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IMPLEMENTATION COMPLETION AND RESULTS REPORT
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ON A

CREDIT/GRANT

IN THE AMOUNT OF SDR 8.1 MILLION; US$8 MILLION
(US$ 21.52 MILLION EQUIVALENT)

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR A

SEVERE ACUTE RESPIRATORY SYNDROME ("SARS") AND

OTHER INFECTIOUS DISEASES RESPONSE PROGRAM

June 29, 2007

Human Development Sector Unit
China Country Management Office
East Asia and Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective June 28, 2007)

Currency Unit = Yuan

Yuan 1.00 = US$ 0.13

US$ 1.00 = Yuan 7.61

Fiscal Year

January 1 - December 31

ABBREVIATIONS AND ACRONYMS

AI	Avian Influenza
AIDS	Acquired Immunodeficiency Syndrome
CAS	Country Assistance Strategy, 2003-2005
CDC	Center for Disease Control
CEP	Chinese Experts Panel
CIDA	Canadian International Development Agency
CPS	Country Partnership Strategy, 2006-2010
DFID	United Kingdom Department for International Development
FLO	Foreign Loan Office, Ministry of Health
GOC	Government of China
HERO	Health Emergency Response Office (of MOH)
HIV	Human Immunodeficiency Virus
IDA	International Development Association
JSDF	Japan Social Development Fund
MAD	Medical Assistance Department (of MOH)
MDG	Millennium Development Goals
M&E	Monitoring and Evaluation
MOF	Ministry of Finance
MOH	Ministry of Health
MOP	Memorandum and Recommendation of the President (World Bank)
PDO	Program Development Objectives
PIP	Program Implementation Plan
QAG	Quality Assurance Group
QOE	Quality on Entry
RMB	Renminbi (Currency of the People's Republic of China)
SARS	Severe Acute Respiratory Syndrome
TB	Tuberculosis
TTL	Task Team Leader
WHO	World Health Organization

Vice President: James Adams, EAPVP
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CHINA

Severe Acute Respiratory Syndrome ("SARS") And Infectious Diseases Response Program

CONTENTS

A. Basic Information

Country:	China	Project Name:	SARS and Infectious Diseases Response Program
Project ID	IO 2037336	L/C/TF/ Numbers	
ICR Date		ICR type	Core ICR
Lending Instrument	SIL	Borrower	China
Original Total Commitment:	USD11.5 million (XDR8.1 million)	Disbursed Amount:	USD12.31 million

Environmental Category:

Implementation Agency:
Foreign Loan Office, Ministry of Health

Cofinanciers and Other External Partners:
UK, Canada, Japan

B. Key Dates

Process	Date	Process	Original Date	Revised/Actual Date(s)
Concept Review:		Effectiveness:	07/10/2003	07/10/2003
Appraisal:		Restructuring(s):		
Approval:	06/19/2003	Mid-term Review:		
		Closing	12/31/2005	12/31/2006

C. Rating Summary

C.1 Performance Rating by ICR

Outcome:	Satisfactory
Risk to Development Outcome:	Negligible to Low
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)

Bank	Ratings	Borrower	Ratings
Quality at Entry	Highly satisfactory		Satisfactory
Quality of Supervision	Moderately satisfactory		Satisfactory
Overall Bank Performance:	Satisfactory	**Overall Borrower Performance:**	Satisfactory

	Original	Actual
Sector Code (as % of total Bank financing)		

Theme Code (Primary/Secondary)	

E. Bank Staff

Positions	At ICR	At Approval
Vice President	James W. Adams	Jemal-ud-din Kassum
Country Director	David Dollar	Yukon Huang
Sector Manager	Fadia Saadah	Fadia Saadah
Project Team Leader	Shiyong Wang	L. Richard Meyers
ICR Team Leader	Shiyong Wang	
ICR Primary Author	Ian Paton Morris	

F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document)

The objective of the Program is to (1) address emergency needs for SARS-related diagnosis, clinical management, and personal protection that are necessary to bring the current epidemic fully under control; and (2) support the Government's efforts to strengthen the capacity of the public health system more generally so that China's health system is prepared to combat the possible re-emergence of SARS and, equally important, similar infectious disease threats that might occur in the future.

Revised Project Development Objectives (as approved by original approving authority)

The Program Objectives were not formally revised, and the final indicators vary slightly from the ones in the MOP. The indicators were updated (see 2.3) at the time the closing date was extended.

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	SARS morbidity and mortality in highly affected areas reduced and exportation of SARS cases from these areas minimized within the first six months after program effectiveness: No. of SARS cases/No. of deaths			
	Beijing: 192/2521 Guangdong: 58/1512 Tianjin: 14/175 Hebei: 12/215 Henan: 0/15 Mongolia: 28/282 Shanxi: 24/448 Guanxi: 3/22 This accounted for 97% of cases and 94% of deaths nationally.			The last case of SARS was identified as the project was approved—although this could not be known ex ante
Date achieved	7/10/2003			12/31/2006
Comments (incl. % achievement)				
Indicator 2 :	Disease surveillance and reporting system improved especially for SARS and other infectious diseases: web-based disease reporting system coverage, and rate of under-reporting			
Value quantitative or Qualitative)	There was no national computerized disease reporting system. Disease reporting took over 12 days and rate of under-reporting (national sampling data) was 8%			Established web-based real-time national disease reporting covering 100% of provincial facilities, 95% of county facilities and over 76% of township level facilities. Average disease reporting delays reduced to 3.6 days and under-reporting reduced to about 3%
Date achieved	7/10/2003			12/31/2006
Comments (incl. % achievement)				

Indicator 3 :	An alert and response mechanism for public health emergencies set up: # of provinces have set up	
Value quantitative or Qualitative)	No national alert system existed	All provinces have set up alert system covering 25 key disease indicators categorized into 3 broad categories to serve as early warning system for public health emergencies
Date achieved	7/10/2003	12/31/2006
Comments (incl. % achievement)		
Indicator 4 :	Positive behavior change in targeted groups, focusing on vulnerable population like women, floating population and the poor, etc. by health promotion, messages developed and delivered under the program: coverage of IEC, level of knowledge on key infectious disease	
Value quantitative or Qualitative)	Little health promotion and no data available on scale and effectiveness	Research in 2 provinces indicated some behavior change in targeted vulnerable groups for hand-washing: before meals increased (40% to 54%), and after using bathroom increased (43% to 59%).
Date achieved	7/10/2003	12/31/2006
Comments (incl. % achievement)		
Indicator 5 :	To deepen health reform, policies and strategies are developed on the basis of experiences learnt from SARS control practices, e.g.: to improve health financing in rural areas: # of policies developed by the program.	
Value quantitative or Qualitative)	None	54 public health policies/strategies developed (at national and provincial level focused on _____)
Date achieved	7/10/2003	12/31/2006
Comments (incl. % achievement)		

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :				
Value (quantitative or Qualitative)				
Date achieved				
Comments (incl. % achievement)				

G. Ratings of Project Performance in ISRs

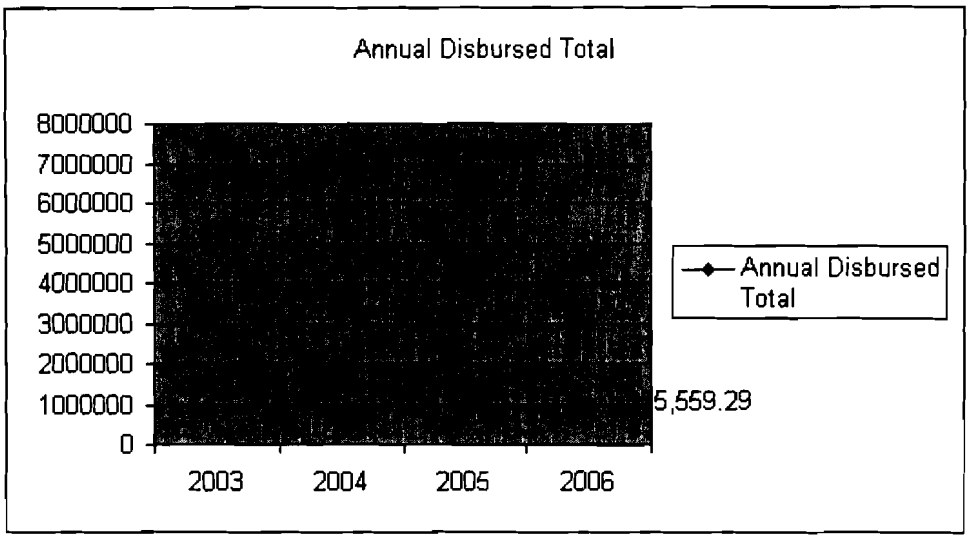
Reporting on the SARS activities through ISRs was through an ongoing health Project (P003566). The numbers in parenthesis are the ISR numbers for the health Project.

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1(13)	1/13/2004	S	S	
2 (14)	6/21/2004	S	S	
3 (15)	12/21/2004	S	S	
4 (16)	5/5/2005	S	S	
5 (17)	12/19/2005	S	S	
6 (18)	12/18/2006	S	S	

H. Restructuring (if any)

Not Applicable

I. Disbursement Profile



1. Program Context, Development Objectives and Design

1.1 Context at Appraisal

The Program was developed by Government and appraised by the Bank in less than two months (under Bank Emergency Recovery Assistance Procedures – OP 8.50). This was in response to an urgent request by the Government of China (GOC) in May 2003 for immediate assistance to deal with a dramatically escalating public health crisis caused by the Severe Acute Respiratory Syndrome (SARS) epidemic. The sudden and dramatic onset of SARS -- a newly identified zoonotic disease of epidemic proportions -- created an unexpected and severe threat to people's health (including a high death rate) as well as to China's continued rapid economic development. First identified in Guangdong, China in November 2002 it had spread to 26 provinces/regions in mainland China as well as to Hong Kong Special Administrative Region and Taiwan, China. Further, the future scale and duration of the epidemic was extremely uncertain. It was clearly recognized by GOC (and participating development partners) that a failure to bring SARS under control could result in further significant spread of the disease with both domestic and global economic implications – including unprecedented disruption to domestic and international movement of people and of trade. Further, GOC recognized it had limited surveillance, clinical management, and response capacity to deal with infectious disease epidemics particularly in its vast rural areas as a consequence of past limited investments.

GOC therefore attached the greatest importance to SARS prevention and control. SARS prevention became the top priority for government at all levels. Central government had worked out the strategy of "Setting up Emergency Alert Response Mechanisms, Implementing Effective Prevention and Control, and Strengthening Collaboration with International Society" as the way forward. A series of new policies and guidelines had been developed and measures implemented including: (a) establishing a national command office to guide the response; (b) establishing a RMB 2 billion ($242 million) SARS response fund; and (c) listed SARS as a legally notifiable infectious disease.

The State Council had spelled out the priority work that needed to be implemented urgently. This included: (a) ensuring all reporting health facilities sent daily reports (even if zero) of SARS cases to generate reliable and timely data as a basis for effective and targeted response measures; (b) strengthening supervision on SARS prevention and control; (c) coordinating SARS scientific research (including improved cooperation with the international community) to identify effective preventive measures; (d) strengthening support to the potentially more vulnerable provinces/rural areas in the middle and western regions and guaranteeing free SARS treatment and care for the poor; (e) strengthening overall collaboration with the international community; and (f) publicizing government policies and decisions, and disseminating information on the Law on Infectious Diseases and relevant preventions/precautions.

While these collective actions had resulted in a significant progress in SARS prevention and control, particularly in Guangdong Province and Beijing, SARS still represented a serious challenge. As a new disease, the GOC remained unclear about the disease's pathogenesis, and epidemiological nature. There were no specific and effective diagnostic methods or treatment regimens. There was serious risk that SARS may spread to the vast rural areas, or become endemic and reoccur seasonally. GOC recognized that the epidemic had placed in stark relief the general lack of preparedness of China to cope with a rapidly moving infectious disease crisis despite its size resources. Specifically, the crisis demonstrated that there were major deficiencies

in the health system's ability both to detect, and mount timely responses to new infectious disease threats.

In the context of the emergency response the Bank made very special arrangements to finance the IDA share of this "Program" in full consultation with, and at the request of GOC. Strictly speaking it is not a stand alone IDA financed Program. The expenditure program was financed by amending (and extending where applicable) eight existing IDA Projects (from various sectors) to add a SARS component. In 2 extraordinary cases, already closed projects were reopened prior to their amendment and extension. In addition to IDA financing, the Canadian International Development Agency (CIDA) and United Kingdom Department for International Development (DFID) and a Japan Social Development Fund Grant (JSDF) jointly financed the "Program" IDA managed Trust Funds

Bank's Rationale for Involvement

The rationale for Bank involvement in the program was extremely strong. Firstly, SARS had both major national and global implications for population health and economic activity. The potential disruption to labor and trade and hence to the Chinese and regional economies was very significant. Secondly, the SARS epidemic had rocked China to its foundations with the dramatic realization by the leadership that this was a policy and government failure which needed to be redressed quickly and decisively in order to protect its citizenry and for China to be doing its part to prevent its global spread. In asking for urgent support from the Bank China aimed at (a) accessing global knowledge; (b) getting assistance in preparing a program to enable it to adequately respond to the crisis; and (c) demonstrating its increased openness and transparency in working with international community on this issue. In this context, the Bank responded quickly to client needs.

Thirdly, rural health was well known to be in a poor state, particularly in the poorer provinces of Middle and Western China – assistance to health was an identified priority in the Country Assistance Strategy 2003 – 2005 (CAS), and the subsequent Country Partnership Strategy 2006-2010 (CPS), and in prior Bank economic and sector work. The need to: (a) strengthen the relationship between levels of government; (b) achieve the Millennium Development Goals (MDG) (which include reduction in infectious diseases); (c) to respond to demand driven knowledge; and (d) encourage increased use of local experts as a means of increasing capacity were also themes of the Bank's CAS and CPS in China. Fourthly, further investments in public health were clearly justified on public finance criteria as they had strong public good characteristics (information required for action and strong positive externalities through prevention and control). It was also expected that experience and insights gained through the Program would also feed into longer term initiatives that could be focused on the broader health sector reform and development agenda.

Finally, the Bank had significant experience in putting programs together quickly, including in emergency situations, while also working closely with both government and other interested development partners. The Bank also had experience and capacity to work at both national and provincial levels, including established mechanisms to manage funds flow and procurement. It also had staff with significant expertise and knowledge of China to manage the program while also drawing on the technical expertise of other participating agencies, including the World Health Organization (WHO). GOC, participating development partners and the Bank also recognized the benefits that would come from a strong partnership reflected in one joint development partner program supporting the GOC program responding to the SARS public health crisis.

1.2 Original Program Development Objectives (PDO) and Key Indicators

The Program Objective is to (1) address emergency needs for SARS-related diagnosis, clinical management, and personal protection that are necessary to bring the current epidemic fully under control; and (2) support the Government's efforts to strengthen the capacity of the public health system more generally so that China's health system is prepared to combat the possible re-emergence of SARS and, equally important, similar infectious disease threats that might occur in the future.

The Short-term Objectives of the Program Project Specified that:

Within the initial six months, the Program would focus on:

- Monitoring and evaluating SARS related risks and preparedness for combating SARS in the provinces that currently have limited epidemics or have reported no cases.
- Curbing the further spread of SARS, reducing its incidence in highly affected SARS epidemic areas, and minimizing the spread of SARS from these areas to other, especially rural, areas.
- Improving the clinical management of SARS, thus improving the cure rate and lowering the fatality rate.

The Medium-term Objectives of the Program Project Specified that:

Beginning immediately and over the next two years, the Program would:

- Strengthen overall capacity for infectious disease prevention and control.
- Improve infectious disease surveillance and reporting.
- Set up alert and response mechanisms for detecting public health crises.
- Improve capacity for operational research on infectious disease prevention and control in collaboration with renowned international research/technical institutions, including WHO.
- Use the lessons learned and experience gained in the Program to inform the process of building an adequate public health infrastructure as well as issues of broader health sector reform and development.

The Government adopted the following overall program indicators to monitor the program:

1. SARS morbidity and mortality in highly affected areas reduced and the spread of SARS cases from these areas minimized within the first six months after program effectiveness.
2. Infectious disease surveillance and reporting system improved, especially for SARS.
3. An alert and response mechanism for public health emergencies set up.
4. Positive behavior change in targeted groups, focusing on vulnerable population groups including women, floating populations and the poor etc., by health promotion messages developed and delivered under the program.

The Memorandum and Recommendation of the President (MOP) provided the key performance indicators and recognized that they would need to be refined. The indicators presented in Annex 2 are the ones embodied in the Letter Agreements.

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

The PDO's for the program were not revised, and the final indicators vary slightly from the ones in the MOP. The indicators were updated (see 2.3) at the time the closing date was extended.

1.4 Main Beneficiaries

The Program targeted benefits (i.e. creation of capacity to respond adequately to public health emergencies) in eight provinces/cities with a total population of 179 million (14% estimated poor and 12% minorities) selected on the basis that one or more of the following criteria were met: (a) have had, or have, a SARS epidemic underway; (b) are located in the middle or western region (areas known to be disadvantaged); (c) be a city or province where the local response will generate indispensable lessons for China and/or internationally; (d) be particularly vulnerable to SARS type epidemics because of large highly mobile populations, or role as major transport network center. Work under the Program was designed to generate knowledge to support action on SARS, and other infectious diseases. This was a particular focus of program activities in Guandong Province, the worldwide epicenter of the SARS epidemic, and Beijing (a main center of the epidemic) which were primarily focused on operational research and technical assistance designed to create critical information drawn from local and international experience to support: (i) efforts to develop the program in program provinces/cities; (ii) the development of a national capacity for infectious disease prevention and control; and (iii) provide information for use internationally (global knowledge).

Investments also focused on the enhancement of institutional capacity to enable the Ministry of Health (MOH), provinces and lower level authorities in program areas (particularly selected hospitals, clinics, and Centers for Disease Control (CDCs)) to identify gaps in preparedness for public health emergency responses and to develop a capacity to appropriately respond through support to: (i) renovate hospital wards/clinics to deal with highly infectious respiratory patients and establish medical waste management systems in designated hospitals; (ii) develop protocols for the management and treatment of patients with highly infectious respiratory diseases, including SARS, and associated training of staff ; (iii) establish the web-based infectious disease surveillance and case reporting system, through equipment, staff training and consulting support at all levels of the system; (iv) develop a public health laboratory network capacity to safely undertake SARS/infectious disease testing; and (v) develop comprehensive health promotion capacities and programs which were gender sensitive and with a focus on mobile, rural and poor populations.

1.5 Original Components

Component (1): Program Planning, Coordination and Policy Development. This component would support activities to: (1) review and take stock of SARS related policies and accumulated experience, including the provision of free treatment for the poor, in part to determine lessons for other, more general public health programs and policies, e.g., for TB and HIV/AIDS, and assess the extent and nature of SARS related determinants (public health, socio-economic, financial barriers to accessing health care especially for the poor and vulnerable) in both affected and non-affected areas; (2) identify gaps in preparedness and local responses in addressing SARS/infectious diseases issues and develop and/or revise protocols for emergency responses to SARS and other similar outbreaks; (3) hold international and national workshops, seminars and conferences that involve exchanges of information and the sharing of best practices with respect to addressing SARS and related public health challenges that include integrating gender concerns

into health policy; (4) plan and implement supervision efforts and domestic and international technical assistance, drawing upon technical input from WHO and other centers of international expertise; and (5) support the dissemination and implementation of operational research findings

Component (2): Clinical Management of SARS Patients. This component would provide support to: (1) establish fever clinics where needed in selected medical institutions; (2) renovate designated SARS hospitals and wards in provincial capitals and selected prefectures in accordance with appropriate infectious disease control standards; (3) train male and female health care workers on SARS/infectious disease diagnosis and treatment; (4) strengthen personal protection measures for health care workers in order to minimize hospital infections in both patients and health care workers; (5) provide emergency supplies of consumables, medical equipment, and appropriate vehicles for transporting SARS patients; (6) undertake regular supervision to evaluate compliance with MOH guidelines on the clinical management of SARS and hospital infection control for SARS and other related infectious diseases; and (7) carry out operational research.

Component (3): Disease Prevention and Control, with a focus on SARS and Other Infectious Diseases. This component would: (1) strengthen disease surveillance and case reporting systems; (2) strengthen the laboratory network development for SARS/infectious diseases surveillance; (3) carry out gender sensitive health promotion activities to, among other things, improve general awareness on preventing infection as well as reduce fear and stigmatization associated with SARS/infectious diseases; and (4) train Ministry of Health Communicable Disease Center staff in field epidemiology, contact tracing, case reporting and ensure the implementation of these activities.

1.6 Revised Components

The formal components of the program were not revised during implementation.

1.7 Other significant changes

The PDOs and components did not change, however the scope, scale and emphasis of individual activities within the components evolved in response to: (a) the fact that the SARS epidemic waned; (b) the original implementation timetable had proved ambitious; (c) technical assistance activities under the program had suggested increased emphasis in some areas (e.g. establishment of a national laboratory network) and some technical assistance activities took longer to implement than planned; (d) there were some savings; and (e) foreign exchange gains in US$ terms. The extension enabled additional training and capacity building activities to be undertaken, technical assistance and operation research to be completed and, significantly, more time for expert panels and seminars to be used to review policy/protocols etc. and to disseminate experiences across the Program provinces.

Closing Date Extensions. The closing date was extended for 12 months (all six IDA credits and the one of the two trust funds financing the program were adjusted by varying periods) to allow for full achievements of Program objectives.

2. Key Factors Affecting Implementation and Outcomes

2.1 Program Preparation, Design and Quality at Entry

The Program was prepared in seven weeks under Bank Emergency Recovery Assistance procedures (OP 8.50) in response to the dramatic explosion of the SARS epidemic as noted in Context of Appraisal (1.1 above). The GOC took the decision at the highest levels that it needed to: (a) take immediate and unprecedented action to deal with the potentially catastrophic effects of a sustained SARS epidemic on both the population and the economy/trade more generally; (b) develop capacity to deal with public health emergencies more generally and (c) mobilize international donor support, access to global knowledge on SARS/infectious diseases and a mechanism to bring local and national experts together to deal with the crisis. To give effect to this the GOC immediately established strong program preparation teams at the national and provincial levels to work with the Bank (WHO and other development partners). The MOH became responsible for the program under the direction of the National Command Center of the State Council.

Thus the Program, its focus and scope, had extremely high ownership by GOC, including the Ministry of Finance (MOF), MOH and the Program provincial authorities. The level of ownership and commitment to accessing global knowledge and determination to "learn by doing" in addressing the crisis by GOC is fundamental to understanding the overall quality of program design and subsequent implementation success. Government teams and the Bank team worked collaboratively around the clock (often by video conferencing between Beijing and Washington because the teams were constrained by restrictions on and potential dangers of travel) to prepare respectively the Program Implementation Plan and the Bank's "appraisal" document.

The Program was also built on the foundations of a well-established relationship with GOC as a consequence of previous projects and sector work (including in the Program provinces). The Bank team working with the Foreign Loan Office of MOH (FLO) was respected and acknowledged for its capacity to: (i) assist in Program design; (ii) conduct policy dialogue; (iii) focus GOC/MOH efforts on both immediate and the more strategic longer term outcomes; and (iv) apply lessons from past Chinese and global experience.

Lessons incorporated in the Program design included:

- the need for emergency programs to be strategically focused on outcomes – both immediate and medium term – but with enough flexibility to respond to potentially rapidly evolving and uncertain circumstances;
- the desirability of seizing the opportunity to enhance national institutional capacity to deal with (in this case) strengthened capacity for infectious disease prevention and control while dealing with the specifics of the SARS epidemic.
- the importance of ensuring global knowledge is brought to bear on both technical and capacity building/sustainability aspects of the program while blending it with local knowledge involving Chinese Expert Panels (CEP) in program design, implementation (including technical studies), monitoring and evaluation;
- the importance in design of strong central leadership and close supportive supervision at the provincial level by MOH (supported by Bank supervision) to ensure program success from a policy, technical, resource mobilization and allocation perspective.
- identifying and distinguishing the inter-dependence of program components (from a timing, technical content and the communications/collaboration perspective) required for those

involved in the planning, technical content and implementation of the various program components; including their links across levels of government.

- Recognition of the need to overcome the social and economic obstacles in access to health care among the vulnerable and poor.

Program preparation and appraisal by the Bank was led by a sector specialist and colleagues (including support from locally based staff from WHO, CIDA and DFID) well versed with both the technical issues and with the on-ground situation in the health sector. The Bank's Country Director provided continued strategic guidance and active support to the preparation team by leading high level dialogue with GOC -- particularly the MOF. Two key decisions by GOC/MOF arising from this dialogue were critical for program preparation (and implementation): (i) the high level agreement on the rationale for the program and acknowledgement that there was a critical need to invest in these critical public health functions which had been neglected historically; and (ii) agreement that the MOF would assume the repayments for the IDA credits expended at the provincial level and thus converting the credits to grants from the perspective of provincial authorities – all of whom were in the impoverished Middle and Western provinces of China.

The Quality Assurance Group (QAG) did not review quality-at-entry.

Safeguards. The program components and activities were explicitly designed to deal with potential environmental and social concerns from the outset during implementation. At entry the potential environmental impacts of the program were adjudged limited in scope although this probably underestimated some aspects of the development of laboratory capacity to deal with potentially dangerous viruses. Nevertheless risks were mitigated by agreements to establish WHO recommended guidelines on hospital waste management and WHO/international best practice in dealing with the SARS virus (in hospitals and laboratories) in the context of uncertainty about what constituted best practice for dealing with SARS. Recognizing that SARS made no distinctions in terms of socio-economic status, gender, ethnic origin etc, social concerns were explicitly addressed by commissioning Operational Research to influence detailed design of program activities to ensure the poor could gain access to health services and deal with potential uneven gender impact of the epidemic arising from women and girls as care givers.

There were no land acquisitions or resettlements involved in the program. Procurement and financial management capacity within FLO and involved provinces were adjudged adequate to manage the program based on past health sector experience, particularly with the strong commitment of GOC to implement the program with due diligence.

Risk Assessment. The assumptions made at appraisal reflected detailed understanding of past performance in the sector. The program foresaw the need to be flexible in detailed activity design inherent in emergency response projects (considerably enhanced by the very real ex ante uncertainty of the likely scale and direction of the SARS epidemic) while also remaining steadfastly focused on the agreed strategic objectives of each component. Provisions were made for considerable national and international technical assistance, expert panels, seminars and operational research at all government levels to create and underpin internal dialogue on the best way forward. Significant training assisted sustainability and capacity development. Clear attention was given to potential environmental issues in program implementation. The agreements to explicitly contract WHO (as the premier world health technical agency) under the Program was a significant risk mitigation measure by ensuring global knowledge was brought to bear on the program during implementation. It also facilitated continued international dialogue on various aspects of the Program. However, a clearer focus on the likely impact on

implementation schedules of the need for counterpart funds would have reduced some program delays. In hindsight, it is evident that some of the activity targets set for the initial 3-6 months (relating to operational research and technical assistance) and the overall scale of implementation envisaged were ambitious for the activities to be supported in a two year program – though waning of the epidemic reduced some of the immediate pressure on Government.

2.2 Implementation

Factors Outside the Control of Government Implementing Agency. No major factors outside the control of government negatively affected program implementation. The early waning of the epidemic meant communications and ability to travel did not affect implementation schedules. The emergence of Avian Influenza (AI) in 2004, another emergent zoonotic disease with major global implications, positively reinforced the need for improved surveillance and emergency response capacity in China. Contracting delays within WHO delayed some technical assistance.

Factors Subject to Government Control. Firstly, the highest levels of government endorsed the Program and enacted the Law on Infectious Diseases Prevention and Control which provided a clear signal, not only to MOH, but to all relevant agencies, about the seriousness with which China intended to deal with the SARS crisis and public health emergencies. Secondly, MOH and GOC more generally, wanted to create a more open environment with improved transparency, including reaching out to global (and local) expertise and experience while developing a wide range of strategic policies, regulations and contingency plans. A clear program of capacity building for (a) infectious disease management and infection control in hospitals; and (b) infectious disease outbreak identification, responding to outbreaks was identified. Leadership ensured there was a keen awareness of and commitment to implement the program by officials at all government levels. This was reinforced by the decision of MOF to assume the repayment obligations for IDA credits on behalf of provinces (for the first time and as a special circumstance). Thirdly, however, shortfalls in counterpart funding by provinces (all relatively poor), prior to amendments to the Program Agreements providing for 100 percent development partner financing of costs delayed implementation.

Factors generally subject to implementation agency control. MOH established the necessary institutional and coordination arrangements to ensure the smooth implementation of the Program notwithstanding its complexity. Program management capacity in FLO was significant given its past experience with Bank projects – including at sub-national levels and in the poorer provinces. Thus there was relatively effective program management and coordination between the eight participating provinces/cities. The preparation of annual implementation plans (which enabled detailed design to be undertaken as the program evolved) and reporting on their implementation progress by participating agencies was by-and-large thorough and timely. This can be attributed to both the performance of the implementing entities and to FLO as national coordinator of the Program. Technical assistance, operational research and policy dialogue enabled major challenges to be identified, lessons learned and dealt with during implementation. Delays in implementation and the need to extend the program (due in part to counterpart funds needs, delays in technical assistance, time required for policy dialogue and training) were perhaps inevitable given the 2-year time frame of the Program. An improved focus on performance indicators and their systematic monitoring would have improved this otherwise sound performance.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

A program-based M&E system was designed at appraisal and enhanced by Government during implementation – principally as the detailed annual implementation plans were developed and their performance reviewed. The Program performance indicators adequately measured progress towards meeting PDOs given available data systems. Additionally, various Program elements were designed to develop information, provide for its analysis and use as a monitoring tool, and to draw out implications for subsequent program design. Nevertheless, an improved focus on the use of the formal monitoring indicators and outcomes by each level of government and improved timeliness of reports could have warned of implementation delays more quickly. The core list of Program indicators were updated at program extension to reflect progress and changes in emphasis resulting from the fact the SARS epidemic had waned.

A Program objective was the development of an M&E framework for monitoring, evaluating and responding to SARS and other infectious disease epidemics. The existing knowledge of SARS (or infectious diseases), including knowledge of the denominator, was poorly understood in China at program design. The architecture for a new web-based national infectious disease monitoring system (with equipment and training support in program provinces) was established in a remarkably short period of time and was another important input to program monitoring. The on-going challenge for the newly created Health Emergency Response Office (HERO) will be to enhance the quality of the data being collected overtime – particularly from the lower levels of the health system.

The FLO and implementing entities also used the supervision dialogue and aides memoir as an important program monitoring and evaluation tool. The policy dialogue with appropriately staffed supervision missions, and their input to key seminars held during missions designed to distill the results of technical assistance and draw lessons from across the country, were a major M&E tool for Government (and were identified as such at appraisal). Increased focus on Program indicators by missions and government to measure Program progress would have helped government at all levels focus on outputs and outcomes. Government's evaluation also acknowledged that its management and supervision of technical assistance needs to be improved in the future.

2.4 Safeguard and Fiduciary Compliance

Environment. The program's environmental impact was substantially positive. The designated Program SARS hospital wards/fever clinics now have: (a) significantly improved medical waste disposal arrangements in place; (b) renovated wards able to cater for infectious disease patients; and (c) significantly improved infectious disease policies and regulations (with standards consistent with WHO guidelines) developed and in place. These are now to be applied across the country.

Laboratory capacity within the CDC in program provinces/cities were also enhanced under the program and the concept of a public health laboratory network was initiated as a result of program activities. This development of core infrastructure is critical for enabling GOC to mount a sound response to epidemics – viruses/organisms involved need to be isolated and detected. MOH did not have an adequate system of categorizing and monitoring laboratory capacity and bio-safety standards. Such development of laboratories in the context of a national network was not specifically identified during program preparation. Laboratory enhancement would normally have been rated at least an environmental category B, if not A, under a non-emergency health

program within the Bank. Notwithstanding this observation, the program has assisted CDC to develop laboratory standards, consistent with WHO guidelines, together with a system of accreditation. While all laboratories do not yet meet all standards (relevant to its category) substantial progress has been made in an area where little attention was given previously. WHO cited this as one of the major achievements of the Program.

Auditing Requirements. Adequate program accounts were maintained by each program implementation entity and no major problems were identified. Technically, as discussed, the program was funded from component "Z" of 8 separate IDA projects which were amended to enable the Program to be funded together with 2 separate donor funded trust funds. No problems were identified in the audits of either the part "Z" of the 8 projects or of the 2 donor funded trust funds (which included one "pooled" fund trust fund).

Procurement. Despite an overall positive implementation/procurement progress, some procurement issues were identified. National Expert Panels were involved in equipment specification (a lesson learned from past projects). Some delays were experienced due in part to inexperience and occasional confusion about responsibilities for procurement in this program. These were also related to procurement with UN agencies (WHO) that delayed the processing of such contracts

2.5 Post-completion Operation/Next Phase

Investments in infectious disease surveillance, management and response capability in emergency cases has been entirely inadequate in the past. The Program has assisted in the establishment of basic institutional architecture to identify and respond to infectious disease outbreaks in program provinces/cities. GOC, MOH, health workers, and the public more generally, have improved knowledge about the importance of responding decisively to infectious disease outbreaks and public health emergencies. This will contribute significantly to sustainability of program achievements. In addition to Program financing, the GOC and provinces/cities have invested and plan to sustain very significant expenditures in these areas – including sustaining the infectious disease monitoring system, emergency supply and response capability, laboratory network and improved practices in infectious disease and waste management practices in hospitals. Coordination capacity, within a framework of appropriate law and regulations, has been strengthened.

The enactment of new laws, policies and regulation (which typically adopt international [WHO] guidelines) governing relevant technical areas provide the basis for on-going institutional development of these functions and activities. They empower individual agencies and officials to take actions which simply did not exist before. GOC now clearly recognizes investments in these types of public goods are essential to China's development and duty of care for its population. Networks of professionals (both national and international) with skills and capability in these public health areas have begun to be established to support government capacity. The increased openness and transparency with which GOC deals with its population and the international community on SARS, and more recently AI, auger well for the sustainability of program outcomes. Program investments in technical assistance, enabled by a willingness to seek global best practice, and training have also helped to greatly improve institutional capacities

This was an emergency response program of initially only 2½ years duration which was extended to 3½ years. It would be wrong to expect fully operational systems of best practice standards to be achieved across these complicated and sometimes highly technical public health areas in such

a short period of time; much more needs to be done. A greater emphasis on quality and standards needs to be the focus of future national efforts. A follow-on project would be consistent with the CSP and could assist GOC, and the poorer provinces, to more fully institutionalize program achievements and focus on the quality agenda. Health authorities in participating provinces were keen for a follow-on program (particularly if the national government assumed repayment obligations to the Bank) because projects provided a unique platform for cross provincial dialogue, increased access to training and technical assistance to enhance capacities.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

The objectives of the program as appraised continue to be relevant to both current country and global priorities as well as to the Bank's CPS for China. As an emergency program, responding to the SARS emergency, and also as part of a response to the global crisis caused by SARS, the objectives of the program were also timely and soundly based. The emergence of AI in 2004 reinforced the importance of developing capacity to identify, manage, prevent and monitor infections diseases more generally and not just responding to SARS as a once off crisis. China, in asking for assistance from the Bank (and other partners), was not only responding to the needs of its own population but was also responding to increasing international calls to be open and transparent in dealing with its infectious disease outbreaks, and particularly the SARS outbreak.

The program design remained consistent with Bank priorities through both the CAS and the CPS periods which both recognized the importance of: (i) health and all-round social progress and barriers to services; (ii) the need to strengthen sub-national financing and cooperative arrangements between levels of government; (iii) addressing the needs of the poor, including the lagging regions; (iv) sustainable environmental policies; and (v) the need to create demand-driven knowledge and increased use of local and international experts to build sustainable programs. The objectives of the program were also consistent with the Millennium Development Goals and their focus on reduced infectious diseases.

3.2 Achievement of Project Development Objectives

ICR Rating: Overall Achievement of Program Development Objectives is Satisfactory.

The objective of the proposed Program was to: (1) address emergency needs for SARS-related diagnosis, clinical management, and personal protection that are necessary to bring the current epidemic fully under control; and (2) support the Government's efforts to strengthen the capacity of the public health system more generally so that China's health system is prepared to combat the possible re-emergence of SARS and, equally important, similar infectious disease threats that might occur in the future.

(a) Program Planning, Coordination and Policy Development. At the outset the eight Program provinces/cities (or China) did not have an appropriate policy/legal framework or protocols to deal with infectious disease outbreaks like SARS. As a short term response, all Program provinces (less extensively in Inner Mongolia) and the National Government developed emergency response protocols relating to the handling of SARS specific outbreaks based on operational research and dialogue within China and knowledge from international best practice. Starting from scratch, provinces now have a system for stockpiling critical stocks of SARS/infectious disease-related supplies with which to mount first wave responses to outbreaks.

Local and national authorities recognize that these systems remain fragile and that they have to further develop replenishment systems – particularly those that have a limited shelf life.

In the medium term, in order to lay the foundations for a policy and legal framework for a infectious disease response system, the Program provided for operational research to learn lessons from the SARS experience to determine best practices with the objective of also: (a) drawing out the wider applications of this experience to public health emergencies; and (b) disseminating the results across all program provinces/cities and with Beijing based national authorities. An extensive array of operational research was undertaken on the SARS experience (including by WHO) together with an extensive review of international best practice. This formed the basis of extensive dialogue across provinces and implementation entities through seminars, workshops and meetings of national expert panels (supported by international and national technical assistance). Significant effort was given to the policy and legal framework for responding to infectious disease emergencies. Some 76 new rules/protocols (68 at provincial level) were developed from scratch and another 4 regulations were substantially reformulated with Program support.

Within the framework of Program objectives a process of detailed annual plans was developed by implementing agencies to reflect implementation progress and adjust to new realities arising and policy work being developed under the program. These were critical for managing and monitoring the program and some agencies (e.g., Medical Assistance Department (MAD)) saw the value of this being extended past the program completion and the scope expanded to cover national programs.

(b) Clinical Management of SARS Patients. The Program provinces had severely limited hospital (or clinic) capacity to provide quality clinical care to SARS or other highly infectious respiratory patients. Hospital infection control standards were either outdated or did not exist. Staff were not trained in proper personal protection (or provided with equipment/supplies) for dealing with highly infectious diseases. Hospital waste management systems were unsafe and haphazard. Medical staff were poorly equipped to diagnose and treat (or transport) highly infectious respiratory patients. Immediate actions included creating designated SARS hospitals/wards (for at least 200 probable and 200 suspected cases) in Program provinces and establishing capacity for providing quality clinical care to highly infectious respiratory patients – including providing for their isolation. Program support included ward renovations to improve hospital infection control standards, equipment, training and works to establish safe hospital waste disposal systems in designated SARS hospitals.

Standards for hospitals and fever clinics were established with Program support based on WHO guidelines for hospital infection control. An initial system for their monitoring has also been established within MAD. This is a major achievement as only limited and outdated policies and/or a legal framework existed prior to this. The Program also enable expert panels, technical assistance and support for seminars, meetings and training programs to be used to support institutional capacity development in these areas. It is recognized that some of these systems may yet be fragile and in need of further enhancement, particularly with a focus on quality aspects but a lot has been accomplished in 3½ years and there remains a firm commitment in MAD and provinces to try and sustain the achievements to date.

Training guidelines for hospital and clinic staff to diagnose, treat, and transport SARS, AI and other infectious diseases patients were developed with Program support. A total of 58 training sessions covering 15,700 staff (37% female) were conducted. Training evaluations indicate a high level of satisfaction with the training and report significant increases in knowledge and

capacity of staff to diagnose, treat and manage highly infectious patients. No health workers in any designated hospital were reported infected by SARS or other similar infectious diseases after the program was launched.

(c) Disease Prevention and Control with Focus on SARS and other Infectious Diseases. China had limited staff or systems capacity to undertake even basic SARS/ infectious disease surveillance and reporting on a timely basis – particularly at local government levels. Many provincial public health and hospital laboratories were poorly equipped to handle pathogens like SARS Corona virus, laboratory standards and bio-safety protocols were outdated, and staff were inadequately trained. Further, knowledge among populations most at risk from SARS/infectious diseases including mobile populations, mothers and the poor had limited knowledge of infectious diseases and how they might protect themselves or reduce the risk of infection by simple behavior change.

Initially the Program focused staff training and equipment support for infectious disease surveillance and reporting. The MOH quickly decided to establish a national alert and response network while the program was implemented. In order to improve the effectiveness of the system, the Program focused on staff training and limited equipment support for infectious disease surveillance and reporting. In the program provinces, a web-based real time national disease reporting system covering 100% of provincial facilities, 95% of county facilities and 76% of township level facilities was established by the time of the program was completed. *Average disease reporting delays were reduced from 12 to 3.6 days and surveys suggest under-reporting was reduced to about 3 percent.* CDC Staff can undertake analysis of disease patterns in their local area and no longer need to wait for top down reporting of results. Equipment and training support in Program provinces enhanced their capacity to respond to outbreaks and send out field investigators with the requisite skills. Almost 35,000 staff in CDCs and hospitals, covering all Program provinces have been trained for SARS/infectious disease surveillance and reporting. With WHO's program financed technical assistance, the program piloted an early warning system for infectious diseases, syndromic surveillance. Valuable lessons were learnt for improving sensitivity of outbreak identification, eventual development of Country Outbreak Alert and Response Network. The core architecture of the system is now in place – a truly remarkable achievement. Further work is required in improving the skills of health staff diagnosing diseases and entering the data. Improved syndromic surveillance and quality control of data entry remain a challenge. It is estimated that about 50 percent of infectious disease outbreaks are now identified by the web-based system.

An initial program activity aimed to upgrade eight provincial public health laboratories – one for each program province/city – with accreditation by MOH consistent with WHO guidelines for laboratories. Project financed WHO technical assistance recommended and China agreed, to the establishment of a national laboratory network. Support for this was included for implementation in Program provinces for the program extension period including the development of national protocols for establishing and evaluating a national pathogenic microbiological network based on internationally recognized standards. This remains a major achievement which will have long standing benefits to the public health system well beyond the initial objectives of the program.

A significant multi-media/channel communication campaign was implemented with some targeting to those identified as being more vulnerable. This included information that health services would be provided free for SARS patients. It appears that general knowledge in the public and in vulnerable groups were improved somewhat – for instance research in two provinces indicate hand-washing before meals increased from 40% to 54% and after using the bathroom increased from 43% to 59%. Capacity for health promotion was improved in the

program provinces. For instance, Beijing established a clearing house for collecting, screening, analyzing, and storing different IEC materials for later easy reference and health promotion network covering all its districts and counties. On the other hand, a clearer focus on behavior change with a more rigorous focus on what communication channels were working for which groups could have improved results.

3.3 Efficiency

No formal economic analysis was calculated for the program at the time of its preparation and available data were insufficient to carry out detailed economic analysis of the program at closing. Nevertheless, potential economic and social costs of a SARS or other infectious disease epidemics such as AI are known to be very substantial, even potentially catastrophic in some circumstances. Effects on morbidity and mortality can be very significant and the disruption to trade and labor mobility can drastically affect movement of people and trade. The costs associated with developing a national prevention and response capability would appear relatively small compared to the potential costs of public health emergencies – most of which can be prevented or significantly contained. The standards developed and incorporated in policy, laws and regulations/protocols and in renovations, development of hospital waste management systems etc., are based on international experience and standards relevant to China. Resources available for technical assistance, operational research and training were not excessively expensive, and made major contributions to the enhanced capacity to sustain a surveillance and response system. From a public finance perspective public investment in these activities is fully justified because of the public good nature of the investments. Further, epidemics are more likely to directly affect the vulnerable and poor.

3.4 Justification of Overall Outcome Rating

Rating: Satisfactory.

The program responded to a major infectious disease epidemic with potentially catastrophic domestic (and global) public health and economic implications. Public finance for these types of investment in health is fully justified on public good grounds. The program was fully consistent with the CAS and the subsequent CPS which both emphasized the appropriateness of investments in public health, the need to sustain economic growth while protecting the poor and vulnerable – particularly those living in the poorer provinces of China. System architecture for a policy/legal framework and appropriate protocols for infectious disease surveillance and for mounting an outbreak response has been established together with an enhanced capacity to safely diagnose, treat and mange patients safely (for patients and staff) within the framework of appropriate protocols. A national public health laboratory network has been established with appropriate protocols for bio-safety. The overall objective to strengthen capacity for infectious disease prevention and control in all Program provinces and cities has been satisfactorily met.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

The decision of MOF to absorb IDA repayment obligations of provinces reduced the costs on the poorer provinces and, indirectly, of the population by reduced pressure on health fees to finance the repayments to the national government. The abolition of fees for health services for patients with SARS and other infectious diseases such as TB and AI, particularly for poor patients, has

reduced the costs to patients (with a positive impact on the poor) and probably encouraged patients to come forward for treatment which has a very significant positive externality.

(b) Institutional Change/Strengthening

The Program objective of supporting China to be prepared to combat SARS and similar infectious disease threats has been met. With the support from the program, the National Development and Reform Commission worked out the National Plan for Medical Assistance for Public Health Emergency. Its implementation will have a profound impact on further strengthening clinical management capacity for infectious diseases in the Country. The decision to establish HERO and health bureaus went much further than initially anticipated by the Program and is a major signal of the importance GOC places on the Program long-run objectives. By establishing HERO as an office there is recognition of the need for considerable independence of action across agencies compared to administrative departments within MOH. The initiation of the establishment of a National Laboratory Network with accreditation and bio-safety standards and monitoring arrangements is also significant and well beyond the initial program objectives.

(c) Other Unintended Outcomes and Impacts (positive or negative)

4. Assessment of Risk to Development Outcome
Rating: Low or Negligible.

There do not appear to be any foreseen risks in terms of political ownership or economic stability which would negatively affect the development outcomes of the program. The emergence of AI strongly reinforced the political commitment – both within China and globally – of the need to sustain efforts and outcomes achieved to date. Strong ownership by GOC, MOH (particularly CDC HERO and MAD) and of Program provinces of outcomes remains solid and a high priority. The legislation, policies and protocols developed under the program provide a sound basis for both sustainability of outcomes and their further development. Government ownership, international interest and support for this international public good; GOC commitments to work on its capacity to deal with epidemics in international forums; and GOC and provincial government commitments to allocate sustaining budgets augur well for overall sustainability of outcomes. Sound international technical assistance coupled with national experts have enabled technically appropriate designs to be implemented which are within the capabilities of the institutions being developed. This process, together with systematic training of staff has had a major impact on overall institutional capacity development. Environmental issues associated with laboratories and hospital waste management were systematically dealt with. A reasonably successful health information and education program has increased knowledge about infectious diseases and the importance of dealing with them within both the general public and in vulnerable groups. Evidence of behavior change exists but significant challenges remain.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry
Rating: Highly Satisfactory

The program was prepared and appraised in seven weeks in response to a GOC urgent request for assistance with the SARS epidemic which was sending shock waves through both China and

South East Asia (including severe travel restrictions). The program design and preparation were supported by a team of Bank experts (often via video conference because of travel restrictions and safety concerns) with a range of appropriate skills and a deep knowledge of the past and existing portfolio in the health sector in China. Working in extremely close partnership with the GOC preparation team, the Bank team, also with support of participating development partners, provided strategic guidance (which incorporated international best practice) on developing a sound program which responded to the crisis – both in the short- and medium-term. Consistent with lessons learned from other emergency projects, careful attention was given to focusing on the initial emergency response to the epidemic; creating space for technical assistance and operational research to inform medium term policy, technical and legal/regulatory frameworks and to initiate institutional development and strengthening. Further, other lessons from past experience in China including: (a) the extensive use of local expert panels to consider and contextualize the recommendations of international technical assistance; and (b) the use of annual plans to enable flexibility in detailed design as the MOH generated new information from program activities proved appropriate. This also formed an important basis for continued policy dialogue between the Bank team and GOC during program implementation. The program had clear outcome indicators and, despite its (necessary) complexity, activities were clearly specified or actions to fully define other activities were clearly specified.

Safeguards and fiduciary requirements were adequately addressed during preparation despite its extremely short gestation period. While the program was rated an environmental category "C" the program design incorporated strong safeguard compliance during program implementation – particularly with respect to hospital waste management, renovation of hospitals/wards and enhancement of public health laboratory capacity. While the work on the latter became more extensive than originally planned, and should perhaps have been graded an environmental category B (or A), very significant efforts have gone into developing bio-safety standards according to ex ante agreements (based on WHO standards). It is important to note that as an emergency program moving ahead on a timely basis was an imperative. The procurement and financial management aspects of the program were: (a) well designed, and (b) FLO, the overall implementing agency, had both extensive experience managing World Bank programs and of programs being implemented in several provinces at once. There were some procurement delays due to confusion between national and provincial responsibilities for procurement, but these were relatively minor and probably could not have been fixed by further or more detailed design.

(b) Quality of Supervision
Rating: Moderately Satisfactory

Bank supervision was focused, robust where needed, and diligent when it came to identifying and resolving technical, management and fiduciary problems as they arose. Supervision missions were staffed with well qualified and appropriate professionals able to participate and contribute to the strategic discussions on policy and regulatory framework options and the way forward to achieve the program outcomes. The annual plans, and their monitoring by government, provided a good vehicle to focus supervision dialogue with government – both during formal supervision missions and for "continuous" dialogue with the supervision team via the resident mission. The aides memoire addressed management and technical aspects of the program extremely well. Consequently, the FLO, and to a considerable extent the provinces, relied heavily on mission aides memoir to supplement internal government supervision of the program and to resolve problems. Mission dialogue and aides memoir could have been more helpful to government if there had been a more consistent focus on progress against agreed output indicators. Supervision missions for the initial period of the program were planned to be six monthly. It is unfortunate that the third full supervision scheduled for July 2004 was delayed until January 2005 due in large

part to Bank and GOC focus on the sudden emergence of the AI epidemic – although AI related missions did discuss this program and resident mission based staff remained in constant contact with the government. The program extension process could perhaps have been handled more expeditiously, although final operational plans for the extension period, on which the extension was based, took much longer to be finalized and submitted than planned.

(c) Justification of Rating for Overall Bank Performance
Rating: Satisfactory

The Bank's preparation activities, conducted under extreme time pressure, with concerns about health and safety of government and Bank staff working in the SARS environment and with very considerable uncertainty about how the epidemic might unfold were extremely solid. The implementation experience has demonstrated the program design, with its inherent flexibility without loosing focus, stood the test of time. Supervision was solid and, as discussed, could have been improved by increased focus on the monitoring of program outputs. On the other hand, supervision arrangements significantly enhanced the transfer of global knowledge and resolved management and technical issues which greatly enhance the program's outcomes.

5.2 Borrower Performance

(a) Government Performance
Rating: Satisfactory

GOC demonstrated strong ownership of the Program and political will in its response to SARS. It shared information on SARS internationally, sought to open up to global experience by requesting international assistance with technical and policy aspects of the SARS epidemic response (and public health emergencies more generally). Very strong signals from GOC leadership on the critical strategic importance of the Program to China greatly facilitated the ability of MOH, sub-national governments and individual professionals to initiate action. The government established well-qualified teams to prepare the program and associated implementation plans and to work with the Bank preparation team on an around the clock basis exchanging views and seeking "best practice" from international experience. Well-qualified teams were also established to implement the program at all levels of government. Supported by a range of national expert panels, operational research, and technical assistance, all areas of government have worked to achieve the objective of the program. Counterpart funding, until development partners agreed to fund 100 percent of the program, was the cause of some delay – but the agreement of MOF to take over the repayment obligations of provinces for the IDA credit was an important incentive for provinces to fully commit to the program.

(b) Implementing Agency or Agencies Performance
Rating: Satisfactory

At the national level the program was implemented by the MOH under the oversight of the National Command Center of the State Council. The FLO was responsible for the day-to-day management and coordination of program implementation with other departments of the MOH with relevant technical expertise, the National Development and Reform Commission, and the MOF providing necessary guidance. Existing provincial program management offices/FLO offices were responsible for program planning and implementation at the provincial level, overseen by provincial development and reform commissions, finance bureaus and health bureaus.

MOH/FLO. The program was undertaken with dedication and enthusiasm and with full appreciation of the urgency with which China had to respond to the SARS crisis and develop the capacity to respond to highly infectious disease epidemics. The FLO was staffed with individuals who had been involved in the sector and Bank projects for many years and thus embodied important institutional and sectoral knowledge. They were also able and willing to draw on technical expertise and advice from the technical assistance, national expert panels and colleagues from other part of the MOH including CDC, HERO and MAD. By-and-large program coordination of this fairly complex program was sound. Annual plans and their monitoring reports although sometimes delayed, proved a very usual strategic management tool to monitor program implementation progress. An improved focus on monitoring of program component and activity outputs and evaluation of program achievements at an outcome level would have improved this process. The key outcomes agreed for the program were basically achieved.

Provincial/City Entities

While the provincial entities were not as closely involved in the Program design as central authorities, because of the emergency nature and speed with the program was prepared and appraised, two factors helped ensure implementation success despite some initial confusions: (a) the establishment of high level inter-agency coordination mechanisms at the provincial level able to give authoritative guidance and provide an avenue for cross-agency dialogue; and (b) the use of detailed annual plans as the basis for funding and national monitoring of the programs being implemented. This also enabled province-specific needs within the overall program to be met. The Program management units in provinces often became the focal point for the day-to-day oversight of the overall GOC program as well as the program specific activities thus enhancing overall coordination. They oversaw the development of the annual plans. This was feasible because these units were well staffed and capable. These units also worked well with technical health agencies in each province and thus ensured inputs needed were in place and were able to interact and coordinate with FLO. They have also worked to help ensure sustainability of program achievements. On the other hand it is well recognized that there remains a vast agenda, despite the Program achieving its goals and targets, to continue to enhance capacity and improve quality.

(c) Justification of Rating for Overall Borrower Performance
Rating: Satisfactory

For the reasons outlined above, the overall performance of the borrower is rated satisfactory.

6. Lessons Learned

General Applicability: to All projects.

- Strong ownership and commitment from the highest levels of Government is critical to program success – in this case it created clear and unambiguous signals in the system at all levels to: (a) initiate evidence-based action to the crisis; (b) create space for policy discussion and debate as a basis for policy development and action; (c) enhance staff capacities (at all levels) to respond to the emergency; (d) improve the level of transparency and openness and involve the general public in epidemic response; and (e) mobilize resources to support the national response.

- Designed appropriately, projects provided a very good platform for sound dialogue between international technical assistance, national expert panels and local institutions which also enhances local capacity and ownership of outcomes.
- A well-prepared Program Implementation Plan (PIP) improves understanding of program objectives, activities and ownership. It also smoothes program implementation and helps clarify implementation responsibilities when many agencies are involved.
- The joint donor financing arrangements resulted in improved coordination which assisted in ensuring good outcomes. Joint donor financing of one GOC program made it easier for government to make effective use of available funds.
- Program training can contribute to capacity building and institutionalization of management systems when conducted systematically over the life of the program.
- Ensuring active involvement of responsible government department and officials in operational studies succeeded in translating findings and recommendations from operational research into policies.

General Applicability: to Health Sector Projects.

- Establishing national expert panels is a sound way to: (a) harness nationals skills to deal with technical issues; and (b) enhance individuals and institutional capacity.
- Behavior change is a long-term process that requires targeted, effective and sustained health promotion messages delivered in multiple and innovative ways. Evaluation of what is and is not working is a critical element of health education initiatives.
- Exemptions, particularly of the poor, to health service charges for infectious disease prevention, diagnosis and treatment is important. While the user financing principle for private goods is appropriate, there is a strong case for public financing of activities with strong public good characteristics – including those with positive externalities.
- The assumption of the responsibility for repayment of the IDA credits from provinces by MOF on a "special case basis" was a critical signal of the seriousness with which the GOC took the SARS crisis. It provided a strong financial incentive for the provinces to implement the Program. The strong public good characteristics of investments in public health functions, and the historically low level of public investments in these functions in China, the case for grants to provinces, particularly the poorer provinces may have a wider applicability in the future.

General Applicability: to Emergency Projects.

- Bank willingness to be responsive and innovative to meet client needs, particularly in an emergency program, is critical. In this case Bank management demonstrated this in the application of Operational Procedures, including those applying under Emergency Procedures: OP 8.50. Critical to program design, implementation arrangements and, its timeliness were the decisions to: (a) open two closed and amend six existing programs and extend them where necessary to finance the emergency response; and (b) absolve the program preparation phase of the need to meet environmental safeguards provisions ex ante and allowing them to be dealt with (appropriately) during implementation.
- The use of annual implementation plans as a basis for annual agreements for program financing can be a critical tool (for the client and the Bank) for: (a) assisting with program monitoring; (b) creating a basis for policy dialogue on next steps; and (c) (critical flexibility in program design and implementation while maintaining a focus on both short- and medium-term objectives.

- Emergency projects, as in other projects, need to focus on outcomes both at the project preparation and implementation stage (both the client and the Bank).

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

There is agreement that the program has largely met its objectives. Three points raised by government are commented upon. First, the delays in final agreement on the program extension in significant part arose from slow and incomplete reporting of the program outputs and outcomes and the considerable time it took to finalize proposals for the extension period. However, the work achieved in this period was significant and the wait for an adequate plan for the extension period paid off.

Second, it is unfortunate that the overspending on the non SARS component of one program resulted in reduced allocations for the SARS program (approximately SDR 400,000). This should have been prevented by the mother program unit and by the Bank disbursement system. Ultimately it was a GOC decision on whether overspending would be charged to the credit under the SARS component rather than to the other components. MOH was not responsible in any way for the overspending. This only arose because of the special nature of the financing arrangements for the program.

Third, there is a need to improve the management of technical assistance by government, which made such a critical contribution to the program outcomes, particularly at lower levels of government. WHO was a critical partner in the supply of technical assistance under the program. More timely processing of consultants by WHO is desired to ensure that such desirable partnership can be enhanced.

(b) Co-financier

This evaluation concurs with CIDA and DFID that the Program was successful in meeting its core objectives. It also concurs with the views of these agencies that separate stand-alone programs did not make sense in the context of the emergency response.

Including WHO in the partnership was a basic condition for CIDA and DFID participation in the Program because they believed the technical expertise they could bring to the Program was critical. The Bank concurred and facilitated sole source procurement of WHO services under the Program. The need for this type of partnership in the future means that innovative ways need to be made to facilitate partnerships in the future.

There is also agreement that:

- An improved focus on monitoring and evaluation during supervision by both the Bank and government could have improved implementation.
- While health promotion efforts were significant, that a greater focus on measuring behavior change would have better shown how well it worked.
- More work will be needed to ensure that the laboratory network is fully developed and protocols are being subject to quality assurance reviews.

(c) Other partners and stakeholders

Partnership arrangement, rather than a parallel technical assistance program managed by WHO (their preferred option) was the correct way to go in these circumstances. One donor program supporting one GOC effort enabled the marshaling of resources, including technical assistance, in a coordinated manner.

Moreover, it is agreed that: (a) flexibility in the Program was essential to outcomes and was responsive to client needs; (b) the program created a good platform for dialogue between agencies and with donors; (c) achievements with establishing the laboratory network was a successful program element – beyond the original objectives of the program – despite the challenges remaining; and (d) establishing the web-based infectious disease monitoring system was also an achievement the beyond original program scope.

WHO acknowledged the administrative burden associated with managing the technical assistance program with consequent delays in contracting (as did GOC). While the technical assistance achievements were very significant every effort should be made by all parties to improve this essential aspect of this critical partnership.

Annex 1. Program Costs and Financing

(a) Program Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
1. Program Planning, Coordination and Policy Development	1.53	2.64	172.5
2. Clinical Management of SARS Patients	8.89	11.44	128.7
3. Disease Prevention and Control, with focus on SARS and other related Infectious Diseases.	11.10	8.57	77.2
Total Baseline Cost	21.52	22.65	105.25
Physical Contingencies	---	---	0
Price Contingencies	---	---	0
Total Program Costs	21.52	22.65	105.25
Program Preparation Fund	---	---	0
Front-end fee IBRD	---	---	0
Total Financing Required	21.52	22.65	105.25

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions equivalent)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
International Development Association (IDA)	Credit	11.52	12.31	106.86
Canadian CIDA	Grant	3.0	2.80	93.33
United Kingdom DFID	Grant	5.0	5.64	112.80
Japan JSDF	Grant	2.0	1.90	95.00
Total		21.52	22.65	105.25

Annex 2. Outputs by Component

Recognizing the complexity of the overall program the Government adopted overarching program indicators given the PDO of Strengthened Capacity for Infectious Disease Prevention and Control in all program provinces and cities. These are summarize indicators, base line and program achievements and are presented in Part F of Basic data sheet.

Table A documents the original indicators, base line and the program achievements by program components formally agreed for monitoring the program. Table B presents the modified (revised) and new indicators formally agreed at the time of program extension which capture the slightly revised focus given the SARS virus had abated.

Table A. Original Agreement

1. Program Planning, Coordination and Policy Development	1.1 Eight provinces that have developed or revised protocols for emergency response to SARS outbreaks according to the recommendations from SARS response preparedness assessments by September 30 2003.	No program provinces had protocols relating to SARS or other infectious diseases	All program provinces (less developed in (Inner Mongolia) and National Government developed protocols based on program operational research & international best practice.
	1.2 see revised Table line 1.2 below		
	1.3 Program annual plans are developed and shared with World Bank by every November 30, and integrated in a timely manner with existing national plan for SARS response.	No system in place.	Annual Plans developed and monitored on basis of annual funding agreements consistent with evolving national and provincial plans.
	1.4 Lessons learned and best practices in addressing SARS epidemic are analyzed for wider public health applications, and are disseminated by December 31 2005.	No systematic processes in place.	National level: 9 reports; provincial 8 focusing on lessons for treatment and control of SARS

	1.5 Key SARS related policies are reviewed and revised both for their implications for SARS and other infectious diseases by June 30 2004.	Limited policies on infectious diseases in place.	76 policies developed or reformulated based on operational research, review of best international practice and seminars including implications for other infectious diseases.
2. Clinical Management of SARS Patients	2.1 Designated SARS hospitals/wards with a capacity of providing quality SARS clinical management for at least 200 probable and 200 suspected SARS cases set up in 8 priority provinces within the 3 months after program effectiveness	Virtually no hospitals, particularly at provincial level, had any wards/ capacity for appropriate isolation of highly infectious diseases such as SARS.	Within 3 months of program start all program provinces designated SARS hospitals with target capacity. Upgraded capacity now completed.
	2.2 No. of hospitals and fever clinics meeting MOH and WHO standards for hospital infection control.	No standards set prior to program.	All designated hospitals and clinic capacity reported to meet new MOH standards rules on prevention and control of infectious diseases developed under the program (based on WHO standards).
	2.3 No. and % of health workers in any designated SARS hospital infected by SARS and any similar infectious diseases.	No cases reported	No cases. SARS incidence became zero; thus not applicable. .
	2.4 No. and % of staff recruited and trained according to national guidelines on SARS diagnosis, treatment, and transportation of SARS patients.	No guidelines related to SARS or other highly infectious diseases.	Training guidelines for SARS, AI and other infectious diseases developed. 58 trainings covering

			15,700 people (37% female). % of total staff not reported.
3. Disease Prevention and Control, with a focus on SARS and other Infectious Diseases	3.1 No. and % staff recruited and trained for SARS/ infectious diseases surveillance and reporting.	No capacity	27 workshops involving 34,900 staff, 35% female.
	3.2 Laboratories for SARS surveillance at eight program provinces will be set up and accredited by MOH and WHO by December 31 2005	No equipped laboratories at provincial level.	Capacity developed in each program province. Paper prepared on national laboratory network and adopted. Also established quality/standards benchmarks for laboratory types based on international standards. Staff training program developed and implemented.
	3.3 % of knowledge and behavior change among targeted populations with respect to SARS and other infectious diseases.	No behavior change programs for SARS or infectious diseases.	Research in 2 provinces indicated some behavior change in targeted vulnerable groups for hand-washing: before meals increased (40% to 54%); and after using bathroom increased (43% to 59%). Overall increase estimated at 25%.
	3.4 % of any new SARS cases and other infectious diseases with unknown transmission route(s) reduced	No new SARS cases after program effectiveness.	AI emerged but transmission route known.

Table B: Revised agreement

1. Program Planning, Coordination and Policy Development	1.1 No. of provinces that have developed or revised protocols and regulations for SARS/major infectious diseases/public health emergencies response based on lessons learnt and best practices.	No program provinces had systematic laws, protocols or regulations relating to SARS or other infectious diseases.	All program provinces (less developed in Inner Mongolia), and National Government developed 76 new rules/protocols (68 at provincial level) and an additional 4 existing rules reformulated strongly influenced by program research and international best practice.
	1.2 Program provinces that have prepared critical stock and protocols for use of SARS and other infectious diseases related supplies with which to mount a first wave response to SARS or a similar infectious disease threat.	No system existed at either national or provincial level.	7 of 8 provinces set up emergency reserve in the provincial CDC. Emergency response offices and protocols for action developed. Hospitals have country level emergency supplies. Still grappling with management and replenishment of stocks.
2. Clinical Management of SARS Patients	2.1 Designated SARS hospitals/ wards with a capacity of providing quality SARS clinical management for at least 200 probable and 200 suspected SARS cases set up in 8 program provinces and cities within the 3 months after program effectiveness.	Virtually no hospitals, particularly at provincial level, had any wards/ capacity for appropriate isolation of highly infectious diseases such as SARS.	Within 3 months of program start all program provinces designated SARS hospitals (49) with target capacity. Upgraded capacity now completed.
	2.2 No. of policies/regulations	Very limited	

	on hospital infection control that have been developed or revised in light of lessons learnt and study of best practice and implementation. 2.3 No and % of designated hospitals and fever clinics meet the MOH and WHO standards for hospital infection control for SARS and AI.	policies/regulations in place.	Policies and regulations (based on best practice) implemented in each province. All designated hospitals and clinic capacity reported to meet new MOH standards for SARS and AI. Standards developed under the program (based on WHO standards).

3. Disease Prevention and Control, with a focus on SARS and other Infectious Diseases	3.1 A national alert and response network for public health emergencies set up, built around an integrated early warning surveillance and response system.	There was no national computerized disease reporting system. Disease reporting took over 12 days and rate of under-reporting was 8% (national sample data).	Established web-based real time national disease reporting system covering 100% of provincial facilities, 95% of country facilities and 76% of township level facilities. Average disease reporting delays reduced to 3.6 days and under-reporting reduced to about 3%. It is estimated that about 50% of disease outbreak identified by the system.
	3.2 No. and % CDC staff trained for SARS and other infectious diseases surveillance and reporting (male and female).	No capacity for SARS and limited capacity for infectious diseases	34,936 staff trained in CDCs and hospitals representing a large share of relevant staff in program provinces.
	3.3 Protocols for establishing and evaluating a national pathogenic microbiological laboratory network developed.	No systematic standards based system in place.	Protocols for lab network (according to bio-safety levels) established according to international best practice.
	3.4 No of provinces implemented FETP and No. of trainees	No capacity at program initiation	All program provinces,& 3,441 trainees
	3.5 Positive knowledge and behavior* changed among targeted populations, especially the poor and vulnerable.	No behavior change programs for SARS or infectious diseases	Research in 2 provinces indicated some behavior changes in targeted vulnerable groups

			for hand-washing: before meals increased (40% to 54%); and after using bathroom increased (43% to 59). Overall improvement estimated at 25%.

* Means understanding key transmission routes of key infectious diseases such as SARS and Avian Influenza, ways to prevent spreading, and improved hand hygiene, etc. and changing behavior accordingly.

Annex 3. Economic and Financial Analysis

An economic rate of return was not estimated for the program at the time of appraisal, nor was it calculated after its closure.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
L. Richard Meyers	Task Manager	EASHD	
Yukon Huang	Country Director	EACCF	
Hsiao-Yun Elaine Sun	Loan Department Division Manager	LOAG3	
Xiaoping Li	Sr. Procurement Specialist	EAPCO	
Lingzhi Xu	Sr. Procurement Specialist	EASHD	
Haiyang Wang	Finance Officer	LOAG1	
Shiyong Wang	Health Specialist	EASHD	
Dong Yi	Finance Management Specialist	EAPCO	
Supervision/ICR			
L. Richard Meyers	Task Manager	EASHD	
Shiyong Wang	Health Specialist and Task Manager	EASHD	
Jeffrey Koplan	consultant		
Karen Shaw	Consultant		
Teresa Ho	Task Manager	EASHD	
Shiyong Wang	Health Sepcialist	EASHD	
Xiaoping Li	Sr. Procurement Specialist	EAPCO	
Haixia Li	Financial Management Specialist	EAPCO	
Jian Hou	Team Assistant	EACCF	
Angus Nicoll	Consultant		Communicable Disease Surveillance
Andrew Cottam	Consultant		Bio Safety
Meredith Bradbury	Consultant		Lab Specialist
Xiaowei Guo	Senior Procurement Specialist	EAPCO	
Haixia Li	Financial Management Specialist	EAPCO	

(b) Staff Time and Cost

Stage of Program Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY03	25.77	89,185.23
Total:	**25.77**	**89,185.23**
Supervision/ICR		
FY04	38.53	149,258.56
FY05	17.28	80,075.44
FY06	10.33	35,488.47
FY07		
Total:	**66.14**	**264,822.47**

Annex 5. Beneficiary Survey Results
(if any)
N/A

Annex 6. Stakeholder Workshop Report and Results
(if any)
N/A

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

The FLO commissioned a major evaluation report of the program (468pp). The following is a summary of Sections 3 and 4 of this report entitled (summary) "Program Evaluation" and "Data Annexes" (73pp). The following summarizes: (a) key long-term program achievements; (b) key outcomes/achievements by program component; (c) program experiences and its role; (d) lessons learned; (e) program extension issues and (f) program fund shortage.

Overall the program achieved its major objectives and contributed to the national program to develop a national emergency response capacity. Almost 179 million people were covered by the program (48% women, minorities 12% and the poor 14%) in five provinces (with 411 counties and 58% classified as poverty counties) and the cities of Beijing, Tianjin and Guangdong.

Key Long-term Effects (Outcomes) of the Program Include:

- Helping establish a national public health emergency response system and infectious disease prevention and control system have been built and improved – operational at both the national and program province levels in accordance with the *Regulation on Public Health Emergency Response* promulgated by the State Council.
- Assisting program provinces/cities establish: (a) budgets to for public health emergencies including a special fund for material and technical reserves; and (b) public health emergency response institutions to prepare and regularly update materials for emergency prevention, diagnosis and treatment.
- Accelerated reform of the disease prevention and control system though establishment of a two-tiered disease prevention and control network covering: (a) medical institutions; and (b) health service stations at the village (community) level.
- Improved urban and rural health service network and treatment system -- specifically the medical service system now includes a system of emergency centres (stations) and blood stations at all levels of the system.
- Enhanced quality and skills of staff throughout the public health system through training of doctors, nurses, disease control and other health care professionals.
- Enhanced health education and promotion capacities. Specific activities were conducted in program provinces including among minorities, the poor and vulnerable.
- Developed operational research results and capacity for research which will provide continued input for the country to formulate health policy, laws and regulation, and to improve the rural health system and urban service system. Operational research activities were many and varied and were applied in many fields (e.g., "*Rules for Hand Hygiene of Medical Staff*" in medical institutions and "*Technical Guideline on Prevention and Control of Hospital Infection for Surgery Department*" were developed and subsequently adopted by MOH.

Component 1: Program Planning and Coordination & Policy Development.

Overview: During program implementation the provinces developed and amended 60 comprehensive contingency plans and 76 rules, policies and regulations. All program provinces have established a 2-tier supply system for normal times and reserves for (public health) emergencies and a reserve fund, to enable prompt response in the outbreaks of SARS or similar infectious diseases. Program offices at national and provincial level prepared annual work plans on a timely basis, submitted the plan to the World Bank (for review and comment) and subsequently integrated the approved activities into their routine health programs. Technical assistance from WHO enabled program lessons and experiences in SARS prevention and control

to be systematically reflected and summarized. The program launched a series of measures to enhance communication and cooperation with international organizations such as WHO on the prevention and control of infectious diseases. These measures included appointing contact persons in relevant MOH departments, regular meetings, short-term position rotating and joint training workshops. The program substantially improved information exchange and action liaison among departments concerned (at all levels of government) by setting up a multidisciplinary leadership group on public health emergencies which jointly issue policy documents, conducted joint exercises, and organized joint training courses. On the basis of these activities, the expert team prepared 9 investigation reports including a strategy document *Choice of China's Public Health.*

Specific Points -- The Program:

- The MOH established an emergency response office (HERO) in March 2004, which organizes and coordinates response to public health emergencies across the country and with program support in the program provinces.
- The program supported transfer of knowledge through workshops, domestic and international study tours and trainings at national and provincial level helped ensure the technical appropriateness of the public health emergency response command system and emergency response management network.
- The emergency response system at national and local level was strengthened by input from World Bank experts during supervision mission and advice from international experts establish agency capability at all levels in handing public health emergencies and other emergency events.
- Program provinces also set up emergency response task forces, health emergency response expert database and training bases for the emergency response task forces. This enhanced the capacity of provinces to respond to outbreaks or suspected outbreaks of infectious diseases.
- One national study: "Study of Standardized Equipment on Public Health Emergency Response" supported by the program, assisted in preliminary policy recommendations on construction of emergency response infrastructure, a mechanism for equipment management and identification of new equipment options. These policy recommendations will shortly be finally considered by HERO.
- Program provinces developed management rules at all levels on the production, supply and reserve of materials for SARS prevention and control, and regulations on the utilization of SARS-focused funding and materials. An emergency reserve was established and a number of pharmaceutical enterprises were also accredited to promptly mobilize emergency drug supplies and production once an outbreak occurs.
- National level operational research projects were launched, including the *Study of Public Health Response System and Operating Model* and the *Contents and Evaluation Indicators for Public Health Emergency Response System.* As a consequence of national operational research concrete policy recommendations were delivered on: (a) enhancing comprehensive planning of public health system and strengthening government's role in the field of public health; (b) legal institutional framework for public health; (c) consolidating the construction of public health emergency response system and mechanism; (d) improving the efficiency of public health service delivery. These policies recommendations will be disseminated and applied in program areas.
- The State Council formulated and issued the *National Overall Contingency Plan for Public Health Emergency* in 2005. In line with the *Law on the Prevention and Control of Infectious Diseases*, the *Rules of Emergency Response to Public Health Emergency* and the *National Overall Contingency Plan for Public Health Emergency*, the State Council and MOH mapped

out the *National Contingency Plan on Public Health Emergency*. The NDRC took the lead in a program financed operational research program on "Medical Treatment System on Public Health Emergency". This resulted in the "*Construction Plan for Medical Treatment System in Response to Public Health Emergency*", which was promulgated for implementation by the General Office of the State Council.

- On the basis of national contingency plan, program provinces have all developed their own comprehensive contingency plans and earmarked plans for SARS, HPAI and rat plague. Funded by the program, experts in Shanxi completed the *Scheme for Construction of Public Health Emergency Response Mechanism in Shanxi,* based on which the province issues 7 schemes/guideline/plans including the *Contingency Plan of Shanxi Province on Public Health Emergency*. During the program implementation, all program provinces worked out 13 comprehensive contingency plans and 47 earmarked plans covering a number of areas such as public health emergency, major acute infectious diseases like SARS and HPAI, other infectious diseases and safety accidents. Valuable technical support was provided on the development of these plans by the program supported workshops, domestic and international study tours, trainings, as well as input offered by the World Bank and program financed WHO consultants.
- Through program financed training, international study tours and operational research, capacity was enhanced in the field of prevention and control of infectious disease as well as public health emergency response system. During its implementation, the program delivered 233 training events for 47,863 persons, (60%) men and 40% women. Among program supported trainings, nearly half of the trainings were tailored for the poor areas, and 90% of trainings went through a review and evaluation process. Generally positive results were achieved.
- The program launched a series of measures (contacts in MOH departments, short-term rotating positions, meetings and workshops etc.) to enhance communication and cooperation with international organizations including the WHO on the prevention and control of infectious diseases. To enhance technical exchange and cooperation in relevant fields, WHO, with program finance, regularly send experts to CDC to work with domestic experts. MOH and WHO co-organized international workshop on SARS and HPAI, as well as international workshop on bio-safety of pathogenic microorganism laboratories. Domestic and international experts (including US CDC director and EU CDC experts) shared latest development, experiences and lessons in relevant fields in the workshops. The multidisciplinary leadership group on public health emergencies, financed by the program, was able to issue policy documents, conduct joint exercises, and organize joint training courses and substantially improve information exchange and action liaison among departments concerned.
- The program supported operational research on the "Study of Inter-department Cooperation Mechanism on the Prevention and Control of Animal Borne Infectious diseases". The study raised policy recommendations such as setting up coordination team on the prevention and control of animal borne diseases, developing inter-department cooperation policies, establishing regular meeting system, ensuring effective communication of information, conducting joint supervision, sharing resources and carrying out scientific and research cooperation.

Component 2: Clinical Management of Patients with SARS/other Infectious Diseases.

Overview: All program provinces, within 3 months upon program validation, designated SARS hospitals with capacity of 200 cases and hospitals/wards to house 200 suspect cases. In Hebei, Henan, Shanxi, Guangxi and Inner Mongolia, infectious disease hospitals/wards in provincial

capital, selected regional hospitals/wards, as well as medical waste/wastewater/solid waste treatment facilities were upgraded. Among all upgrading activities, 10 were for ventilation facilities in infectious disease hospitals/wards with a total area of 10896 M2, 6 for medical waste/wastewater/solid waste treatment facilities including 3 new facilities, and 1 in other areas. All hospitals above secondary level in program provinces have set up fever outpatient department during the SARS period. Upon basic containment of the epidemic, the provinces adjusted and put further regulations on such department. In principle, each county (city/district) had 1 fever outpatient department. Site investigation by the evaluation team shows that, key departments of provincial infectious disease hospitals such as disease infection department, infectious disease ward, internal respiratory department and ICU, have all met the MOH requirement on "standard prevention". The program mapped out 54 policies and rules related to internal infection control, 8 at national level, 23 in Henan, 10 in Tianjin and 6 in Beijing. In addition, outcomes of a program supported operational research on internal infection control, namely the *hand Hygiene Guidelines for Medical Workers in Medical Institution* and the *Technical Guidelines on the Prevention and Control of Hospital Infection in Surgery Department*, have been adopted by the Ministry of Health, and will be integrated into the technical guideline at national level and distributed to the whole country as instructions.

Specific points:

- All program provinces, within 3 months upon program validation, designated SARS hospitals with capacity of 200 cases and to deal with 200 suspect cases.
- In Hebei, He'nan, Shanxi, Guangxi and Inner Mongolia, infectious disease hospitals/wards in provincial capital, selected regional hospitals/wards, as well as medical waste/wastewater/solid waste treatment facilities were upgraded. All program provinces gave priority to poor areas for hospital renovation and other civil works.
- The program helped establish and consolidate information exchange mechanisms between medical institutions and CDCs and to report information.
- The program assisted in mobilizing training, workshops, study tours and operational research programs covering technical training for medical professionals including clinical diagnosis and treatment, radiation diagnosis, lab diagnosis, nursing, patient transport, hospital infection control and pre-admission first-aid. Fifty eight training events (50% on SARS and AI) were conducted in this area for about 15,700 staff.
- Developed and revised relevant policies/regulations in response to the fact hospital infection were a main contributor to SARS spread in its initial stage. Provincial health departments put into place relevant MOH policies/regulations, established or consolidated the functions of quality control for hospital infection management. Some 54 policies and rules related to internal infection control, 8 at national level, 23 in He'nan, 10 in Tianjin and 6 in Beijing were developed.
- Supported operational research on internal infection control, including the *"Hand Hygiene Guidelines for Medical Workers in Medical Institution"* and the *"Technical Guidelines on the Prevention and Control of Hospital Infection in Surgery Department"*. These have been adopted by MOH and are being integrated into the technical guidelines at national level and distributed nationally as guidelines.
- Established and strengthened designated hospitals in provincial capitals and selected localities which comply with internal infection control criteria. Investigation and statistics revealed that, all hospitals have intensified their efforts in compliance and implemented relevant measures although evaluations show 50% of hospitals still don't comply with "hand hygiene" (washing) standards.

- Supported operational research on internal infection control for respiratory system diseases which included development of the "*Hand Hygiene Guidelines for Medical Workers in Medical Institution*" and the "*Technical Guidelines on the Prevention and Control of Hospital Infection in Surgery Department*". These have been adopted by the MOH and will be integrated into the national technical guidelines after a period allowing for solicited feedback from the public via MOH Web-site and circulated nationally as the national guidelines.
- Procured necessary self-protection equipment and as a consequence of training are utilizing the equipment – a significant change in behavior of medical workers.

Component 3: Disease Prevention and Control Targeting SARS/ Infectious Diseases.

Overview: In parallel with program implementation, the national disease prevention and control system designed and established online surveillance and report system targeting infectious diseases. On the basis of this system, the program developed 25 indicators of 3 categories to serve as national indicator system for public health emergency, and proposed policy recommendations on optimizing existing disease surveillance system, and developing real-time data collection, transmission and storage system. The program conducted 124 trainings workshops on disease surveillance and report at national and provincial level for 34936 persons; With several operational research projects, the program drafted construction plan and evaluation methods for pathogenic microorganism emergency response laboratory network related to public health emergencies; and proposed measures and strategies for mass health education in case of public health emergencies. Upon receiving trainings on health education and necessary equipment, all provinces are now more capable in developing health education materials. SARS was under effective control in program areas in 6 months upon program implementation, with no new case, no death case and no case export. 25 trainings on field epidemiology were delivered for 3441 persons at national level and in provinces. With program support, national and provincial program implementers procured 24 types of disease surveillance equipment (274 pieces), 65 categories of equipment related to laboratory tests (795 pieces) and 48 categories of equipment related to health education (48 pieces). On the basis of existing infectious disease early warning system in China, and international experiences in setting up such system, the program developed 5-year plan to facilitate construction of early warning and response system.

Specific Points --The program:

- Assisted in the establishment of a disease surveillance and early warning and report system. China formally mobilized an information report management system for infectious diseases on the basis of case reports in January 2004. From 2005, the national CDC initiated proactive surveillance on 22 major infectious diseases (established with WHO technical support) in key areas in China. WHO, through program financing, and in cooperation with national experts developed a 5-year development plan for an early warning and response system which set out a plan for its implementation. The program financed training and key equipment in program provinces to support this.
- Supported pilot syndromic surveillance in Dongcheng District of Beijing and Wuhan City. A preliminary organizational framework for a systematic syndromic surveillance system was established and is being implemented in other cities.
- Assisted with the online direct report system through 27 training workshops and operational research. A national level operational research program, the "*Data Analysis of Online Direct Report System on Infectious Diseases and its Utilization Study*", was mobilized to analyze and improve how the system was working. The coverage of online

reporting has improved overtime – from over 2 weeks to 3.6 days in Shanxi and CDCs at all levels take less than .5 of a day to analyze reports.

- Supported training in technologies for preventing and testing infectious diseases, information system for disease prevention, SARS online reporting, and prevention and control of AI.
- Supported an MOH team visit to US to study its monitoring system for infectious diseases and operation of its symptoms monitoring system. Importantly it established professional and institutional contacts with US institutions.
- Significantly upgraded laboratory equipment in CDCs in prefecture cities and counties significantly improving testing capacity (speed of diagnosis has been increase 80% on average).
- Supported operational research on "*Network Building for Pathogenic Microorganism Laboratories for Public Health Emergency*". This proposed the establishment of a Public Health Laboratory Network based on international experience. Supported the development of quality control recommendations for laboratories through: "*Research on Quality Control Indicators and Assessment Methods for Pathogenic Microorganism Laboratories in China's CDC System*". Based on US-CDC systems the report proposed relevant quality control indicators and assessment methods, which are being implemented and tested.
- Improved bio-safety. Bio-safety training was established together with adoption of strict operational regulations.
- Program provinces are now making efforts to: establish health monitoring system for laboratory staff, set up the disease infection emergency response plan, enforce strict operational regulations and technical standards and constantly improve safety and self-protection awareness to minimize possible infection among laboratory staff and environment.
- Supported the review and formulation of strategies in health education and health promotion relating to "SARS" and other infectious diseases. Undertook health education and health prevention activities designed to inform the public. All program areas have carried out many kinds of mass health education, especially for rural areas and farmers in poor remote areas.
- Supported the production of the "*Infectious diseases—How Much Do you Know About It?*" a book on general knowledge of communicable disease prevention and control targeted at low income and low educational background population, and distributed it freely to every cultural office in the administrative villages of nation-level poor counties in program provinces.
- Supported a study of the barriers to and needs of communicable disease prevention and control for poor and vulnerable people -- "*Study of 'SARS' on Vulnerable Group*" -- which analyzed treatment seeking behavior, financial burdens and quality of received medical services by poor and vulnerable people (including women) during the outbreak of SARS (and together with provincial based operational research) can now underpin policies and its administration to poor and vulnerable people in future possible public health emergency.
- Enhanced capacity by procurement of key equipment for health education to make and print publicity materials. Field investigation showed high utilization rate of this equipments.
- "Changes of Health Behaviors of the Public after SARS" has been researched at national level and a few program provinces (including Guangxi and Inner Mongolia). These show that health education programs achieved some positive outcomes. The opening of

hotlines and other forms of publicity and education have contributed to healthy behaviors of the public.

- Emergency response exercises have been undertaken in a number of provinces including response to the AI epidemic, simulation of respiratory infectious diseases and SARS prevention, control and treatment technologies.
- Capacity improvement of field epidemic investigation has also been undertaken. CDCs at all levels to strengthened their capability of field epidemic investigation and public health emergency response, and strengthened knowledge and skill training of the human resources. Training for this has been supported by WHO financed under the program.

Program Experiences and its Role. The Program:

- Greatly assisted with consolidating resources, bringing better control on the SARS epidemic in program provinces by funding equipment needed, civil works, training programs, health education and promotion activities and operational researches. This assisted in controlling the disease
- Strengthened the communication and cooperation among national and provincial medical institutions, CDCs and health supervision agencies. It also helped them more effectively cope with any public health emergency by clearly defining their responsibilities and establishing an information-sharing platform.
- Enhanced capacity for clinical diagnosis and treatment in program provinces through training a large number of professionals in different fields. This also enhanced program provinces capacity to better manage and better capacity for clinic diagnosis and treatment of infectious diseases.
- Exposed Chinese officials to international experts and enabled the introduction of many advanced technologies to program provinces, which broadened the views of the management personnel and professionals in the regions.
- Supported the initial development of a network of pathogenic microorganism laboratories. The program organized experts to discuss the importance and demands for a network of pathogenic microorganism labs in response to public health emergencies in China. The drafting of the *"Plan for Establishing Pathogenic Microorganism Lab Network in Response to Public Health Emergencies"* and the *"Methods for Evaluating Pathogenic Microorganism Lab Network in Response to Public Health Emergencies"* will facilitate further improvement of the laboratory network.

Sustainability of the Program: A number of factors suggest sustainability of outcomes:

- *Policy Sustainability:* GOC at all levels have: (a) recognized the importance of public health; (b) increased public health input; and (c) strengthened health cooperation between agencies. With policies, rules, regulations and a responsibility system put into place, the work of public health emergency response is guided by the rule of law.
- *Human Resource Sustainability:* Training activities have improved the capacity of the medical and disease control staff at all levels to deal with public health emergencies and produced a huge pool of professionals for the medical and disease control institutions in program provinces.

- *Sustainability of Program Achievements*: Driven by the program, governments at all levels made comprehensive and detailed emergency response plans and put in place a single command system, a system for disease prevention, control and treatment, an effective information-sharing system and a legal responsibility system. The program-

funded planning, training and management network is operating effectively and the technologies used are getting more mature. Institutions and mechanisms set up during the program implementation can be included into the regular management system and merged into relevant agencies, which makes the program deliverables transplantable and sustainable.

- *Sustainability of Public Health Budgets:* Government has funded RMB 10.9 billion for national disease prevention and control programs, and RMB 11.4 billion for medical treatment programs for public health emergencies – the poorer western region of China. An additional RMB 4 billion has been dedicated for AIDS, tuberculosis and hepatic B and other prevalent infectious diseases.

Lessons Learned

- Strong government ownership (at all levels) is critical for providing a framework within which implementation can operate – particularly the government leadership teams and program offices established to guide implementation of the program and appropriate inter-departmental coordinating mechanisms where cross agency cooperation is required.
- Program flexibility is critical (even with appropriate program objectives and a clear program structure) to ensure enough flexibility is built in to enable adjustments to be made as circumstances change (e.g., the epidemic waned, other needs evolved as knowledge increased and new threats in form of AI emerged).
- Annual work plans were developed at national level and in each province in line with national priorities on infectious disease prevention and control. They were finalized after comment by the World Bank and other stakeholders. In general, these annual work plans were well implemented. Local areas often took action to meet local needs from disease outbreaks. These extra activities enhanced program effect, and demonstrated flexibility and target-oriented principles in the program.
- International experience provided by experts (e.g. from WHO under the program) and from the World Bank (in preparation and via supervision arrangements) are critical to knowledge development and dissemination of international practice.
- Pay attention to procurement capacity development and training at the provincial level, particularly for consulting services, because of limited experience at this level. Need to ensure consultants fully perform their obligations. Future procurement of consulting services should pay attention to this.

Program Extension and Adjustment

The FLO applied for program extension and to adjust categories of funds in early 2005 because: (a) a need to focus more on long-term capacity building, in particular the establishment of an emergency response system for public health events and a system for disease prevention and control and (b) exchange rate gains making an additional $1.1million available. The Bank wanted a more detailed program to demonstrate that it's necessary to extend the program and adjust its funding. The FLO held two working meetings for program provinces in April and July of 2005 to prepare a revised proposal. An action plan was also formulated for the late stage of the program together with detailed reports on program progress. Finally after one year of preparation the program extension and fund adjustment was finalized. Program extension and fund adjustment helped us make better use of the program fund and realize program objectives.

Program Financing Shortage/Overspending of Non-SARS Component.

While program legal documents clearly spell out the approved loan amount of the SARS program financed as components of six separate IDA program, the over expenditure by these projects on non-SARS program related activities meant the SARS program became under-funded by SDR 400,000. Thus the funds available for the program were suddenly and unexpectedly reduced at a late stage. This was unprecedented in the projects of the World Bank. Our recommendation is that if a project is threatened by such risks, the World Bank should point out such risks in legal document. Otherwise, project legal document would lose part of its binding power.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

The Canadian International Development Agency (CIDC) and the United Kingdom's Department for International Development (DFID) were joint financiers of the program program (via a World Bank administered Trust Fund) and provided the following (summarized) comments to the ICR preparation team at a meeting in Beijing to discuss the program and the Government's evaluation report on the program. The ICR team did not have the opportunity to discuss the program with Japanese authorities responsible for the Japan Social Development Fund (JSDF) which was administered by the Bank.

Comments on the program derived from a meeting with the World Health Organization (WHO) Beijing are also summarized below. The comments of WHO are included here even though they were, strictly speaking, a contractor under the Program. As discussed below however, the contracting of WHO was done to ensure a strategic partnership with WHO was created, particularly as regards moving forward on the key technical public health issues at the center of developing an adequate SARS and infectious disease response capacity in China.

CIDA views the program as being successful in meeting its core objectives. At the outset, CIDA, at a corporate level, conducted a "due diligence" review of the program documentation as it was prepared take a "hand-off" approach to program design and implementation and to ask the Bank to manage its funds via a Trust Fund. They concluded the Bank could develop the program faster than they, as a bi-lateral agency, could. They recognized the Bank had: (i) a capacity to dialogue across agencies and at the highest levels of Government; and (ii) facilitate political support/will power to move forward on the program on an emergency footing. The joint financing design of the program overcame many of the partnership/coordination issues and risks that could have arisen without joint financing of a single program.

In finalizing the strategic agreements underpinning their support of the program it was critical to CIDA (and DFID) that WHO became a strategic partner in the emergency response effort and was involved in the detailed design and implementation of the program. However, WHO as a technical agency without significant discretionary funds able to be immediately deployed to the emergency effort, needed funding. A mechanism was developed to enable funding of WHO technical support under the program with full agreement of the Bank and of the Government.

DFID viewed the program as being successful in meeting core objectives. Institutionally DFID wanted to demonstrate a clear and appropriate response to the SARS epidemic. It made no sense to try and run a stand alone DFID program but recognized the need for good global technical assistance to be blended with local expertise. The World Bank had capacity to develop a program to respond to the crisis with the Government of China (GOC) and had in place mechanisms to ensure financing and implementation capacity at the provincial level. In this context it made sense to join with program financing with WHO being financed under the program.

Key specific points made by both CIDA and DFID included:

- MOH, at both national and provincial levels, have worked very hard and diligently in short period of time to: (a) establish public health emergency response policy and regulatory framework, (b) build an infectious disease management capacity in the program provincial hospitals; and (c) develop a system to identify and respond infectious disease emergencies. In short, a response capacity was substantially increased.

- MOH exhibited a positive and genuine change in attitudes to openness, transparency and a willingness to seek both international and local expertise and technical support in responding the SARS crisis – at both the national and provincial level. This contrasted somewhat with the Ministry of Agriculture, a critical partner in generating a really effective national public health response capacity. It was noted that the Ministry of Finance on occasion mediated coordinated cross agency actions and the involvement of WHO.

- The monitoring and evaluation focus on outcomes, rather than just capacity development, by both MOH and the Bank could have been improved. It was noted that the MOH evaluation report, while very large and extensive in its coverage, also lacked a clear focus on outcomes.

- The program has been relatively successful in establishing a core architecture for a policy based emergency health response system in a short period of time (the core objective of the program) but it still important to recognize there are many qualitative aspects of the system and its capacity which need much further development.

- While acknowledging significant work on establishing a system for health promotion and behavior change it is not clear how successful behavior change has been.

- Work on establishing a laboratory network and associated protocols under the program was significant but there are concerns whether all appropriate protocols developed are in place and whether a fully sustainable laboratory staff capacity is in place.

- Concerns expressed about the financial capacity of the poorer provinces to sustain components of the program.

- While recognizing the Bank team supervising the program did a sound job under considerable pressures a view was expressed that longer lead times on mission timing would have enabled increased participation by development partners and perhaps increased focus on monitoring and evaluation of the program. Aide memoires were important monitoring instruments but focused a little too much on management issues and not enough on outcomes.

WHO views the collaboration under the program positively and the outcomes achieved significant and sound. While institutionally WHO believes the development partners could have given the funds for the technical assistance program directly to it to administer there was explicit recognition of both the desirability of donors support a single program and the role the World Bank, and in particular Bank country management, in assisting with the development of a core coordinated program and a capacity to implement the program – particularly at the provincial level.

Key points made by WHO include:

- The program enabled WHO to deliver technical assistance on a timely basis and the support enabled critical changes in legislation, regulations and policy to be developed and implemented. WHO believes it was able to get very well qualified staff to work on the program.

- The design of the technical assistance on a "program" basis enabled flexibility in implementation, enabled the effort to respond to evolving demands by GOC for assistance in the agreed areas, and as a consequence outcomes were improved. .

- The strong commitment of GOC to developing an appropriate response to the SARS epidemic, in part as a consequence of a need for China to be responding to international concerns about the potential global impact of the emergency, created a very positive environment within which to implement the technical assistance program.

- The approach adopted to implementation of the technical assistance program under the program enabled a linking of China and Chinese experts with the rest of the World – in particular Canada, United Kingdom, Australia, Netherlands and the United States – particularly the Center for Disease Control. Specifically, the program created a formal mechanism for international technical assistance to talk/work with China at both the national and provincial levels.

- The positive efforts made under the program to improve Bio-safety in laboratories was significant and should be seen as both a significant contribution to development in China but also as a global good.

- The rationale for the development of a Chinese Laboratory network arouse from work under the program and is a significant outcome which will take years to institutionalize.

- While acknowledging the major achievement of MOH of establishing the Web-based infectious disease monitoring system expressed concern that the system remains fragile and in need of sustained qualitative improvement over the next 20 years..

- That WHO was able to establish and sustain a good working relationship with Bank staff under the program.

- Finally, WHO acknowledged the significant administrative burden in implementing the technical assistance program. CIDA and DFID also noted this seemed an issue for WHO.

Annex 9. List of Supporting Documents

1. The following is a list of the key documents relating to the China SARS and Other Infectious Diseases Response Program.

2. World Bank: "A SARS and Infectious Diseases Response Program Supported By International Assistance: Program Description and Implementation Framework;" 2003. (served as program appraisal document), 2003.

3. Amendment to Development Credit Agreements for :
   - Environmental Technical Assistance Project (Cr. 2522-CHA)
   - Loess Plateau Watershed Rehabilitation Project (Cr. 2616-CHA)
   - Yangtze Basin Water Resources Project (Cr. 2710-CHA)
   - Southwest Poverty Reduction Project (Cr. 2744-CHA)
   - National Rural Water Supply Project (Cr. N027-CHA)
   - Basic Health Services Project (Cr. 3075-CHA)
   - Fourth Rural Water Supply and Sanitation Project (Cr. 3233-CHA)
   - Enterprise Reform Project (Cr. 3271-CHA)

4. Mutli-donor Trust Fund Grant Agreement between People's Republic of China and IDA

5. JSDF Trust Fund Grant Agreement (TF 052892) for China Prevention and Control of SARS

6. Letter Agreement on Program indicators

7. Foreign Loan Office, Ministry of Health (China): "Program Implementation Plan on SARS and Other Infectious Diseases Response Program Co-Financed by World Bank/DFID/ CIDA/JSDF" (2003).

8. Foreign Loan Office Coordinated "Annual Implementation Plans" and World Bank Mission Comments on Such Plans (various years)

9. The World Bank: "Supervision Aides Memoire, Back-to-office Reports 2003-2006.

10. Foreign Loan Office, Ministry of Health (China): "Final Evaluation Report on China SARS and other Infectious Diseases Response Program Co-financed by WB/DFID/ CIDA/JSDF;" (2007) 468pp.

11. Foreign Loan Office, Ministry of Health (China): "Program Indicators, Base line and Target Achievements Matrix;" (2007).

12. WHO Technical Reports
    - A set of "Technical Reports Analyzing the SARS experience in China."
    - "Strengthening Early Detection of Infectious Disease Outbreaks;"
    - "Strengthening Public Health Response to to Infectious Disease Outbreaks;"
    - "Strengthening Health Care Facility Response o Infectious Diseases;"
    - "Strengthening Bio-saftey in Laboratories;"
    - "Prevention and Control of Influenza A (HSNI) in humans;"

Note: A wide range of reports from technical assistance and from Operational Research are documented/summarized in (10) above and provide significant information on different program activities and informed program implementation and this ICR.

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0 300 Kilometers

0 100 200 300 Miles

CHINA

- SELECTED CITIES AND TOWNS
- PROVINCE CAPITALS
- NATIONAL CAPITAL
- RIVERS
- MAIN ROADS
- RAILROADS
- PROVINCE BOUNDARIES
- INTERNATIONAL BOUNDARIES

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