Country Name	
People's Republic of	Bangladesh Digital Mapping Assistance Project
Bangladesh	

## I. Project Outline

Background	The 1:50,000 scale national base r the limited parts of them had been upor the government of Bangladesh decide Survey of Bangladesh (IDMS)" using of IDMS project was to prepare 1:25 1:5,000 scale digital topographic may Barisal. Through the Japan's coopera study (2002-2004), the knowledge an Bangladesh (SOB), and the fundame SOB has been required to play a role improve technical and managerial government of Bangladesh requested capacity of the staff of SOB.	naps covering the o lated since then. Ac ed to implement the the Debt Relief Gra ,000 scale digital t ps of five major c tion such as dispa nd skills of geodet ntal digital topogra e of an agency res knowledge and sk the government o	ire territory of Bangladesh were prep essing a growing demand for new ma roject of "Improvement of Digital M Assistance from the Japanese govern ographic maps covering entire area is including Sylhet, Rajshahi, Chitta of long-term experts (1999-2007) a survey has been transferred to staff ic data of 1:5,000 scale has been p nsible for the implementation of IDP is which had not been acquired y apan a technical cooperation project	ared in 1940s, and aps in recent years, Iapping System of ment. The purpose of the country and igong, Khulna and and a development f of the Survey of repared. However, MS project, and to et. Therefore, the for improving the
Objectives of the Project	<ul> <li>Through the transfer of essential to of products specifications in SOB in capabilities to implement digital mappimplementation of IDMS project.</li> <li>Overall Goal: SOB implements Bangladesh (IDMS)."</li> <li>Project Purpose: Technical staff of the scale of 1:5,000 and 1:25,000,</li> </ul>	cchnologies and ma n Dhaka, the Proj- ping in the scale of the project of "I of SOB will develo , and actual work of	gement skills of digital mapping inclu- aimed at the improvement of SOI 5,000 and 1:25,000, thereby contrib- provement of Digital Mapping Sys- heir skills enough to implement the DMS is implemented correctly and sm	uding development B technical staff's uting to the proper tem of Survey of digital mapping in noothly.
Activities of the Project	<ol> <li>Project Site: Dhaka</li> <li>Main Activities: 1) developmen improvement of the capabilities digital mapping, and 3) acquisition</li> <li>Inputs (to carry out above activities Japanese Side</li> <li>Experts: 11 persons</li> <li>Trainees Received: 7 persons</li> <li>Equipment: PCs, printers, graphic</li> <li>Operation cost</li> </ol>	t of work procedu of SOB's technica n of essential theories) software, etc.	<ul> <li>s and specifications of digital mag staff of planning, management and technics and skills of digital mappin</li> <li>Bangladeshi Side <ol> <li>Staff Allocated: 16 persons</li> <li>Land and Facilities: Office space</li> <li>Cost for IDMS project</li> <li>Operation cost: cost for utitelephone and water) of Japanese transportation cost for Banglace etc.</li> </ol> </li> </ul>	pping products, 2) troubleshooting of g. ilities (electricity, experts' office and leshi counterparts,
Project Period	July 2009 – September 2013	Project Cost	ex-ante) 304 million yen, (actual) 399	9 million yen
Implementing Agency	Survey of Bangladesh (SOB), Ministr	y of Defense		
Cooperation Agency in Japan	Geospatial Information Authority of Ja	apan (GSI), Ministr	of Land, Infrastructure and Transport	

# II. Result of the Evaluation

1 Relevance

<Consistency with the Development Policy of Bangladesh at the Time of Ex-Ante Evaluation and Project Completion>

The Project was consistent with the development policies of Bangladesh stated in the "National Strategy for Accelerated Poverty Reduction" (2005-2008) at the time of ex-ante evaluation and the "Sixth Five Year Plan (2011-2015)" at the time of project completion aiming at the improvement of land administration and land use applying the "Digital Bangladesh" initiative (2008)<sup>1</sup>.

<Consistency with the Development Needs of Bangladesh at the Time of Ex-Ante Evaluation and Project Completion>

Although highly accurate and the latest topographic maps have been constantly required as the most fundamental data for all kinds of land development and land conservation activities of the country, the maps have been ill-prepared and not updated since 1940s in Bangladesh. Through the Japanese assistance in a development study of the "Study on Urban Information Management for Greater Dhaka City" (2002-2004), basic skills and knowledge were transferred to SOB for making maps of 1:5,000 scale. But further skills and knowledge were required for the mapping of 1:25,000 scale which was one of the major components of IDMS project. Thus, the Project was consistent with the development needs of Bangladesh.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The "Japan's Country Assistance Program for Bangladesh" (May 2006) raised priority areas and sectors including 1) economic

<sup>&</sup>lt;sup>1</sup> The national ICT (information and communication technology) initiative which promises a prosperous and equitable education, health, employment and solution of poverty issues by utilizing ICTs.

infrastructure improvement for private sector development, 2) agricultural and rural development, 3) social development (basic living conditions, human resource development), and 4) disaster management. In order to realize these assistances efficiently, accurate maps and utilization of Geographic Information System (GIS) data and other mapping technologies were indispensable. Therefore, the Project was consistent with Japan's ODA policy for Bangladesh at the time of ex-ante evaluation. <Evaluation Result>

In light of the above, the relevance of the Project is high.

2 Effectiveness/Impact

<Status of Achievement for the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. Nearly 300 staff members of SOB participated in a variety of training programs implemented by the Project, and on-the-job-training (OJT) was conducted on at least 70% of them as targeted by the Project. Out of theses staff trained, a project team of nearly 200 members was organized in SOB for the IDMS project. While the progress is behind the schedule, the IDMS project has been implemented by them and advancing to its completion.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been continued by the time of ex-post evaluation. Although it is delayed, the IDMS project has been continuously implemented by the team trained by the Project, with the technical and managerial knowledge and skills, and with the equipment provided by the Project. For newcomers to the IDMS project, the knowledge and skills has been transferred through OJT. <Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal was partially achieved by the time of ex-post evaluation. The main activities of the final year of the Project were to support the planning, execution management, accuracy and quality control of maps produced, and technical troubleshooting during the implementation of the IDMS project. According to the interviews with the staff of the Digital Mapping Unit of SOB, while all the maps of 1:5,000 scale of Sylhet city was completed, another 4 to 5 months are required to complete producing maps of other four cities. Regarding 1:25,000 scale maps, 100% of photography and field verification and 75% of GIS and cartography has been done, but not yet completed. All of these maps are available for government and private organizations and individuals with a proper application and reproduction cost. SOB is currently preparing a web-based portal for online sales of maps.

<Other Impacts at the time of Ex-post Evaluation>

Since the outputs (maps) of the IDMS project have just started to be released, few specific impact has been identified yet. No negative impact on natural environment has been observed.

<Evaluation Result>

In light of the above, through the Project, the Project Purpose was achieved at the time of project completion, positive effects by the Project have continued, and the Overall Goal was partially achieved at the time of the ex-post evaluation. Therefore, the effectiveness/impact of the Project is high.

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Aim	Indicators	Results		
(Project Purpose)	Indicator 1: The organization for IDMS is	Status of the Achievement: Achieved. (Continued.)		
Technical staff of SOB	organized in SOB and an appropriate	(Project Completion)		
will develop their skills	amount of staff are allocated for IDMS.	SOB has organized a project team of an appropriated number of members for		
enough to implement the		IDMS project.		
digital mapping in the		(Ex-post Evaluation)		
scale of 1:5,000 and		The project team of IDMS has the digital plotting section, the GIS section,		
1:25,000, and actual work		the cartography section, the printing section, and the administration section		
of IDMS is implemented		with more than 200 members.		
correctly and smoothly.	Indicator 2: Technical staff of SOB acquires	Status of the Achievement: Achieved. (Continued.)		
	the essential technology of digital mapping	(Project Completion)		
	in order to implement IDMS.	The IDMS project has been implemented by the project team members of		
		technical staff of SOB who acquired the essential technology of digital		
		mapping through the training programs and OJT provided by the Project.		
		(Ex-post Evaluation)		
		Although it was delayed, the IDMS project has been continuously		
		implemented by the team trained by the Project, and their knowledge and		
		skills has been transferred to the newcomers through OJT.		
	Indicator 3: Technical staff of SOB acquires	Status of the Achievement: Achieved. (Continued.)		
	the planning, management and	(Project Completion)		
	troubleshooting capabilities for IDMS.	The project team of the staff of SOB who have trained by the training		
		programs and OJT by the Project have been in charge of planning and		
		management of the IDMS project.		
		(Ex-post Evaluation)		
		Management and troubleshooting of the IDMS project has been continuously		
		done by the SOB's team trained by the Project, and their knowledge and		
		skills has been transferred to the newcomers through OJT.		
	Indicator 4: IDMS is implemented	Status of the Achievement: Partially achieved. (Continued.)		
	according to the schedule.	(Project Completion)		
		IDMS project has started with one year delay due to the delay of the		
		procurement of equipment and aerial photo taking.		
		(Ex-post Evaluation)		
		While it is delayed, the IDMS project is advancing to its completion.		

### Achievement of Project Purpose and Overall Goal

		Although the maps of 1:5,000 scale has been completed for one of the		
		targeted cities, another 4 to 5 months are required to complete the mapping of		
		other four cities. For 1:25,000 scale national maps, GIS and cartography has		
		not been completed with the progress of about 75%.		
(Overall Goal) SOB implements the project of "Improvement of Digital Mapping System of Survey of Bangladesh (IDMS)."	SOB will provides 1:25,000 and 1:5,000 scale topographic maps and database to government and private users.	(Ex-post Evaluation) Partially achieved. While the targeted mapping of 1:25,000 and 1:5,000 scales has not been completed yet, all the maps produced are available for government and private users. SOB has prepared a database of topographic maps and is currently preparing a web-based portal for online sales of them.		
Source: Terminal Evaluation Report (2011), Final Report (2013), BDMAP Supplemental Terminal Evaluation Result Report (Draft) (2013),				
questionnaire survey to an	d interviews with SOB (2017)			

#### 3 Efficiency

The project cost exceeded the plan (the ratio against the plan was 131%) due to the increase in manpower cost and fluctuation of the exchange rate of taka to the dollar, and the project period exceeded the plan (the ratio against the plan was 139%) due to the delay of the procurement of equipment and aerial photo taking of the IDMS project. Therefore, efficiency of the Project was fair. 4 Sustainability

# <Policy Aspect>

The "Seventh Five Year Plan" (2016-2020) proposes activities for the establishment of digital land management system in one of the 26 key areas. It is expected by the Plan to make land administration and management transparent and accountable by making land records available online, through conducting satellite technology based digital survey, preparation of digital maps and ledgers. The Plan mentions the IDMS project as one of the key interventions for constructing the digital land management system in Bangladesh. The project effects are, thus, expected to be sustainable from the perspective of policy aspect.

A 5-story Digital Mapping Centre has been constructed under the IDMS project in Mirpur, Dhaka in 2016, in which nearly 200 staff members are engaged in digital mapping business including the implementation of the IDMS project. According to the interviews with the staff of the Digital Mapping Unit of SOB, while this number of staff is adequate for completing the mapping of other four cities, it will not be sufficient to extend the mapping to other cities in the country. Also, the organizational and personnel structure of SOB is still framed on the premise of analogue topographic mapping by ground survey but not of digital photogrammetric mapping technology, and this constrains effcient operation of works.

<Technical Aspect>

Almost all the staff trained by the Project are still in the Digital Mapping Department, specifically in the Digital Mapping Centre, and the IDMS project has been implemented by them. All the manuals and textbooks prepared by the Project have been highly utilized not only in the IDMS project but also widely in SOB. While there has been a training section in SOB, its training system is not necessarily sufficient for digital mapping. Therefore, retention of the knowledge and skills of the staff trained by the Project and its transfer to newcomers is basically done by OJT in workplaces. For sustaining and extending knowledge and skills in view of further expansion of digital mapping in the coming years, it is expected SOB's training party to strengthen its training capacity. <Financial Aspect>

The SOB's annual budget for digital mapping has been decreasing from 2015 to 2017 (Table 1). According to the interviews with the staff of the Digital Mapping Unit of SOB, this is because the mass procurement for the mapping projects was almost completed, and the budget has been allocated for current expenditure. Nonetheless, the amount of budget is not sufficient for recruiting more staff, training, and logistics for high resolution digital mapping covering the whole country in the coming years. <Evaluation Result>

Table 1. SOB's Annual Budget for Digital Mapping
unit: million Taka

Year	2015	2016	2017
Budget	258	182	40

Source: Ministry Budget Framework, Ministry of Defense (2017-18)

In light of the above, some problems have been observed in terms of institutional,

technical and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the Project is fair. 5 Summary of the Evaluation

The Project Purpose was achieved at the time of project completion. The project effects have been continued while the Overall Goal was partially achieved by the time of ex-post evaluation. As for sustainability, although its staff and budget are not necessarily sufficient, the new center was established consolidating the institutional setup for digital mapping in Bangladesh. As for efficiency, both of project cost and period exceeded the plan. Considering all of the above points, this project is evaluated to be satisfactory.

### III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- Although the Digital Mapping Centre has been established, the organizational and technical transition of SOB as a whole from analogue mapping to digital mapping is behind the needs of the time. This is mainly because the staff of the Digital Mapping Centre are original staff of SOB who have been engaged in analog mapping without sufficient knowledge and experience of digital mapping. Therefore, it is recommended for SOB to enhance its training system by improving OJT (on-the-job-training) and inviting lecturers from external training resources. Besides, to accelerate its mapping works, it is recommended for SOB to review, by referring to some successful cases in other countries, the possibility of outsourcing of some works.

Lessons Learned for JICA:

The Project was planned and implemented to enhance the capacity of the staff of SOB in order to successfully implement the IDMS project. This close relationship of these two projects caused some confusions in the evaluation of the plan and implementation of the Project. In terms of the plan, production of outputs and on-schedule implementation of IDMS were indicators of the Project. Therefore, the performance of IDMS has been evaluated as the performance of the Project despite these two projects were two

different projects. In terms of the implementation, the delay of IDMS caused the delay of the Project. For proper evaluation of a project, contents of a plan are to be limited within the scope of the project, and affecting factors caused by other project are to be categorized as Important Assumptions or external factors which are out of the responsibility of the project.



Work stations in the Digital Mapping Center



Students of the Department of Geography and Environment, University of Dhaka visited the Digital Mapping Center