

ASIAN DEVELOPMENT BANK

TAR: BHU 36207

TECHNICAL ASSISTANCE

TO THE

KINGDOM OF BHUTAN

FOR

STRENGTHENING OF THE PAYMENT AND SETTLEMENT SYSTEM

September 2004

CURRENCY EQUIVALENTS

(as of 15 July 2004)

Currency Unit	–	ngultrum (Nu)
Nu1.00	=	\$0.022
\$1.00	=	Nu45.86

ABBREVIATIONS

ADB	–	Asian Development Bank
BNB	–	Bhutan National Bank
BOB	–	Bank of Bhutan
DADM	–	Department of Aid and Debt Management
RMA	–	Royal Monetary Authority
MICR	–	magnetic ink character recognition
NIA	–	Negotiable Instruments Act
TA	–	technical assistance

TA CLASSIFICATION

Poverty Classification	–	Other
Sector	–	Finance
Subsector	–	Banking systems
Theme	–	Sustainable economic growth
Subtheme	–	Promoting economic efficiency and enabling markets

NOTES

- (i) The fiscal year of the Government ends on 30 June.
- (ii) In this report, \$ refers to US dollars.

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I. INTRODUCTION

1. During the Country Programming Mission in April 2003, the Government of Bhutan (the Government) requested the Asian Development Bank (ADB) to provide a technical assistance (TA) grant to augment its efforts in developing its national automated payment and settlement system.¹ The request was in congruence with the Government's efforts to develop its private sector and with ADB's country development strategy for Bhutan. The TA is included in ADB's Country Strategy and Program Update 2004–2006 for Bhutan.²

2. The Fact-Finding Mission visited Bhutan during 1–10 March 2004. The Mission met with representatives from the Department of Aid and Debt Management (DADM); the Royal Monetary Authority of Bhutan (RMA); and senior officials from the two commercial banks: Bank of Bhutan (BOB) and Bhutan National Bank (BNB), which are the primary facilitators of payment and settlement system in Bhutan. The Government and the Mission reached an understanding on the objectives, scope, financing plan, and implementation details of the TA. The project framework is provided in Appendix 1.

II. ISSUES

3. A national, secure, and efficient payment and settlement system is essential for a robust financial sector, where private sector operations may thrive. As part of its efforts to develop the private sector in Bhutan, the Government took the initiative to introduce a payment and settlement system in the 1990s. Bhutan's first clearinghouse was established in the financial hub of Thimphu in January 1997. Thimphu clearinghouse was providing a service long needed, and the amount of checks it cleared expanded rapidly. To facilitate the efficient payment and settlement of growing interbank transactions between BNB and BOB, another clearinghouse was opened in Phuentsholing in 2000. Both clearinghouses thrived. The number of checks and the amount of funds cleared per month in Thimphu increased from 99 checks and Nu9.73 million (\$212,167 equivalent) in January 1997 to 2,781 checks and Nu131.50 million (\$2,867,423 equivalent), respectively, by January 2003: an increase of 2,709% in the number of checks and 1,252% in the amount being cleared. Similarly, the Phuentsholing clearinghouse has processed more than 11,000 checks in 2003. At present, despite the high volume of transactions they handle, the two clearinghouses fall short of adequately meeting market demand in Bhutan.

4. Phuentsholing and Thimphu clearinghouses are owned and managed by RMA. They provide services to the two commercial banks BNB and BOB.³ These services include processing local currency personal checks, banker's checks, drafts, cash warrants, and foreign currency checks payable in local currency drawn on one of the two banks. Each clearinghouse reports its net position to RMA daily. A semi-manual settlement method of clearing transactions and the DOS-based FoxPro computer program, developed by RMA in 1997, are still being used by the clearinghouses. However, this system is not able to accommodate the expanding volume of transactions.

¹ The TA first appeared in the *ADB Business Opportunities* (Internet edition) on 2 April 2004.

² ADB, August 2003, *Country Strategy and Program Update: Bhutan 2004–2006*, Manila

³ BNB and BOB do not transact directly but go through the clearinghouses and RMA. Checks are thus cleared in about 2 working days.

5. Moreover, no national computerized network exists. This engenders a geographical exclusivity; only transactions undertaken in Phuentsholing and Thimphu are cleared, excluding transactions in other parts of the country. Operations throughout the country should be electronically linked if an integrated national settlement system for Bhutan is to be established. Full automation of the payment and settlement system would assist in expeditious and efficient processing of claims. Financial transactions, hence the trade sector in particular, would not suffer from delays due to manual processing. Conceivably, development of automated electronic banking instruments would enhance efficiency of domestic financial institutions and reduce transaction costs of payment and settlement. Complete information on these transactions would be immediately available to monetary authorities, facilitating more informed management of the monetary and financial systems. The increase in speed, security, and transparency of financial transactions would lower risks associated with settlement. This could, in turn, stimulate mobilization of domestic deposits and deepening of the financial sector.

6. Bhutan has no comprehensive legislative and regulatory framework for clearinghouses at present. Clearing operations, responsibilities of clearinghouses, liabilities and responsibilities of clearing participants, and the guidelines for interaction among clearinghouses and other financial institutions have been prescribed by the Clearinghouse Rules and Regulations (1996). These rules and regulations have been supplemented by the Negotiable Instruments Act (NIA) of 2000, which pertains to promissory notes, bills of exchange, and checks. The regulatory framework will have to be reviewed and amended to accommodate a national automated payment and settlement system.

7. The current payment and settlement system has structural, institutional, and capacity constraints. To address these constraints, RMA formed the Working Group for Payment and Settlement System. The group is chaired by the managing director of RMA, and comprises senior officials from RMA and commercial banks. The group is tasked with guiding the design and development of a modern, robust payment and settlement system in Bhutan consistent with the best international practices. In close communication with the Reserve Bank of India, Bangko Sentral ng Pilipinas, and clearinghouses in India and the Philippines, the group has deliberated on payment instruments, electronic banking systems, clearing and settlement arrangements, and regulatory and technological infrastructure that may be necessary to establish an integrated payment system in Bhutan.

8. In April 2004, five members of the group visited Manila and Mumbai to learn from their counterparts' experience about how a modern clearinghouse may be established. They met with technical staff and senior officials from the Department of Information and Technology and National Clearing Cell of the Reserve Bank of India, the high value Clearinghouse in Mumbai, and the Philippine Clearinghouse Corporation.

9. Central to the discussions were the current clearing system in Bhutan and means of improving its scope and efficiency through computerization of clearing transactions. For the group to make an informed decision on which automated and computerized system may be used in Bhutan, they compared and contrasted types and volume of transactions, number of clearing participants, equipment, and software needed to carry out payment and settlement activities in Bhutan, India, and the Philippines. In addition to the structural and legal modalities to be considered while strengthening the payment and settlement system in Bhutan, the group concluded magnetic ink character recognition (MICR) or imaging might be used to modernize the existing clearing mechanism.

10. MICR is a character recognition⁴ and analysis system using special ink and characters that can be magnetized and read automatically. MICR is used extensively in the banking industry to print details on checks (making it difficult to forge the checks), and enable expeditious and automatic processing by computer systems.⁵ MICR clearing involves sorting, listing, and generating interbank claims. There are two commonly used MICR fonts: E-13B and CMC-7. E-13B is the first font used in automated banking in the 1950s, when automatic reading of information became important with automatic processing of checks at other than the native banks. It contains the digits and four special symbols used in banking. The font was specially designed so that magnetic pulses would be read unambiguously. The CMC-7 font was designed in France to encode more than simply the digits and some special symbols. It encodes the digits, the letters, and five special symbols; it can also be seen as a bar code.

11. "Remote check imaging," on the other hand, is the imaging of a check (via electronically scanning) at a bank site other than the site where the image system and database reside. Images of checks are stored electronically until they are automatically retrieved for statement preparation. Customers receive an image statement, which includes a specially designed first page, and features images of canceled checks, rather than the actual checks. Directly beneath each check image, the posting date, check number, amount, and trace number may be listed. Imaging also improves response to customer inquiries, and check verification, and makes production of customer statements and notices more efficient. Images of checks, deposit tickets, and statements are archived on optical disk storage and retrievable through a computer network. Users can access, print, or fax check images and statements.

12. MICR is used for clearing large numbers of checks for numerous banks in a short period of time. Even low capacity machines are able to handle about 300 checks per minute, while faster technology is available and used in sophisticated financial sectors. Imaging is the next generation of technology used in automated payment and settlement systems. However, telecommunication bandwidths, image data compression efficiency, and compatibility are key components of using this method for check clearing. For it to be adopted in Bhutan, information infrastructure would have to be adequate. Moreover, considerable amendments to the legislation pertaining to information and communication technology and NIA would have to be made. For instance, the NIA requires that checks be physically presented for clearing. If this requirement were maintained, imaging would not necessarily expedite check clearing across Bhutan's geographically challenging terrain.

13. The group translated the technical knowledge gathered during the study tour into informed guidance for improving the current payment and settlement system in Bhutan. The group shared its findings from the study tour with the chief executives of BNB, BOB, and RMA on 28 April 2004. The chief executives deliberated available options and possible modalities of pursuing each option identified during the study tour. However, this knowledge needs to be further contextualized for Bhutan, given its immediate and medium-term needs: institutional, structural, and legal adaptability. Once a clear decision is made as to how the payment and settlement system could best be automated, then operational and regulatory guidelines, appropriate computer software, adequate hardware, and trained technical staff will be required to successfully upgrade the payment and settlement system.

⁴ Character recognition fonts are divided in two groups, MICR and optical character recognition (OCR). However, the distinction is somewhat artificial, as some applications use magnetizable ink for OCR, while the MICR fonts can be recognized optically.

⁵ Similarly in computing, MICR is a technique that enables special characters printed in magnetic ink to be read and inputted rapidly to a computer.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Output

14. The objective of this TA is to establish an integrated payment and settlement system throughout Bhutan. Legal modalities, institutional arrangements, and current practices will be reviewed, with a view to designing a comprehensive, computerized payment and settlement system. The system will address the needs of banks, businesses and individuals in a sustainable, efficient, transparent manner, thereby promoting financial market and private sector development. The TA will explore the possibility of graduating from the current manual system of recording, payment, and settlement to a more sophisticated processing system, e.g., a system using MICR technology, imaging, or a “real time” gross settlement system, eventually. The TA will support the institutional and regulatory development of this system, as well as implementing the system by procuring necessary equipment and computer software.

B. Methodology and Key Activities

15. This TA will primarily support (i) reviewing and revising, as needed, the Clearinghouse Rules and Regulations (1996) to accommodate an integrated clearing and settlement system; (ii) reviewing the present responsibilities and tasks of the clearinghouses; (iii) defining a general framework to link all the clearinghouses and expand their coverage to the entire country; (iv) drafting the rules and procedures to create the necessary legal framework within which the clearinghouses would operate; (v) identifying, procuring, and installing software and hardware for the integrated automated clearing system, to enable efficient operation of a check clearing and settlement system; (vi) implementing the system; and (vii) ensuring its sustainability by training staff from BNB, BOB, and RMA on how to use and maintain the system.

C. Cost and Financing

16. The total cost of the TA is estimated at \$330,000 equivalent, comprising \$272,000 in foreign exchange costs and \$58,000 equivalent in local currency costs. ADB will finance \$275,000 equivalent, which includes the entire foreign currency costs and \$3,000 in local currency costs. The TA will be financed on a grant basis by ADB's TA funding program. The Government will contribute the remaining \$55,000 equivalent of local currency costs in kind as office space and facilities, counterpart staff, local transportation, and administrative and clerical support. ADB's financing will be used for (i) acquiring the services of an international consultant, (ii) organizing workshops and providing training as required to counterpart staff, and (iii) acquiring the equipment and software required to implement the new payment and settlement system. The detailed cost estimates and financing plan are provided in Appendix 2.

D. Implementation Arrangements

17. DADM, Ministry of Finance, will be the Executing Agency for the TA, and RMA will be the Implementing Agency. The TA will be implemented over 1 year, between November 2004–November 2005. Two counterpart staff will be nominated from DADM, and will work closely with the TA consultant to facilitate effective and efficient TA implementation.

18. An individual international consultant will be engaged by ADB in accordance with its *Guidelines on the Use of Consultants*, to provide the required consulting services for a total of 3 person-months, delivered intermittently. The consultant will be a central bank financial specialist, with extensive operations experience in payment and settlement systems. The

consultant will assess of the current institutional, legal, and procedural facets of the check clearing and settlement mechanism in Bhutan, and identify how to improve it. The consultant will then prepare a framework to consolidate and improve the currently disjointed settlement system in a payment systems vision paper and draft the necessary rules and regulations to ensure sustainability of a national check clearing system in Bhutan. The consultant will also assist RMA staff, who have the expertise in information technology and system requirements to implement an automated payment and settlement system, in identifying the necessary software and hardware to support this system. Outline terms of reference for the consultant are provided in Appendix 3.

19. In implementing the new system, additional computer software and hardware will be needed. The consultant will identify the software and hardware necessary to support the new clearing system. Equipment, computer hardware and software will be procured in accordance with *ADB's Guidelines for Procurement*. After the completion of the TA, all equipment purchased under the TA will be turned over to the Government.

20. The consultant will prepare (i) an inception report within 15 days of fielding; (ii) a midterm review report after the second month of consultancy; (iii) a draft final report for the TA, to be submitted 2 weeks before the end of the consulting term; and (iv) a final report at the end of the consulting term. All reports will be submitted (in hard and soft copies) to DADM, RMA, and ADB for review and comments. The consultant will incorporate the comments received from the Government and ADB while finalizing the reports. The recommendations of the final report will be discussed during a tripartite meeting.

IV. THE PRESIDENT'S DECISION

21. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$275,000 on a grant basis to the Government of Bhutan for Strengthening of the Payment and Settlement System, and hereby reports this action to the Board.

TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal</p> <p>Promoting financial market and private sector development by establishing a national automated payment and settlement system in Bhutan.</p>	<ul style="list-style-type: none"> • Necessary institutional and legal framework adopted to support efficient operation of the new payment and settlement system. • An automated, integrated payment and settlement system is adopted by Bank of Bhutan, Bhutan National Bank, and Royal Monetary Authority. • Staff in relevant institutions handling payment and settlement operations are adequately trained on correct and efficient use of the new system. 	<ul style="list-style-type: none"> • TA progress reports. • RMA periodical performance reports on its activities and financial sector in Bhutan. • ADB review missions. 	
<p>Purpose</p> <p>Operationalizing a national automated payment and settlement system in Bhutan.</p>	<ul style="list-style-type: none"> • Developing and maintaining a complete and consolidated database of all checks for clearing. • Faster clearing of checks within a nationally integrated, automated payment and settlement system. 	<ul style="list-style-type: none"> • Descriptive and analytical reports prepared by RMA on the payment and settlement system. • Consultant's inception, progress, and final reports. • Consultations with other relevant departments of the Government, including RMA and Department of Aid and Debt Management. • Tripartite meetings. 	<ul style="list-style-type: none"> • Full cooperation and participation of the Government, RMA, and commercial banks during TA implementation. • Expertise available to meet output requirements.
<p>Outputs</p> <ul style="list-style-type: none"> • Payment systems vision paper prepared. 	<ul style="list-style-type: none"> • New payment and settlement system identified and vetted 	<ul style="list-style-type: none"> • Quality and scope of training materials and manuals . 	<ul style="list-style-type: none"> • Timely provision of hardware and software to support

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TECHNICAL ASSISTANCE FRAMEWORK – *Continued*

<ul style="list-style-type: none"> • An integrated national payment and settlement system is adopted. • Staff are trained adequately in proficient use of automated check clearing and payment system. 	<p style="text-align: center;">at a stakeholder workshop (April 2005).</p> <ul style="list-style-type: none"> • Payment system vision paper completed (May 2005). • National automated payment and settlement system operational (September 2005). • Training materials and manuals prepared (August 2005). 	<ul style="list-style-type: none"> • Feedback from trainees. • TA progress reports. • ADB review missions. 	<p style="text-align: center;">the new automated payment and settlement system.</p> <ul style="list-style-type: none"> • Adequate training of a critical number of bank and clearinghouse staff.
<p>Activities</p> <ul style="list-style-type: none"> • Assess range of potential options applicable and design the means for developing an electronically linked, automated payment and settlement system in Bhutan. • Assess need for revisions to NIA. • Review and revise, as needed, the Clearinghouse Rules and Regulations (1996) to accommodate a national, automated clearing and settlement system. • Institutional and human resource requirements for utilizing this system are identified. • Review the present responsibilities and tasks of RMA, clearinghouses. 	<ul style="list-style-type: none"> • Options for development of Bhutan payment and settlement system, in accordance with international best practices, reviewed (March 2005). • Amendments to NIA drafted, if necessary (April 2005). • Clearinghouse Rules and Regulations revised (April 2005). • Institutional and human resource requirements identified and incorporated into the payment systems vision paper (May 2005). • Review of responsibilities and tasks completed (May 2005). 	<ul style="list-style-type: none"> • Payment systems vision paper. • Regular consultations among ADB staff, TA consultant, and the Implementing Agency. • Consultant's progress reports. • ADB review missions. 	<ul style="list-style-type: none"> • Commitments by RMA to implement the TA, by assigning dedicated staff to work with TA consultant and go through necessary on-the-job training. • Timely fielding of appropriately qualified consultant. • Qualified consultant to carry out the training. • Trained personnel to continue to work in their current capacities, at least until additional staff can be trained to replace them. • Timely procurement of equipment and software to ensure maximum on-the-job training in the course of TA implementation.

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TECHNICAL ASSISTANCE FRAMEWORK – Continued

<ul style="list-style-type: none"> Identify, procure, and install software and hardware to create a national, automated clearing system. Provide on-the-job training to staff from RMA, commercial banks, and clearinghouses on how to use the new software, and basic trouble-shooting in daily operation of the new software. 	<ul style="list-style-type: none"> Necessary hardware and software procured and national, automated payment and settlement system operationalized (October 2005). Skills and information transfer through on-the-job training (intermittently until November 2005). 		
<p>Inputs</p> <ul style="list-style-type: none"> Full participation and institutional support from RMA and commercial banks during TA implementation. Consulting services for 3 person-months. Financial inputs: <p>ADB \$275,000</p> <ul style="list-style-type: none"> -Consultant \$81,000 -Computers, other equipment \$150,000 -Workshops, manuals, report \$5,000 -Contingency \$39,000 <p>Government \$55,000</p> <ul style="list-style-type: none"> -Office, secretarial, other services \$25,000 -Local counterpart staff \$10,000 -Reports, workshops, communications \$10,000 -Contingency: \$10,000 		<ul style="list-style-type: none"> Consultant progress reports. Tripartite meetings. ADB review missions. 	<ul style="list-style-type: none"> Fielding of qualified consultant. Continued commitment of the Government and RMA to TA objectives. Availability of counterpart funds.

ADB = Asian Development Bank, NIA = Negotiable Instruments Act, RMA = Royal Monetary Authority, TA = technical assistance.

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank Financing^a			
1. Consultant			
a. Remuneration and Per Diem	70.0	0.0	70.0
b. International Travel	10.0	0.0	10.0
c. Communications	1.0	0.0	1.0
2. Computers and Other Equipment ^b	150.0	0.0	150.0
3. Workshops, Manuals, and Reports	2.0	3.0	5.0
4. Contingency	39.0	0.0	39.0
Subtotal (A)	272.0	3.0	275.0
B. Government Financing			
1. Office, Secretarial, and Related Services	0.0	25.0	25.0
2. Local Counterpart Staff	0.0	10.0	10.0
3. Reports, Workshops, and Communications	0.0	10.0	10.0
4. Contingency	0.0	10.0	10.0
Subtotal (B)	0.0	55.0	55.0
Total	272.0	58.0	330.0

^a Financed by the Asian Development Bank's technical assistance funding program.

^b Computers and peripheral equipment, software, and all other office equipment that will be needed to adopt and implement the new payment and settlement system (e.g., magnetic ink character recognition, imaging etc.) at the Royal Monetary Authority and clearinghouses.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANT

1. The technical assistance (TA) will provide for 3 person-months of consulting services, rendered intermittently by one individual international consultant. The consultant will be a central bank financial specialist, with extensive operational experience in payment and settlement systems and associated clearinghouse procedures. The consultant will have at least 5 years experience working with payment systems within the context of a central bank and clearinghouses in small economies and/or within the region. The consultant will have thorough knowledge about clearinghouse operations and required infrastructure, including relevant accounting principles and required computer software. Prior experience in legal drafting with reference to payment and settlement systems will be preferred.

2. The consultant will review and build upon the work undertaken thus far by the Government of Bhutan, and carry out all tasks outlined in the terms of reference, as well as any other related tasks that may be required to achieve the objectives of the TA, including the following:

- (i) Assess the need for revisions to the Negotiable Instruments Act (NIA), and accompanying rules and regulations, to accommodate a modern, efficient, secure, and integrated payment and settlement system, consistent with best practices, for Bhutan.
- (ii) Review the Clearinghouse Rules and Regulations (1996) and revise them in the context of the NIA, incorporating rules and procedures required for new payment- and settlement-related services to be provided.
- (iii) Review the activities presently executed at the clearinghouse. Recommend new services that may be addressed by clearing transactions, including, but not limited to (a) salary payments, (b) payment and refund of taxes, (c) utility payments, (d) payment of motor vehicle tax, (e) insurance premiums, (f) dividend and pension payments, (g) electronic funds transfer in clearinghouses, (h) remote (interbranch) clearing of banks, and (j) integration of regional clearing with global clearing.
- (iv) Assess a range of potential options for improving the payments and settlement system involving different levels of automation, coverage (with and without electronic fund transfers features) and associated costs and benefits to arrive at a solution that is most appropriate for Bhutan.
- (v) Design a payment and settlement system that can address the demands of the Bhutanese economy, with a time-bound action plan for implementing this system. The system should include (a) types of services that may be covered under the payment systems; (b) a framework to link all the clearinghouses and expand their coverage to the entire country; (c) procedures for assigning codes to the participating banks in the country; (d) standardized check system for all the participating banks incorporating details such as size of checks, and quality of paper to be used for printing checks; (e) roles and responsibilities of the Royal Monetary Authority (RMA), banks and other stakeholders under the new payment and settlement system; (f) institutional framework, type of instruments or messages, processes and procedures to be followed, and implementation schedules; (g) legal and regulatory framework, and oversight; and (h) accounting

guidelines for clearing transactions to be followed by RMA and other participating banks.

- (vi) Conduct a workshop for Bank of Bhutan (BOB), Bhutan National Bank (BNB), RMA, and staff to vet the technical, structural, institutional, and legal requirements of the payment and settlement system the consultant designed;
- (vii) Guided by the input from the workshop, prepare a “payment systems vision paper” for Bhutan in close coordination with RMA staff.
- (viii) Based on the findings, assist RMA and clearinghouse staff in identification, procurement, and installation of hardware and software to create a national, integrated, automated payment and settlement system. (Any procurement of equipment, computer hardware and software will be in accordance with *ADB's Guidelines for Procurement*).
- (ix) Oversee development of an electronic database and monitoring program for payment and settlement transactions before the end of the TA, and means of maintaining it effectively for the clearinghouse to meet continuing demands of a growing financial sector.
- (x) Review the internal control measures of the clearing transactions, including control of the computer program, and implement necessary changes. Checks and balances during and after transition should be reinstated, identifying provisions required.
- (xi) Prepare staffing recommendations for clearinghouses and RMA, a work plan, and responsibilities of clearinghouse staff.
- (xii) Provide on-the-job training for officials from BOB, BNB, RMA, and clearinghouse staff to ensure proficient, correct, and effective use of an automated payment and settlement system.
- (xiii) Prepare (a) an inception report, within 15 days of fielding; (b) a midterm review report after the second month of consultancy; and (c) a draft final report for the TA, to be submitted 2 weeks before the end of the consulting term; and (d) finalize the draft final report, incorporating comments from the Government and ADB.