technical proposals at the same time so that the tendering period would be shortened and the whole process of the project implementation would be accelerated. As the information and experience obtained from the Southern Project can be used, tendering for the Project will be planned with a single stage without PQ. More specifically, participants will submit price quotations and technical proposals at the same time. At the tender opening, submitted price quotations will be opened and tender evaluation will start after prices are read out. In that case, the minimum required tendering period before issue of awards will be 9 weeks in total -1) 5 weeks for tender announcement in newspaper, etc., distribution of tender documents and tendering (submission of tender documents), 2) 2 weeks for tender evaluation, and 3) 2 weeks for approval of the tender evaluation report. For tender evaluation, approval will have to be obtained from the Pakistan side through the following processes.

- The Agent will create a draft of the evaluation report and submit it to the E&L Department
- After checking the contents, the E&L Department will hold a meeting of the Committee approve the result of tender evaluation and report to SPPRA.
- The Agent will sign the minutes concerning the results of tender evaluation with the E&L Department and issue awards to the successful bidders.

In the actual cases of the Southern Project, participants were limited to PEC registered companies in higher classes for reasons related to construction abilities in multiple sites, financial strength, manpower and equipment. For this project, criteria will be set with a focus on CB class. In terms of the ease of procuring materials and equipment as well as communication between relevant parties, it is preferable to focus on construction companies that have profitable bases in Karachi or Hyderabad.

(5) Selection of Equipment Supplier

As opposed to the facility construction, equipment will be procured by the Provincial/District E&L Department. In case of this Project, the scheduled equipment is only basic specification of computers, and bearing in mind the need for after sales service such as maintenance and software updates, it is planned to select an equipment supplier from specialized computer suppliers through

national competitive bidding. Tendering for equipment will be divided into separate lots for furniture/equipment of Lot 1 (Lot 3/4) and furniture/equipment of Lot 5/7, and will be conducted immediately after Lot 2 tenders are opened and rough financial projections are obtained (after completion of tendering for Lot 2). When making the selection, management capability in relation to transportation and installation (initial setup) across the dispersed sites will be carefully assessed, and qualification requirements will be established that emphasize a track record in procurement for educational facilities with similar content and scale.

Eligibility for participation shall be determined by the Procurement Committee (Council for the Project) for each project.

2.2.4.4. Consultant's Supervision

(1) Contents of the supervision of works

During the preparatory surveys, draft tender documents including detailed designs drawings will be prepared. At the implementation stage, in principle the Japanese consultants overseeing the preparatory surveys will conclude a consultancy agreement with the Agent after obtaining the recommendation of JICA, and will provide 1) tendering assistance, 2) construction supervision and 3) procurement supervision under the guidance of the Agent.

When performing their duties, consultants will aim to push ahead with the project based sufficiently on the framework of Japan's Grant Aid and the concept of the outline design in addition to cooperating with the Agent's resident personnel. The consultants will also give prompt and suitable advice to personnel involved in the construction, and will provide supervision so that facilities of the required quality based on the contract documents are completed on time. The specific work details and systems for each stage are as follows:

1) Assistance with the tendering

Since the resident office of the Agent, the Sindh E&L Department, other relevant agencies of both nations, and many of the contractors/suppliers expected to participate in the tender are based in Karachi, one Japanese supervisor will be dispatched to Karachi with the tender for each batch, and perform the following duties by employing necessary personnel for assistance in Japan and Pakistan.

- Assistance in the preparation of tender documents: Review of the draft tender documents including detailed design drawings prepared in this survey, and assistance with the Agent to prepare the final tender documents and obtain approval from the implementing organization.
- Technical assistance with the tender: Assistance with the technical side of the sequence of duties related to the tender implemented by the Agent (e.g. pre-qualification, clarifications, additional instructions, tender opening, tender evaluation).

• Compiling a construction manual: Compiling a manual for construction as a work in Japan. So that the manual ensures the same quality of works for each site, the points in carrying out the works will be compiled in a form easily understandable to local contractors.

2) Supervision of works

To carry out construction supervision, a Japanese engineer will be dispatched for each batch. Under his supervision and guidance, the following assignments will be carried out with the assistance of a local consulting firm as well as directly hired local assistants.

- Preparation of standard documents for the supervision of construction works: In order to ensure the quality of the construction supervision according to the different sites and different supervising engineers and aim for standardized work, a standard form for a checklist, trial/test result report form and regular report form that cover points in supervising the works will be prepared.
- Approval of the construction plan: The construction diagrams, construction plans, schedules and samples submitted by the contractors will be checked and approved without delay. If questions arise in relation to the contractual documents, explanation will be given to the contractors promptly.
- Site Supervision: A team of a chief engineer and assistant engineers, assigned on the basis of a person per 2 to 3 sites, will be stationed at the area base established for each lot, from where they will supervise daily works on the sites (confirmation, inspection, etc. concerning quality assurance, compliance with the schedule, safety ensuring, etc.) through visiting the sites on a daily basis. In the event of defects or delays, appropriate measures will be taken such as instructing/guiding the contractor in improvement.
- Routine Site Visits: Japanese supervisors will establish a resident office in the base city and will regularly patrol all sites with the objective of managing the progress of the project overall and ensuring a standardized quality of workmanship at each site.
- Supervision by Short-term Dispatch: In such specialized areas as structure and electric installations, depending on the progress at each site, specialized engineers will be dispatched on a trip basis to provide advice to resident engineers and witness inspection and test-run.
- Quality Control Test: For the Southern Project, where the target sites are dispersed in a wide area far from official testing laboratories, a directly controlled testing laboratory has been established for the intensive implementation and management of major material tests for all sites to ensure that tests can be conducted when necessary.
- Convening Meetings: Regular meetings with the contractors will be held to confirming the progress and schedule of the construction. In addition, consultants will attend regular meetings held by the Agent and the Sindh E&L Department, and will report on necessary details.
- Design Changes: Where necessary depending on such a cause as the circumstances on the

premises or requests from the recipient country, design changes will be done in accordance with the procedures defined in the contract.

- Approval of Payment: In response to invoices for payment from contractors, performance will be confirmed and certificates of payment will be released to the Agent.
- Preparation of Reports: In addition to monthly progress reports, the reports defined in the contract will be prepared and submitted to the Agent.
- Completion Inspection/Defect Inspection: A completion inspection will be conducted at the end of the construction, and the completion documents, including the completion report and other necessary documents will be submitted to the Agent. Similarly, at the end of the defect liability period, a defect inspection will be conducted, and after confirming that defect remedy works have been completed, a final inspection report will be submitted to the Agent.

(2) Framework for Supervising Works

The consultant will establish the following framework in Pakistan to carry out the above-mentioned works.

- Base for Supervision (Japanese consultants): Sukkur, the central city of the northern area, is about 9 hours' drive from Karachi and it would be difficult for Japanese consultants to evacuate during an emergency. There are only a limited number of flights and it is also far from the bases of the relevant parties with whom Japanese consultants will have to have close communication and cooperation, such as the Agent, the E&L Department, construction companies and suppliers. Considering such disadvantages and from the viewpoint of placing top priority to safety management for Japanese personnel, the supervision base for the Project will be located in Hyderabad, of which security situation is known through the Southern Project, and Japanese resident supervising engineers (up to two) will be stationed at the base to carry out their assignments. In Sukkur, located roughly in the center of the target area, an office with residence will be established and used as the activity base for directly-hired local engineers.
- Supervision Team of Directly-Hired Local Staff: Local assistant engineers who will assist Japanese engineers in promoting the progress of the overall project and have communication and discussion with local consultants and other relevant parties as well as the quality control team who will deal with quality control testing, especially concrete compressive strength testing, will be directly hired and directly supervised by Japanese engineers.
- Support Structure in the Headquarters: A structure to provide technical support to resident supervisors will be established by appointing a Japanese consultant, mainly chief, in each specialty field as a person in charge of the project. Moreover, engineers in the most relevant field will be dispatched from the headquarters on a short-term trip about three times according to the progress of the construction- at the time of the commencement of construction for each lot, during construction and at the time of completion for witnessing major inspections, etc.

They will also carry out assignments in Japan such as periodic reporting to JICA, procedures in Japan for design changes etc. and communication and discussion with the procurement agent.

Local Consultants: For local consultants, a supervision base will be established for each lot and
overall supervision activities on sites will be carried out at such bases for units of a few sites.
For electrical, structure and QS, specialized engineers will be dispatched ad hoc and a structure
will be established so that technical support will be provided according to the local situation.

Based on the above, the construction supervision framework of the consultant will be as follows:



Figure 2-4 Construction Supervision Framework

(3) **Procurement supervision**

Procurement supervision for the Project will be provided by a Japanese consultant recommended by JICA, according to the consultancy agreement signed with the Agent. The target equipment will be educational furniture and PC equipment and they will be limited both in number of items and quantity without any complicated items. Personnel dispatched for construction supervision will have more than one role whenever possible so that operations will be carried out in an efficient manner. Specifically, Japanese resident engineers dispatched for construction supervision will also be in charge of overall communication and operational coordination in Pakistan, and a supervising engineer dispatched from the headquarters on a short-term will provide supervision for procurement during his stay. Concrete operations of the consultants in tendering and procurement stages will be as follows.

• Tendering Support: Under the guidance of the Agent, consultants will provide assistance mainly

from technical aspects for such tendering operations as preparation of tender documents, obtainment of approval from the implementing organization, preparation and holding of a tender meeting and tender evaluation.

- Procurement Supervision: Consultants will carry out the following operations at the right timing for each equipment lot.
 - Confirmation of fabrication drawings for furniture and other items to be fabricated, witness of various inspections, and coordination of transportation and delivery dates
 - Supervision and guidance on installation, adjustment, test-run and initial operation instruction
 - Operations related to handover inspection and delivery including confirmation of delivery, numerical check and confirmation of installation

2.2.4.5. Quality Control Plan

The planned facilities will be constructed by local contractors based on the local standard design and construction methods. When implementing quality control, items below will be carried out with an emphasis on structural works which has a major effect on basic performances such as strength and durability. The test methods and material standards conform appropriately to local standards generally applied in Pakistan or international standards such as BS and ISO. However, as it is assumed that testing devices will be brought in for concrete compressive strength and slump tests that will be frequently conducted, Japanese standards will be applied. Likewise, in order to maintain the quality under severe conditions of high temperatures and dryness, the concrete will be controlled by paying close attention to countermeasures against excessive heat during and after casting.

Item	Methods
Ground	• After excavating for the foundations, the ground conditions at the design excavation level will be visually examined and then checked with a soil bearing test if there is a risk that it falls below the required soil bearing capacity.
Building location	• Using a surveyor's instrument, benchmarks will be set and the location of the buildings will be marked, and this will be confirmed with the consultant and contractors as witnesses.
Reinforcing bars/ steel-profiles	• Material quality will be verified for each supplier and type of re-bars by checking mill sheets, and by conducting a tensile strength test in an official testing laboratory for each diameter of re-bars.
Re-bar arrangement	• Before casting the concrete, re-bar arrangement inspection witnessed by the consultants and the contractor will be conducted, and the quantity, location, accuracy, joints, fixed lengths, and installation of spacers will be checked.
Cement	 Material quality will be confirmed by checking test result reports acquired from manufacturers. If storing on-site, instructions on an appropriate storage environment and number of stacking bags will be given so as to prevent hardening due to dampness.

 Table 2-22
 Quality Control Items

Aggregate	 At the official testing laboratory, mass, particle size distribution and water absorption tests will be implemented once per site. For each delivery, the maximum particle diameter, silt content and water content will be checked.
Concrete	• A water quality test for mixing water will be implemented for each site at the official testing laboratory.
	• Blending the contents according to the standard composition is the basis, and likewise the prescribed 28 day strength is tested through trial mixing.
	• The water quantity will be determined through a slump test and will be controlled so as to be under the maximum level stipulated in the specifications.
	• Compressive strength tests will be conducted approximately 5 times per site to confirm that the 28 day strength average of 3 samples exceeds the quality control strength.

For the major control items listed above, consultants will develop check sheets in advance so that they can be used at the sites, and file and keep them after both the consultant's supervising engineers and the contractor's engineers checked the sheets.

2.2.4.6. Procurement Plan

The construction materials and equipment used in the Project conform to the general specifications and standards of the area, and almost all are general purpose materials commonly used in local educational facilities. The primary materials of the aggregate (sand, gravel or crushed stone), cement, and bricks are easily procurable within the Province, and imported materials or industrial products ordinarily used under local specifications are easily procurable from the periphery of Karachi. Furnitures that require manufacture also accumulate in factories on the outskirts of Karachi, and there are no problems with the manufacturing or technical capabilities. However, as there are only a limited number of manufacturers, orders will have to be placed at appropriate timing and supervision will have to be provided so that the construction schedule will not be affected. Procurement categories of major items are as shown in the following table.

i										
Name of Equipment & Materials	Procurem Source	ent	Notes							
	Pakistan	Third Country	PS: Pakistan Standards							
Construction materials										
Cement	Yes		Domestic products will be procured from a factory in the province.							
Sand (fine aggregate)	Yes		River or crushed sand from the periphery of each site will be procured							
Crushed stone (coarse aggregate)	Yes		Will be procured from crusher plants within the province							
Reinforcing bars	Yes		Domestic products available in the local markets (conforming to PS) will be procured							
Timber	Yes		Domestically manufactured lumber will be procured							
Plywood for formwork	Yes		Domestic products available in the local markets will be procured							
Bricks	Yes		Domestic products available in the local markets (conforming to PS) will be procured							

 Table 2-23
 Category of Materials for Procurement

Porcelain tiles	Yes	Domestic or imported products available in the local markets will be procured
Waterproof materials	Yes	Same as above
Wooden or steel fittings	Yes	Will be manufactured at a factory on the outskirts of Karachi and Hyderabad
Hardwares	Yes	Domestic or imported products available in the local markets will be procured
Paint	Yes	Domestic, general-purpose products will be procured
Piping material	Yes	Domestic or imported products available in the local markets will be
Sanitary fixtures		procured
Pumps, etc.		
Wiring materials		
Lighting fixtures		
Fittings and furniture		
Ready-made furniture	Yes	Imported products will be procured through domestic suppliers
Order-made furniture	Yes	Will be manufactured at factories on the outskirts of Karachi
Equipment		
PCand periferals	Yes	Imported products will be procured through domestic suppliers

PS:Pakistan Standards

2.2.4.7. Implementation Schedule

(1) Project Implementation Schedule

If the project is implemented with the Japan's Grant Aid, after both countries sign the Exchange of Notes (E/N) and the Grant Agreement (G/A), the project will be implemented through the stages shown in Table 2-24.

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	Item	Details	Required Timeframe
1	Agent Agreement	Conclusion of contract with the Procurement Agent, preparation to start their work by setup of the office and lodgings	1.0 month
2	Consultancy Agreement	Negotiation and conclusion of agreement between the Japanese Consultants and the Procurement Agent	1.0 month
3	Selection of Contractors	Preparation ~ Notice to tender/ Distribution of documents ~ Clarification ~ Tender opening	2.5 months
4	Works contracts	Evaluation of tender ~ Approval of the relevant authorities ~ Negotiation of contracts ~ Conclusion of contracts	1.5 months
5	Facility Construction 1	First batch: Facility construction of the first lot	12 months
6	Facility Construction 2	Second batch: Facility construction of the remaining lots	12 months
7	Selection of procurement supplier	Preparation ~ Notice to tender/ Distribution of documents ~ Clarification ~ Tender opening (Third and fifth batch)	2.5 months
8	Procurement contract	Evaluation of tender ~ Approval of the relevant authorities ~ Negotiation of contracts ~ Conclusion of contracts	1.5 months
9	Procurement of equipment/furniture	Fifth batch is to procure equipment/furniture for facilities both under lot 2 and lot 5.	5.0 months

 Table 2-24
 Steps in the Implementation Stage

As for the facility construction, Lot 1 in Khairpur will go ahead as a pilot construction, and roughly six months after the work on the first site is almost complete, its performance will be reviewed and lessons learned will be incorporated in the next stage, and facility construction for Batch 2 will be started. Construction for the remaining lot (Lot 5) will be started after the completion of Lot 1 so that the number of sites for supervision will be leveled. For equipment, tendering will be started taking into account the time each lot for facility construction is completed.

(2) Tender Schedule

Based on the procurement regulations of Sindh Province and the normal required time-frame from similar cases, the tender schedule for the Project is envisaged as below, and the period from notification to contracting including the preparation is planned to be four months each for equipment procurement is also planned to be four months.

		Construction	Procurement
-	Tender preparation	1.0 month	0.5 months
-	Tendering (Notification, distribution of documents, clarification, submission)	1.5 months	2.0 months
-	Evaluation/preparation of report:	0.5 months	0.5 months
-	Approval:	0.5 months	0.5 months
-	Preparation of contracts/contracting:	0.5 months	0.5 months

(3) Construction/Procurement Schedule

Based on the track record from the Southern Project, the construction and procurement schedules are planned as follows:

Facility Construction

- It is established that six months will be needed for the substantive construction period of a single-story building for each site (site development, procurement of equipment & materials /preparatory work; 1 month, foundation work; 1.5 months, concrete/masonry work; 1.5 months, finishing work to inspection/handover; +2 months), and that eight months will be needed for a two-story building as additional two months are needed for the concrete/masonry work.
- For the external work, it is expected that one month will be necessary to transport purchased soil to sites that require earth filling or land development.
- As for the schedule for each contracting lot, temporary materials and skilled labors for each type of works will be efficiently used for groups of a few sites each and constructions in each group will be carried out sequentially. The standard schedule will be determined on the assumption that the start of construction at each of a maximum four groups will be staggered by half a month (additional two months).
- In addition to the above, allowing for reduced working efficiency during the rainy season from June to September and Ramadan (progress at around 60% of the dry season), the standard

schedule for a lot is set at 12 months.

Equipment Procurement

- As furniture will be manufactured and ready-made products will be imported, the period from placing orders to the delivery to the supplier is estimated to be 2.0 months.
- The period required for various procedures (duty exemption, customs clearance, etc.) is estimated to be 1.0 month.
- Transportation to the site, assembly after arrival, cleaning, installation as well as operation check, adjustment, instruction for PC equipment will have to be performed at the site. It is estimated that such activities will require 1.0 month.

With another 1.0 month for inspection and delivery at all the sites added to the above, the total period from placing orders to the completion is set at 5.0 months.

(4) Chart of the Project Implementation Schedule

A summary of the above project implementation schedule is shown in the table below. The total project period is 31 months.

Month			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Procurement Agent		,	 Ag	Fun	I greem I d Tra	l lent l nsfer	(The	e same	offi	te for	the pi	reviou	is pro	i ject v	vill be	utiliz	zed.)							Clos	ing of F	roje	ect of	fice fo	or Pro	curem	nent A	.gent		
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Furniture/															1	Public	o Noti	ice 🖌				Eval	uatior	i/App	roval/C	Cont	tract							
Equipment																						P	rocur	ement	Work			1	Procre	ement	Work			

 Table 2-25
 Project Implementation Schedule

2.3. Obligations of the Recipient Country

The obligations of the Pakistan side in relation to implementing the Project confirmed in field surveys are as follows:

- a) To prepare premises for the construction of the facilities, and ensure that there are rights to use the land as school premises.
- a) Where necessary, to prepare temporary classrooms required to run the schools during the construction period.
- b) Where necessary, to provide land for temporary facilities required to construct the buildings.
- c) Where necessary, to construct/improve outdoor facilities such as planting not included in the obligations of the Japanese side.
- d) To distribute electricity into the premises, and carry out works to connect it to meters that will be installed by the Japanese side.
- e) To carry out works to supply electricity to the existing buildings from the incoming panels that will be installed by the Japanese side.
- f) To procure general furniture, materials, fixtures and equipment not included in the obligations of the Japanese side.
- g) To bear the commissions to the Japanese bank for banking services based upon the Banking Arrangement.
- h) To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the components as well as the employment of the agent be exempted/be borne by its designated authority without using the grant and its accrued interest.
- i) To accord Japanese nationals and/or nationals of third countries, including such nationals employed by the agent, whose services may be required in connection with the supply of the components such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.
- j) To ensure that the facilities and the components be maintained and used properly and effectively for the implementation of the Project.
- k) To bear all the expenses, other than those covered by the grant and its accrued interest, necessary for the implementation of the Project.
- 1) To give due environmental and social consideration in the implementation of the Project.
- m) In accordance with the project management system in Pakistan, to complete the procedures necessary to implement the Project, such as project authorization (PC-1) and preliminary procedures for EIA screening.

Of the above mentioned items, the necessary obligated works related to the facility construction for each site are summarized in the following table. Note that the demarcation of the Pakistan and Japan side's obligations related to leading in the electricity are as follows:

Electricity: The Pakistan side will be responsible for leading in and connecting low-voltage electricity (aerial lead-in) to the meters installed by the Japanese side. Regarding sites where electricity is already supplied to the existing buildings, it has also been planned that the connection will be shifted to the lead-in point at the new building. The Japanese side will be responsible for the installation of new meters and incoming panels, and the Pakistan side will be responsible for relocating the existing lead-in wiring and supplying electricity from the newly installed incoming panels to the existing electrical switchboards.

District	ct S.N Name of School Rebuild Items to be done by the Recipient		Miscellaneous/notes					
			of Provision Supply of electricity					
			existing	of	Off-site	Reloca-	Supply	
			bldgs.	tempora-	supply	tion of	from the	
				ry CRs	point to	existing	new panel	
					the new	lead-in /	to existing	
					meters	electricity	sw. board	
	Kh01	Wapda Colony	-	-	Yes	-	Yes	
	Kh02	Hadi Bux Laghari	All	required	-	Yes	-	
	Kh03	Haji Ali Dad Jogi	-		-	Yes	Yes	
	Kh05	Bajeed Fakir	-	-	Yes	-	Yes	
Khairpur	Kh06	Ameen Patho	-	-	Yes	-	Yes	
	Kh07	Wazirabad Rajper	-	-	Yes	-	Yes	Construction of access road (22m)
	Kh08	Gambal Shah	Part	required	Yes		Yes	
	Kh09	Jani Boro	-	-	Yes	-	Yes	
	Kh11	Karim Bux Bhambhro	All	required	Yes	-	-	
	Su02	Miandad Khoso	All	required	Yes	-	-	Demolis/removal of esisting foundation being construction
Sukkur	Su03	Sorho	-	required	Yes	-	-	Relocation of low-voltage power line and a pole, and re-routing of open ditches.
	Su04	Moto Mirbahar	-	required	Yes		Yes	
	Gh01	Officer Colony Ghotki	-	required	Yes		Yes	
	Gh02	Nawab Khan Pitafi	-	-	Yes		Yes	
Chatlei	Gh03	Kamoon Shaheed	-	-	Yes		Yes	
Gliotki	Gh04	Belo Naich	All	required	Yes		-	Relocation of low-voltage power line
	Gh06	Sheroo Mahar	-	required	-	Yes	Yes	
Shikarpur	Sh01	Khanpur-II	-	-	Yes		Yes	
	La01	Gund	-	required	Yes	-	Yes	
Larkana	La02	Nai Gudd	All	required	Yes	-	-	Demolition/rermoval of the existing buildings in extended lands.
	La03	Model Comm. Tharecha	All	required	-	Yes	Yes	
	Da01	Kamaluddin Vill. Kanhiri	-	•	Yes		Yes	
Dadu	Da03	Aminani	-	-	Yes	-	Yes	
	Da04	Gharib Abad Radhan	-	required	-	Yes	Yes	
	Da05	Wali Muhammad Gorar	-	-	Yes		Yes	
TOTAL		25 Sites	7	13	20	5	19	

 Table 2-26
 Details of the Recipient's Obligations by Site

The Pakistan side's obligations will be overseen overall by the implementing agency of this Project, the E&L Department, and will be executed via local organizations at the district and taluka

level. As for the technical details, the province/district W&S will provide technical advice and coordination. All the requested items are general in detail, require no special skills or supervision, and are sufficiently implementable at the province/district level. The required budget will be secured as a project budget within PC-1 (project approval in planning stage), and budgeting measures will be taken each year.

2.4. Project Operation Plan

2.4.1. Operation Plan

(1) **Operation Framework**

The operation and maintenance of the school facilities expanded under the Project will be carried out by each school, mainly the headmistress and the School Management Committee (SMC), under the supervision and guidance of the provincial and each level of educational administrations.

In Sindh, after the commissioner system was reintroduced in 2012 togather with administrative divisions (Division or Region), the local educational administration now has a hierarchy of Province, Division, District and Taluka. In 2014, the new structure of management posts was announced and at divisional level, a directorate of school education (Primary) administers primary education while a directorate of school education (ESHS: Elementary, Secondary and Higher Secondary) administers secondary education. As for school management, Taluka Education Officers (TEOs) in charge of primary and ESHS, being deployed at each Education Office separately for boys and girls, supervises schools under its control. At the time of the Field Survey V (2015), the new system looks still not fully established in some districts. At the level of Union Council, Supervisors visit schools in the territory to give guidance. The organizational structure (new) for local educational administrations is as shown in the following figure.



Figure 2-5 Organizational Diagram of Educational Administration at the District Level

The SMC is central to management at the school level and is run through recent activation by the SERP, and its roles and activities are strengthening. The SMC consists of a General Body composed of constituent members of all parents with children of school-age in the school's catchment area as well as an Executive Committee. An overview shown in the guidelines is as per the table below:

	General Body	Executive Committee
Constituent members	All parents with children of school-age in the catchment area	Chairperson (elected from among the students' parents), General Secretary (Headmistress), local representatives (2 people), parents' representatives (1 person); a total of 5 people *3 or more women for girls' schools.
Main roles	 Selection of 2 executives including the Chairperson Approval of the School Improvement Plan 	 Drawing up and publicizing the School Improvement Plan Supervising the activities of staff and students Opening and managing a bank account as well as managing the SMC's funds Assisting with the preparation of extra-curricular activities Activities to encourage school attendance by children not attending school Recording and managing school assets
Meeting	At least once a year (staff, students, and local residents will also participate)	Monthly

Table 2-27Overview of the SMC

The SMC's actual activities vary according to the school, although all the target schools under the Project have an established SMC and elect executive members. At all schools, a minimum of activities are conducted such as convening meetings, managing funds, and drawing up School Improvement Plans, and at most schools there is a certain amount of participation and assistance functioning for community management of the school.

A fixed amount of funds called the "SMC fund" is allocated directly to the SMC by the Provincial E&L Department, Reform Support Unit (RSU). From 2011, all functioning schools are provided with 22,000 Rs. per annum for primary schools, and 50,000 Rs. per annum for middle-schools to be used for such things as the: 1) repair and upgrade of school facilities, 2) repair and upgrade of electrical and water supply facilities, 3) purchase of equipment and consumables such as furniture and stationary, 4) temporary employment of volunteer teaching staff and cleaners.

The operation and maintenance of facilities upgraded under this Project will also be implemented through obtaining the positive participation of the SMC and primarily the headmistress under the supervision of the province/district E&L Department and the taluka education office.

(2) Allocation of Teaching Staff

By the Project, middle classes will be newly established within the existing primary schools, and new teaching staff is required to run those classes. Likewise, in existing primary and pre-primary classes to be run together with the middle classes that will be expanded, some schools experience obstacles in the appropriate running of the school due to a lack of teaching staff. It will therefore be necessary to supplement the lack of primary teaching staff through appropriate running of the school as a whole. The standard for teaching staff required for the establishment of new middle classes by the Sindh E&L Department is shown below:

Category	(Teaching Staff)	No. of Personnel	Category	(Staff)	No. of Personnel
HST	High School Teacher	1 person (headmistress)	General staff	Naib Qasid	1 person(s)
JST	Junior School Teacher	2 person(s)	Security	Chowkidar	1 person(s)
OT	Oriented Teacher (Arabic)	1 person(s)			
AWI	Assistant Workshop Instructor	1 person (IT, etc.)			

 Table 2-28
 Standard Allocation of Teaching Staff in Middle-Schools

Of these, the HST, JST and PST will be selected and employed as a sub-program of SERP via the "Merit and Needs Based Teacher Recruitment Policy" introduced in 2008. In this instance, a standard of one teaching staff member allocated to 30 students is applied (1:25 in remote areas). Although teaching and support staff in other categories are employed as formal public service personnel, none of the existing schools observed were allocated a specialist teaching staff OT. On the other hand, some schools where the computer lab has been upgraded under a government program will be newly assigned with an Assistant Workshop Instructor (AWI) on a contract basis.

Based on the above, in order to adequately maintain the facilities upgraded under the Project, there will be a new minimum teaching staff requirement which is planned as follows:

- The number of teaching staff required to manage middle classes is calculated to a standard of one member of staff to 30 students. More specifically, the plan is to assign schools assessed as A/B in Table 2-9 with three staff, while those assessed as C will be assigned with two staff. This will be one HST (headmistress), and two or one JSTs (general teaching staff).
- The number of OTs across the province is 0.23 per girls' elementary school (2013-2014 education statistics), and in general three out of four schools are not assigned an OT. It is assessed that assignment will be difficult in rural areas, which are not included in the Project.
- AWIs are essential to appropriately utilize the equipment provided under the Project, and it is planned for one AWI to be assigned to each school on a contractual basis.
- As for supplemental teaching staff for primary classes, in terms of the minimum scale of requirements, the required number of teaching staff is planned to be a standard of one member to 30 students based on current student numbers including pre-primary classes, though only at the sites in which facilities will be upgraded for primary classes through the reconstruction under the Project.
- As for non-teaching staff, in accordance with standard allocation, it is decided that one security

guard (Chowkidar) and one general staff (Naib Qasid) will be allocated but only to schools where these positions are empty.

The results of provisional calculations for the number of teaching staff required to be newly allocated to each site is shown in the table below:

			Current situation				Required no. of teaching & support staff (by school)					
	S. No	Name of School	No. of students	No. of teachers	Alloca suppo	tion of rt staff	1	No. of teaching staff		No. of st	support aff	
			KG-V	PST	Guard	General staff	PST	JST	HST	AWI	Guard	General staff
Kha	airpur					Total	2	16	9	9	5	8
	Kh-01	Wapda Colony	176	9	-	-	-	2	1	1	1	1
	Kh-02	Hadi Bux Laghari	57	7	-	-	0	2	1	1	1	1
	Kh-03	Haji Ali Dad Jogi	58	3	>	 Image: A set of the set of the	-	2	1	1	-	-
	Kh-05	Bajeed Fakir	202	4	-	-	-	1	1	1	1	1
	Kh-06	Ameen Patho	123	5	>	-	-	2	1	1	-	1
	Kh-07	Wazirabad Rajper	149	4	-	-	-	2	1	1	1	1
	Kh-08	Gambal Shah	66	2	>	-	-	2	1	1	-	1
	Kh-09	Jani Boro	106	5	-	-	-	2	1	1	1	1
	Kh-11	Karim Bux Bhambhro	84	1	>	-	2	1	1	1	-	1
Suk	kur					Total	3	6	3	3	1	3
	Su-02	Miandad Khoso	139	2	>	-	3	2	1	1	-	1
	Su-03	Sorho	70	4	-	-	-	2	1	1	1	1
	Su-04	Moto Mirbahar	131	2	~	-	-	2	1	1	-	1
Gho	otki					Total	1	10	5	5	1	5
	Gh-01	Officer Colony Ghotki	141	12	1	-	-	2	1	1	-	1
	Gh-02	Nawab Khan Pitafi	89	3	-	-	-	2	1	1	1	1
	Gh-03	Kamoon Shaheed	75	4	>	-	-	2	1	1	-	1
	Gh-04	Belo Naich	46	1	>	-	1	2	1	1	-	1
	Gh-06	Sheroo Mahar	61	2	>	-	-	2	1	1	-	1
Shi	karpur					Total	0	2	1	1	0	0
	Sh-01	Khanpur - II	309	7	1	✓	-	2	1	1	-	-
Lar	kana					Total	2	6	3	3	0	1
	La-01	Gund	161	5	~	 Image: A set of the set of the	-	2	1	1	-	-
	La-02	Nai Gudd	204	8	1	✓	0	2	1	1	-	-
	La-03	Model Comm. Tharecha	110	2	1	-	2	2	1	1	-	1
Dac	łu					Total	0	7	4	4	0	2
	Da-01	Kamaluddin Vill. Kanhiri	87	2	1	-	-	1	1	1	-	1
	Da-03	Aminani	114	3	1	✓	-	2	1	1	-	-
	Da-04	Garib Abad Radhan	145	10	1	✓	-	2	1	1	-	-
	Da-05	Wali Muhammad Gorar	68	5	1	-	-	2	1	1	-	1
G . '	FOTAL						8	47	25	25	7	19

 Table 2-29
 Provisional calculation of the number of teaching staff required

2.4.2. Maintenance Plan

Routine maintenance of the school facilities will be carried out by the SMC's main members and teaching and support staff under the direction of the headmistress. Operation and maintenance of the building utilities such as water and electricity, and maintenance of equipment and furniture will be carried out by the general staff employed by each school. Although the general staff do not have any special technical capabilities, it can be possible since the building utilities installed in the Project are all basic and equal to that of a general home, and where necessary it will be possible to obtain the

support of community members who possess specialized skills. To maintain the building in good order in the long-term, regular cleaning and inspections as well as appropriate repairs of wear and tear, breakage and dilapidation will be necessary. Hence, it has been planned that the SMC, including parents of the students and concerned members of the community, will provide assistance with school upgrades and facility maintenance as necessary, and that the following required items will be incorporated into the school improvement plan drawn up by the SMC:

- Regular cleaning: Classroom blocks will be cleaned daily by students under the direction of teaching staff. Similarly, the managerial rooms and communal areas will be cleaned by general staff assigned to each school, and will also be cleaned regularly altogether by the SMC at least several times a year.
- Routine facility maintenance: The materials and finish being used in the Project are maintenance-free, which keeps required maintenance items to a minimum. If regular inspection and cleaning are strictly observed and appropriate management is implemented, no repairs will be necessary for several years after handover. Thereafter, regular mending and repainting of painted surfaces (roughly once every ten years) and inspection/adjustment of hardwares (approximately every year) will be necessary.
- Maintenance of building utilities: Regarding building utilities, it is important to make appropriate operation controls and regular inspection before getting specialized repair or parts replacement necessary. While the building utilities of the Project have been designed using mainly of equipment widely used in the area and contains no complex systems, it is necessary for each school to establish a system to ensure daily management of facilities such as routine inspections, simple repairs and replacement of parts, with the cooperation of the SMC.
- Maintenance of external facilities: As well as regular cleaning of the building's surroundings, around twice a year, planting will be appropriately maintained to maintain ground stability and rainwater drainage facilities. Similarly, facilities for the sewerage/drainage, such as sewage pits, will be cleaned internally and accumulated sludge removed roughly once a year.

It has been determined that the normal budget for school operation and maintenance will be covered by four financial sources, 1) a general operating budget contributed through the taluka education office, 2) the School Specific Budget (SSB) allocated under fixed criteria to each school, 3) the SMC fund allocated directly to the SMC from the Provincial Budget, and 4) donations from local influential figures. While the use of each budget is individually restricted and allocation of the SMC fund in relation to the maintenance of school facilities is regulated, there are concerns over securing a long-term and stable budget as the sum of 50,000 Rs. each year for schools at the middle level is insufficient, and there are contributions from donor funds managed by the Reform Support Unit (RSU).

School operating budgets have been greatly improved over the last few years through systematic improvement related to the SMC Fund and creation of the SSB (tested in 2011-2012 and fully introduced in 2012-2013). While monitoring the usage of these budgets, the value of the budgets

must be expanded in future. In particular, in order to appropriately maintain the facilities upgraded under this Project into the future, a budget sufficient for the regular repair of school facilities must be continually secured and steadily allocated to each school as required.

2.5. Project Cost Estimation

2.5.1. Initial Cost Estimation

(1) Cost to be borne by the Japanese side (omitted)

(2) Cost to be borne by the Pakistani side

Table 2-30 Estimated cost to be borne by Pakistani side

Item	Estimated Cost (1,000 Rs.)	(million yen)
Removal of existing structures	913.0	1.1
Electricity distribution	1,956.7	2.4
Site preparation (construction of access road, rerlocation of power lines and open ditches)	176.0	0.2
Commission to banking services related to banking arrangements and payments	815.2	1.0
Total	3,860.9	4.7

(3) Conditions of estimation

- Time of estimation: September 2015
- Exchange rate: 1US\$=124.40 JPY, 1US\$=101.71 Rs, 1Rs=1.22308 JPY (Rs: Pakistan Rupee)
- Construction/procurement period: As shown in the implementation schedule.
- Miscellaneous: The Project is to be implemented in accordance with the Japan's grant aid scheme.

2.5.2. Operation and Maintenance Cost

The provisional calculations of the costs deemed necessary to operate and maintain the facility of the Project are as follows:

(1) Operating costs

1) Personnel costs

Implementing this Project will require the new allocation of a minimum of 25 managerial staff (Headmistresses) for administration, 47 general teaching staff, and 25 specialized teaching staff (IT Instructors) for the newly constructed middle classes (3 classes at each school) at the 25 target schools. Likewise, as the bare minimum of staff for the operation of the school facilities, one security guard and one general staff are planned to be additionally assigned to schools where they are not currently assigned. Of these, based on the "new teacher recruitment policy," the HST and JST will be employed as three-year fixed term contracted staff, with the same salaries and allowances being provided as public service employees according to a basic pay scale corresponding to their job type and grade. Eight more PSTs will be required for the proper operation of facilities of the primary school that will be reconstructed in the Project. These posts will be filled with teachers transferred from the target schools that have more teachers than the standard and there will be no increase in the total headcount. The personnel costs required in each district in case all the required teaching staff is newly employed have been provisionally calculated as per the table below.

District	No. of	Req	uired no. of	fstaff	Monthly salary/allowances ('000 Rs.)			Personnel costs/year		
	sites	Teachi	ng Staff	Support	Teachin	ig Staff	Support	('000 Rs.)	(mill. yen)	
				Staff			Staff			
		JST/	HST	Guard/	JST/	HST	Guard/			
		AWI		General	AWI		General			
Standard pay	grade/	BPS-14	BPS-16	BPS-1	21.541	33.348	13.567			
salary and allow	wances									
Khairpur	9	25	9	13	538.5	300.1	176.4	12,180.0	14.9	
Sukkur	3	9	3	4	193.9	100.0	54.3	4,178.4	5.1	
Ghotki	5	15	5	6	323.1	166.7	81.4	6,854.4	8.4	
Shikarpur	1	3	1	-	64.6	33.3	-	1,174.8	1.4	
Larkana	3	9	3	1	193.9	100.0	13.6	3,690.0	4.5	
Dadu	4	11	4	2	237.0	133.4	27.1	4,770.0	5.8	
TOTAL	25	72	25	26	1,551.0	833.5	352.8	32,847.6	40.1	

 Table 2-31
 Provisional Calculation of Personnel Costs

· Pay grades by profession were set in accordance with the request form.

• Salaries from the first year of the standard pay-scale revised in 2015 were adopted, and allowances included adhoc relief allowances, medical allowance, convey allowance, etc.

The results of calculations are that the newly required personnel cost total 22.8 million Rs. for the six target districts. This equates to 0.031% of the 106,825 million Rs. in personnel costs within the provincial budget (current revenue expenditure) for education sector in 2015-16.

2) Facility operating costs

Provisional calculations for the required costs of running the facilities are as below:

• <u>Water supply costs:</u> At all sites, water will be supplied from wells that will be excavated on the premises, and the only required costs are the electricity charges for pumping the water.

- <u>Communications costs:</u> Communications equipment such as telephones are planned to be installed as necessary by the Pakistan side, and as such do not figure in this section.
- <u>Electricity charges:</u> The normal usage for a facility is anticipated, and provisional calculations will be made for the minimum electrical charges required to run the upgraded facilities. It was decided that the calculations will be made as below, and the results are shown in Table 2-32
 - The annual number of days in operation is set as a total of 200 days. This is the average of school days in Pakistan (190 days) plus an additional ten days for managerial duties.
 - The facility usage hours are estimated to be 5.5 hours (8:00 AM to 1:30 PM), which are the standard school hours. Electrical equipment is estimated to be used on average 2.5 hours each day for lighting and ceiling fans, and 0.5 hours for computers and water pumps.
 - Applied type of connection of electricity will be a type A-1(b), three-phase low voltage power connection, and for the electricity charges, a residential, general consumer tariff (power contract 5kW or more) will be applied.

District	S.N	Name of School	Р	ower con	sumption	/day (Wh	ı)	Power	Ann	ual charge	es (1,000	Rs.)
		Facility	CR/	HMR/	MPR	Lav.	Total	consum	Т	arif A-1(b)	By
			MPR	STR		Block		ption/			-	district
		Estimated	Ligh	ting,	PC	Pump	Wh	year	Fixed	Meter	Total	Total
		load	Ceilir	ig fan				kWh	Charge	Charge		
Khairpur	Kh01	Wapda Colony	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	164.04
	Kh02	Hadi Bux Laghari	6,125	775	1,000	185	8.085	1,617.0	1.80	19.22	24.38	
	Kh03	Haji Ali Dad Jogi	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
	Kh05	Bajeed Fakir	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
	Kh06	Ameen Patho	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
	Kh07	Wazirabad Rajper	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
	Kh08	Gambal Shah	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
	Kh09	Jani Boro	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
	Kh11	Karim Bux Bhambhro	6,125	775	1,000	185	8.085	1,617.0	1.80	19.22	24.38	
Sukkur	Su02	Miandad Khoso	6,125	775	1,000	185	8.085	1,617.0	1.80	19.22	24.38	54.98
	Su03	Sorho	3,500	-	1,000	185	4.685	937.0	1.80	10.38	14.13	
	Su04	Moto Mirbahar	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
Ghotki	Gh01	Officer Colony Ghotki	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	90.25
	Gh02	Nawab Khan Pitafi	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
	Gh03	Kamoon Shaheed	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
	Gh04	Belo Naich	6,125	775	1,000	185	8.085	1,617.0	1.80	19.22	24.38	
	Gh06	Sheroo Mahar	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
Shikarpur	Sh01	Khanpur-II	3,500	-	1,000	185	4.685	937.0	1.80	10.38	14.13	14.13
Larkana	La01	Gund	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	67.88
	La02	Nai Gudd	7,000	775	1,000	185	8.960	1,792.0	1.80	21.50	27.02	
	La03	Model Comm. Tharecha	6,125	775	1,000	185	8.085	1,617.0	1.80	19.22	24.38	
Dadu	Da01	Kamaluddin Vil. Kanhiri	3,500	-	1,000	185	4.685	937.0	1.80	10.38	14.13	63.53
	Da03	Aminani	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
	Da04	Gharib Abad Radhan	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
	Da05	Wali Muh. Gorar	3,500	775	1,000	185	5.460	1,092.0	1.80	12.40	16.47	
	TOTA	L	53,375	7,750	12,000	2,220	150.80	30,160	45.00	347.08	454.81	454.81

 Table 2-32
 Provisional Calculation of Electricity Usage Charges

CR: Classroom, MPR: Multi-purpose room, HMR: Headmistress's room, PC: Personal Computers

3) Maintenance Costs

The costs required for maintenance of the facilities upgraded and the furniture provided under this Project are provisionally calculated in the table below. These maintenance costs are allotted for routine maintenance such as: partial repair of painted external walls, finishing, metalwork and woodwork inside and outside the building, replacement of damaged hardware and light bulbs, partial replacement of malfunctioning equipment and instruments, and replacement of the parts of broken furniture. The cost of major repairs necessary for the long-term will be covered by an investment budget managed separately by the E&L Department.

District	No. of	No. of CRs	Floor area	Annual maintenance costs (1,000 Rs.)					
	sites	(General + multipurpose)	Total (m ²)	Building	Utilities/ Equipment	Furniture	Total		
Khairpur	9	33+9	2,525.94	158.6	107.1	186.9	452.6		
Sukkur	3	12+3	835.29	52.3	35.2	64.5	152.0		
Ghotki	5	18+5	1,356.37	85.2	57.6	102.5	245.3		
Shikarpur	1	3+1	208.17	12.2	8.0	16.2	36.4		
Larkana	3	16+3	1,095.10	68.1	45.8	82.7	196.6		
Dadu	4	12+4	932.33	58.8	39.9	70.4	169.1		
TOTAL	25	94+25	6,953.20	435.2	293.6	523.2	1,252.0		
(per school)				(17.41)	(11.74)	(20.93)	(50.08)		

 Table 2-33
 Provisional Calculation of Maintenance Costs

* Using building maintenance and management data from Japan as a reference, from the details and specifications of the facilities in the Project, the assessed normal facility maintenance costs (per annum) are estimated as follows:

- Building maintenance costs: Building construction costs×0.2%

- Building utilities maintenance costs: Building utilities construction costs×1.0%

- Furniture maintenance costs: Cost of furniture ×1.5%

4) Total Operation & Maintenance Costs

To summarize the above mentioned provisional calculation results, an estimate for the required minimum increase of annual operation and maintenance costs from the implementation of this Project is as follows:

Of these, personnel, which account for the highest amount, and utility costs are earmarked in the education sector current expenditure within the total provincial budgets. The value of the budget for 2015-2016 is 106,825 million Rs. for personnel costs including salary and allowances, and 837 million Rs. for utility costs. The increased amounts due to the implementation of the Project for these budget amounts are 0.031% and 0.054% respectively, which are sufficiently possible amounts. On the other hand, the repair and maintenance of facilities, furniture and equipment is deemed to be the role of the SMC, and it is expected that this will be performed through the allocation of the SMC fund. In actual fact, many schools are using the SMC fund for the maintenance and improvement of facilities and furniture. However, the amount required each year provisionally calculated above is nearly the total amount of fund to be provided, which is not necessarily sufficient. An increase in this amount is required in line with the increase in the educational budget.

Looking at the total operation and maintenance costs excluding personnel costs, the additional cost for the Project accounts for 0.004% of the non-salary budget for education sector in total. Therefore, it is very likely that necessary budget can be secured if budget is appropriately allocated when the total education budget is increased, and efforts of the Government of Sindh will be expected.

District	No. of	Personnel costs	Annual	Annual maintenance costs (1,000 Rs.)					
	sites	(1,000 Rs.)	Facility operating	Facility/furniture	Total				
			costs	Maintenance costs					
			(Electricity charge) =						
		= [A]	[B]	= [C]					
Khairpur	9	12,180.0	164.0	452.6	616.6				
Sukkur	3	4,178.4	55.0	152.0	207.0				
Ghotki	5	6,854.4	90.3	245.3	335.6				
Shikarpur	1	1,174.8	14.1	36.4	50.5				
Larkana	3	3,690.0	67.9	196.6	264.5				
Dadu	4	4,770.0	63.5	169.1	232.6				
TOTAL	25	32,847.6	454.8	1,252.0	1,706.8				
(Amount of increase per school)			(18.2)	(50.1)	(68.3)				

 Table 2-34
 Results of Provisional Calculations of Annual Operation & Maintenance Costs

Expense items of	Education Sector	Education Sector	SMC Fund	Education Sector
contributed budget	Current Budget	Current Budget		Current Budget
	- Personnel costs	- Utility charges		- Non-salary budget
2015/16 Budget Amount	106,825.0	836.8	Middle-school	37,958.8
(Sindh Province)			50,000 Rs./school	
Amount of increase	0.031%	0.054%	100.2%	0.004%
[A] [B] [C] share rate				

Chapter 3 Project Evaluation

Chapter 3. Project Evaluation

3.1. Preconditions

The prerequisite matters that the Pakistan side should address for implementation of the Project are as follows._o

(1) Preservation of the building sites

Many of the target sites of this Project are small and narrow, where facility construction includes a degree of land beyond the range of the existing school that is to be donated by land owners. This land needs to be preserved as is until the start of the Project. Boundary of the land for use by the Project has already been surveyed in the presence of persons concerned and affidavits on the land for donation have already been submitted at the applicable sites and the Sindh E&L Department needs to pay sufficient attention to ensure that no modifications are made to the land planned for the construction of facilities that inhibits construction, especially overlapping with the construction of other facilities, by being in close contact with relevant personnel at the district and Taluka level.

(2) Compliance with obligations on the Pakistan side

For implementation of this Project, it was planed to facilitate operations in small, narrow sites within a scope that minimizes the burden on the Pakistan side. However, prior to construction, certain works for the particular sites, such as construction of access road, removal of existing power lines and poles, and demolition and removal of existing structures are required for preparation(five sites in total). Besides, the Pakistan side is required drawing and connection of electricity and, temporary arrangements for classes at sites where the existing classrooms has not been usable during construction in order to secure students' safety or to demolish the building. Regarding these matters, it is necessary for the Sindh E&L Department to direct the District Education Department and, in coordination with Japanese side and contractors for contents of works and implementation schedule, ensure a budget in advance to assure implementation.

3.2. Necessary Inputs by Recipient Country

Matters the Pakistan side should address to sustain the effects brought about through the Project are as follows.

(1) Securing allocation of teachers and other staff

This Project plans to establish 75 classrooms for middle education in 25 schools of six districts in northern part of Sindh. Also in each of the 25 schools one room is established as a multi-purpose

classroom and computer equipment will be installed. In order to open new middle classes and make full use of the facilities and equipment in the target schools, allocation of adequate staff is required. This includes 72 general teachers (including the headmistress) with the necessary qualifications for middle education, 25 assistant workshop instructors for computer education and some additional staff for facility maintenance. Also, to make effective use of new primary classrooms to be placed in schools where the existing building will be rebuilt, 8 new primary teachers need to be found. In order for these staff to be placed immediately following completion of the facilities, it is necessary to formulate a recruitment plan which includes an advance budget allowance (registration to Schedule of New Expenditure (SNE) is needed) and systematically proceed with the preparation of recruitment and assignment. However, since the recruitment period is not constant in the current teacher recruitment system, it may be necessary to transfer teachers from other schools or use temporary primary teachers with sufficient qualifications and abilities. Therefore it is essential to create a plan to ensure that the minimum required personnel for carrying out middle education can be reliably deployed without delay after the facilities are completed.

(2) Securing sufficient school operations budget

New expenditures by the operation and maintenance of the facilities to be constructed in the Project will be paid by the following three sources: each school's calculated school operations budget, or School Specific Budget (SSB); the SMC fund allocated directly to the SMC; and the sub-district education office's elementary education operations budget. How this money is used is limited, particularly with SMC fund, based on the School Improvement Plan, for improving the learning environment and maintaining facilities and equipment. Relative to its functions the amount allocated is quite small and even assuming the bare minimum maintenance of new facilities it would barely cover expenses. If the existing schools are included, the budget would not be sufficient for the maintenance of all school facilities. Budgeting at the school level only began in FY 2011-12 and it is necessary to further optimize allocation criteria to meet demands. Further, it is necessary to organize and study the use of the proceeds of each budget in order to make full use of the amounts while making improvements to the system and increasing efficiency.

(3) Efforts to promote girls' school attendance

This Project aims to eliminate the disparities between genders and regions by improving the environment of and access to facilities for middle education. Hearings at the target schools has proven that the awareness of parents for the need of girl's education is gradually increasing, however the factors that interfere with girl's enrollment are complex. Therefore, for the effects of the Project to be fully realized, in addition to the construction of facilities, local communities and school officials including the SMC need to fully understand the need for girl's education, and must work on promotion activities in the area. Such activities have been positioned as one of the important roles of the SMC and the Government of Sindh needs to strengthen efforts to reduce children not attending school by further enhancing the capacity building program through training

and education of SMC members through SERP.

3.3. Important Assumptions

(1) Stability of the security situation

Pakistan is a country with a variety of ethnic groups and languages, a feudal social structure, economic disparities between rural and urban areas as well as tense border situations with India and Afghanistan. Therefore the risks of a changing security situation are quite high. In addition the political situation is very unstable with civil and military administrations being interchanged frequently after seccesion and independence. In the target area of Sindh Province, urban areas, in particular the capital Karachi, have risks of murder or assault associated with frequent common crime and political conflicts, as well as bombings by Islamic extremists. On the other hand, the security situation in rural areas is relatively stable. For this Project to be carried out successfully an ongoing stable security situation is required. Therefore interruptions to the Project caused by a deterioration in the security situation of the target area is a serious concern.

(2) Continuation of education reform

The Government of Sindh has conducted SERP and SERP II in accordance with the national-level overall goal "National Education Policy 2009" while working on reforms to improve the quality of provided education through improving governance and management. This Project shares common aims to "achieve universal and free primary education by 2015 and up to class 10 by 2025" and "reduce the disparities between genders and urban and rural areas," which are important parts of the overall goal. The Project is to directly support the Government of Sindh's efforts to "improve access to middle education by upgrading existing primary schools." At the same time, SERP / SERP II has implemented a series of programs including "stipened to girls' students in middle and secondary classes," "free provision of textbooks," "re-activation of SMC," and "teacher recruit system reform" etc. It is considered that the combination of these programs has supported the realization of the effects. Since the Project is expected to produce positive outcomes as these reforms expand and continue, continuation of education reform in Sindh Province is an important condition for the Project to be realized successfully.

3.4. Project Evaluation

3.4.1. Relevance

The relevance of the Project is recognized as follows.

1) **Project beneficiaries**

The direct beneficiaries of this Project are about 2,000 female students who will attend middle classes and about 400 students who will use rebuilt primary classes. In addition to this, the implementation of the Project is intended to benefit a wide range of residents of the general public in the target area through improving the school facilities and learning environment of middle education in the area.

2) Project goals and urgency

The goal of this Project is to widen access to middle education for girls in rural areas and reduce the disparities between genders as well as between urban and rural areas. In the target area, the number of middle level schools for girls to which female students can attend are 1/12 of the number in all primary schools and thus not sufficient. Also, in rural areas with no middle level schools within commutable distance, together with a traditional societal custom of female isolationism (Purdah) and the enrollment ratio of girls in middle education has remained at 15% (national, net enrollment ratio in 2013-14). In Sindh Province, especially, the enrollment ratio of the same group is as low as 6% and urgent improvement is needed.

3) Relevance with the overall goal

In "Vision 2025," the Government of Pakistan set strengthening human capital as "a prerequisite for all other development" and put it at the first of the seven pillars (priority areas). In the education sector, the government set the "National Education Policy 2009" as the nationwide overall goal, aiming to achieve universal and free primary education by 2015 and up to class 10 by 2025. In response to this, the Government of Sindh has been promoting the improvement of girls' access to middle education through upgrading existing primary schools as part of "Sind Education Sector Plan (SESP)" as well as "Sindh Education Reform Program (SERP)." This Project is intended to contribute directly to achieving that goal.

4) Consistency with Japan's aid policy and objectives

Japan regards Pakistan as a key country which is significant to peace and stability in the region and, due to its large population, has a great deal of economic and social potential. Thus Japan is carrying out aid to Pakistan through the basic policy of "building a stable and sustainable society through economic growth." The "improvement of human security and social infrastructure" is one of three priority areas and, within this, the elementary education sector is positioned as an important sub-program. A policy which aims to ensure the quality of education through the provision of a safe learning environment and improvement of educational opportunities has been exemplified. This Project is intended to conform to this policy.

3.4.2. Effectiveness

(1) Quantitative Effects

The expected quantitative effects through the outputs of the Project are as follows.

- In 25 girls primary schools in 6 districts in the northern Sindh, new facilities for middle education (75 classrooms) will be developed so that the number of middle education female students will increase from 100 (2015-16, field survey) to 2,028 (target in 2021).
- (2) In 25 girls primary schools in 6 districts in the northern Sindh, dilapidated existing classrooms, which cannot be used continuously, will be reconstructed and 17 classrooms (target in 2021) will be newly available for continuous use. **Qualitative Effects**

In addition, the following qualitative effects are expected through the implementation of the Project.

- In 6 girls primary schools of 6 districts in the northern Sindh, 17 existing classrooms, which have safety concerns with dilapidation, will be replaced by newly constructed classrooms so that learning environment of female primary students will be improved.
- Facilities necessary for girls' enrollment such as a compound wall lavatory etc. are put in place and a reduction of the number of girls who are not enrolled in education can be expected in rural areas.

(3) Conclusion

From the above, the Study Team concludes that the relevance of this Project is high and its effectiveness is anticipated.