

CHAPTER 1 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The Republic of Yemen is one of the severe water scarcity countries all over the world, which is caused by increasing domestic, agricultural and industrial demand. The per capita share of water resources, that is, 150 m³ per annum is very low comparing global average of 2,500 m³, even that of regional average of 1,000 m³ (Ministry of Planning & International Cooperation, 2006)¹. Total annual renewable water resources are estimated at 2.5 billion m³ (1.5 billion m³ of groundwater and 1.0 billion m³ of surface water). Total annual consumption, however, stands at 3.4 billion m³. This means that 0.9 billion m³ of groundwater has been depleted every year, with lowering the water tables in most aquifers in average of 6 meters a year. Consequently, precious groundwater resources are expected to run dry with in 15 to 50 years.

In order to mitigate the nationwide serious water problem, the Government of Yemen has constituted the “Law No.(33) for the year 2002 Concerning Water” which is amended by Law No.(41) in 2006, in turn, established Ministry of Water and Environment in 2003. National Water Resources Authority (NWRA) under Ministry of Water and Environment (MWE) has been developing the institutional capacity for sustainable usage of water resources. Then, the Government of Yemen formulated National Water Sector Strategy and Investment Program (NWSSIP) supported by the World Bank, Netherlands and other donors. Donors including Japan have expressed their positive intention to support the execution of NWSSIP.

Sana’a Basin was designated to be “Water Protection Zone” by the Cabinet Decree No. (344) in the year of 2002 as the one of the five critical basins. In Sana’a Basin, where the capital of Yemen is situated, annual rainfall is limited, therefore, development of deeper aquifer has been exponentially increased to meet the demand of domestic water supply and irrigation accompanied with introducing of modern well drilling technology coupled with the large cash inflow that followed during the oil boom. As a result, the water shortage has become worse and is now being accelerated by continued imbalance between annual recharge and the growing water demand.

Based on the Water Law, NWRA was delegated to formulate water resources management plan, to execute the integrated water resources management and to establish the basin commission. Then NWRA Sana’a Branch (NWRA-SB), with responsibilities on the legal basis of delegation of power vested to by NWRA in accordance with article (72) of the Water Law, was established in the year of 2003 and shall implement activities related to water resources management for Sana’a Basin. Sana’a Basin Commission (SBC), which is now under the chairmanship of the Minister of Water and Environment, was organized in the year of 2003 with the technical secretariat NWRA-SB to execute management of water resources in Sana’a Basin.

The comprehensive water resources studies have been conducted since 1970s and water resources management project has been launched in the year of 2003, however, NWRA-SB has faced difficulties to implement water resources management effectively.

In this context, the Government of Yemen requested the Government of Japan to execute the technical cooperation to formulate water resources management action plan for Sana’a Basin based on the existing data and information.

1.2 OBJECTIVES OF THE STUDY

The objectives of the Study are;

- (1) to formulate a water resources management action plan for Sana'a Basin based on existing data and information, and
- (2) to transfer technology and knowledge on water resources management to the counterpart personnel through their direct participation into the Study.

1.3 STUDY AREA

The Study covers Sana'a Basin and its surrounding areas as shown in *Figure 1.1*. All or some parts of seven districts belonging to Sana'a Province and Sana'a City are included in Sana'a Basin. Sana'a Basin is divided into 22 sub-basins.

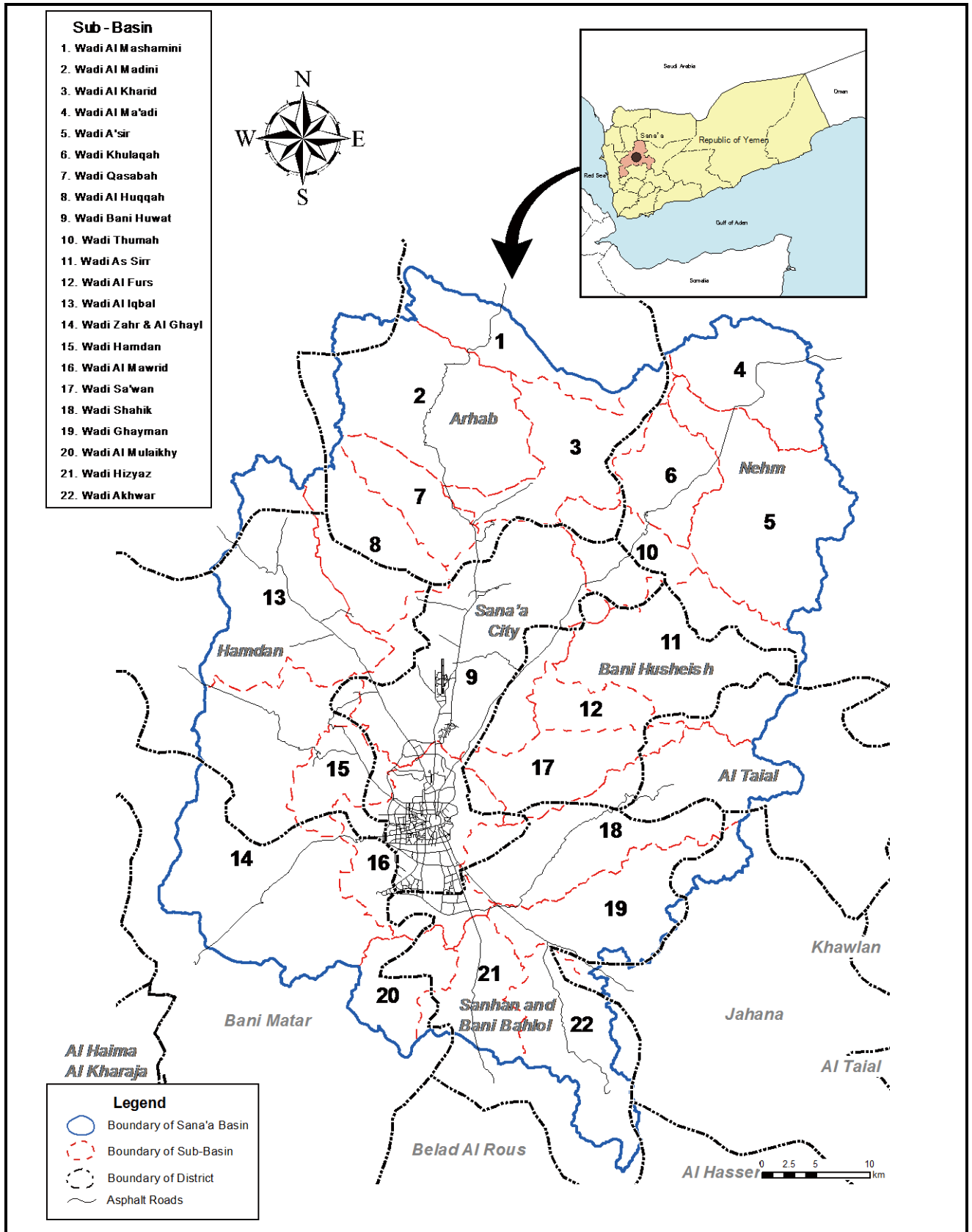


FIGURE 1.1 STUDY AREA

THE STUDY FOR WATER RESOURCES MANAGEMENT ACTION PLAN FOR SANA'A BASIN

JICA

1.4 IMPLEMENTATION OF THE STUDY

National Water Resources Authority (NWRA) Headquarters and NWRA Sana'a Branch of the Ministry of Water and Environment (MWE) were assigned as the counterpart organizations by the Government of Yemen, while the Japan International Cooperation Agency (JICA) was assigned as the official agency responsible for the implementation of the technical cooperation program of the Government of Japan.

The Study was conducted by the Japanese study team, comprised of members from Earth System Science Co., Ltd and Japan Techno Co., Ltd, officially retained by JICA for the Study, and the counterpart staff provided by NWRA.

The members involved in the Study are shown in *Table 1.1*

The total schedule of the Study is shown in the Flow Chart (See, *Figure 1.2*).

1.5 COMPOSITION OF THE REPORT

This report consists of three (3) volumes: Summary Report, Main Report and Supporting Report. The Main Report presents the summarized results of all the studies and the Water Resources Management Action Plan for Sana'a Basin. In Chapter 2, present situation of water resources, water use and institution and organization are described. Issues to be considered in action plan are described in Chapter 3. In Chapter 4, future scenarios based on socio-economy and water demand are presented. In Chapter 5, water resources management action plan for Sana'a Basin is presented. Chapter 6 deals with the conclusions and recommendations.

Detailed study results are described in the Supporting Report. The contents of the Supporting Report are as follows;

- Chapter 1: National Policy and Strategy for Water
- Chapter 2: Water Resources Management Plan for Other Critical Basins
- Chapter 3: Present State of Water Resources
- Chapter 4: Present Condition of Socio-Economy
- Chapter 5: Present Condition of Water Use
- Chapter 6: Current Institutional and Administrative Framework
- Chapter 7: Current Organizational Structure
- Chapter 8: Environmental and Social Considerations

1.6 MEMBERS INVOLVED IN THE STUDY

Members involved in the Study are listed in *Table 1.1*.

Table 1.1 List of Members involved in the Study

1) Steering Committee for the Project

The Steering Committee for the Project is composed of following seven (7) members.

Name	Assignment
Eng. Salem H. Bashuaib	: Chairman
Eng. Abdulla Dhaban	: Sana'a Governorate
Eng. Yahya Al-Eryani	: Ministry of Water and Environment
Eng. Mutaheer Zaid	: Ministry of Agriculture and Irrigation
Eng. Salem A. Baquhaizel	: Environmental Protection Authority
Eng. Ibrahim Al-Mehdi	: Sana'a Water Supply and Sanitation Local Corporation
Eng. Saleh Al-Dubby	: NWRA Sana'a Branch Manager

2) The Counterpart Team

The team is composed of following six (6) members.

Name	Assignment
Eng. Mohamaed Abdul Salam	: Leader of Counterpart Team / Water Resources Management
Eng. Khalid Al-Bar	: Former Leader of Counterpart Team / Water Resources Management
Eng. Ahmed Nagi Al-Razeki	: Hydrogeology / Hydrology / Water Quality
Ms. Wafa Al-Akwa	: Hydrogeology / Hydrology / Water Quality
Eng. Ibrahim Al-Zubairi	: Water Use Planning
Eng. Ibrahim Mohammed Ismaeel	: Institutional Development / Socio-economic Analysis, Social Survey / Institutional Analysis, Environmental and Social Considerations / PCM Facilitation

3) The JICA Study Team

The Team is composed of the following seven (7) experts.

Name	Assignment
Mr. Hiroyoshi YAMADA	: Team Leader / Water Resources Management
Mr. Yusuke OSHIKA	: Hydrogeology / Hydrology / Water Quality
Mr. Masao UEMATSU	: Water Usage Planning
Mr. Naoki MORI	: Institutional Development / Socio-Economic Analysis
Ms. Mikiko AZUMA	: Social Survey / Institutional Analysis
Mr. Keiji NIIJIMA	: Environmental and Social Considerations / PCM Facilitation
Mr. Arata SASAKI	: Study Administration

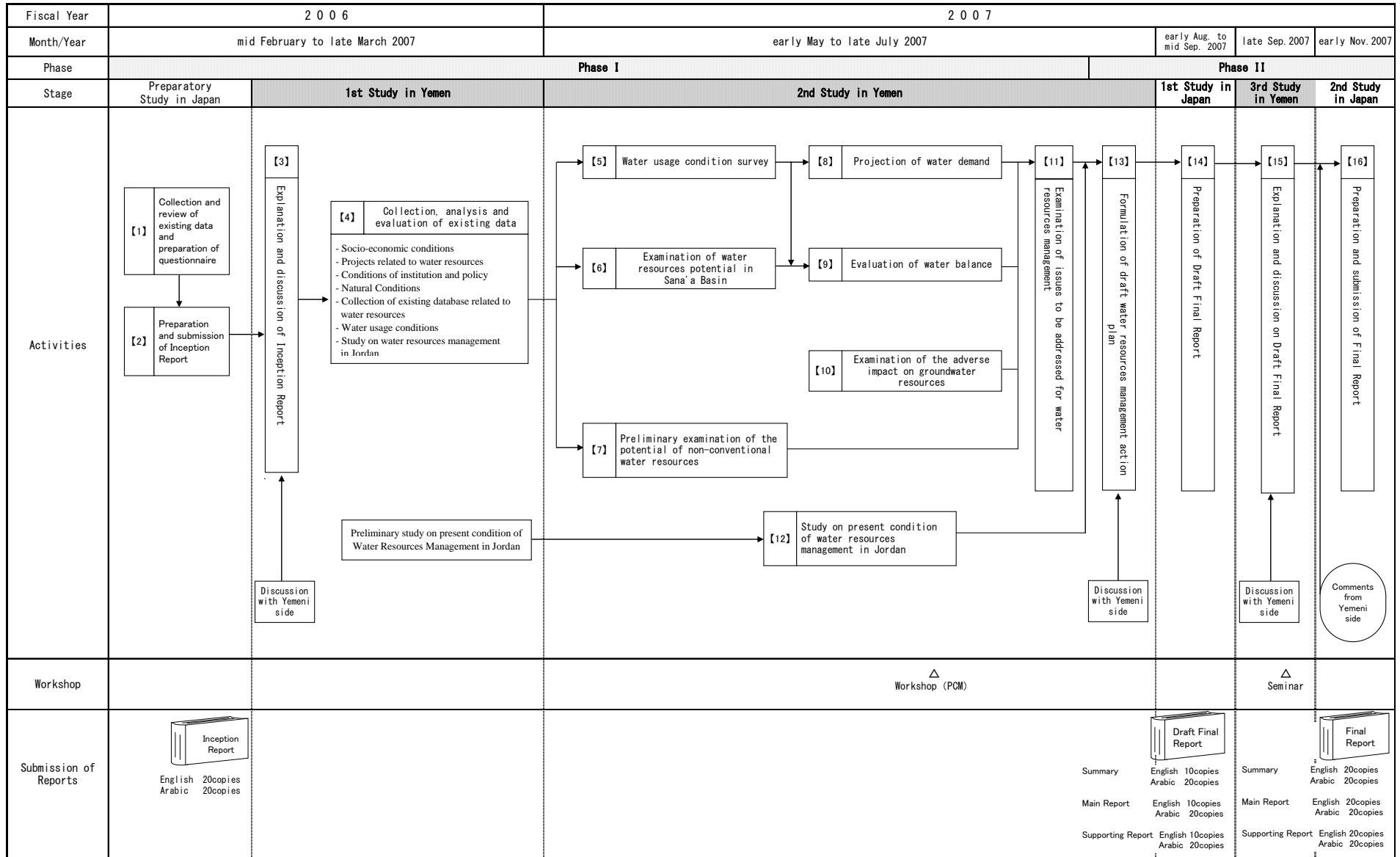


Figure 1.2 Flow Chart of the Study

REFERENCE

Ministry of Planning & International Cooperation (2006) The Socio-Economic Development Plan for Poverty Reduction (2006-2010)