

**REPUBLIC OF TURKEY  
MINISTRY OF HEALTH**

**REPUBLIC OF TURKEY  
PREPARATORY SURVEY  
ON  
HOSPITAL ESTABLISHMENT PROJECT  
IN AYDIN PROVINCE  
  
FINAL REPORT  
(PUBLIC VERSION)**

**September, 2015**

**JAPAN INTERNATIONAL COOPERATION AGENCY**

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**MAEDA CORPORATION  
INTERNATIONAL TOTAL ENGINEERING  
CORPORATION  
LSI MEDIENCE CORPORATION**

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## Abbreviation

Abbreviation	Original Ward
AFAD	Republic of Turkey Prime Ministry Disaster and Emergency Management Presidency (Afet ve Acil Durum Yönetimi Başkanlığı)
AIA	American Institute of Architect
AIMDD	Active Implantable Medical Device Directive
BLO	Build-Lease-Operate
BLT	Build-Lease-Transfer
BO	Build-Operate
BOO	Build-Own-Operate
BOT	Build-Operate-Transfer
BRT	Build-Rent-Transfer
BS	Balance Sheet
BTO	Build-Transfer-Operate
CCD	Charge-Coupled Device
CPI	Consumer Price Index
CT	Computed Tomography
DBO	Design-Build-Operate
DOH	Directorate of Health
DRG	Diagnosis Related Groups
DSCR	Debt Service Coverage Ratio
DSI	General Directorate of State Hydraulic Works
EBRD	European Bank for Reconstruction and Development
EC	European Community
EEC	European Economic Community
EIA	Environmental Impact Assessment
EIRR	Equity Internal Rate of Return
EPC	Engineering, Procurement and Construction
ERCP	Endoscopic Retrograde Cholangiopancreatography
EU	European Union
EUR	Euro
FM	Facility Management
FTA	Free Trade Agreement
GDP	Gross Domestic Product
HIMS	Hospital Information Management System
ICD	International Classification of Diseases

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Abbreviation	Original Ward
ICU	Intensive Care Unit
IFC	International Financial Corporation
IMF	International Monetary Fund
ISPAT	The Republic of Turkey Prime Ministry Investment Support and Promotion Agency
IT	Information Technology
IVDD	In Vitro Diagnosis Device Directive
JCI	Joint Commission International
JICA	Japan International Cooperation Agency
JPY	Japanese Yen
LDR	Labor, Delivery, Recover
LIS	Laboratory Information System
LOI	Letter of Intent
MDD	Medical Device Directive
MOEU	Ministry of Environment and Urban Planning
MOH	Ministry of Health
MRI	Magnetic Resonance Imaging
NICU	Neonatal Intensive Care Unit
NPV	Net Present Value
O&M	Operation and Maintenance
OECD	Organization for Economic Co-operation and Development
PET	Positron Emission Tomography
PFI	Private Finance Initiative
PHU	Provincial Hospital Unit
PICU	Pediatric Intensive Care Unit
PIRR	Project Internal Rate of Return
PPI	Producer Price Index
PPP	Public-Private Partnership
PQ	Pre-Qualification
Pre-FS	Pre Feasibility Study
PSIF	Private Sector Investment Fund
SE	System Engineer
SGK	Sosyal Güvenlik Kurumu (Social Security Institution)
SKS	Sağlıkta Kalite Standartları (Medical Quality Standard)
SPECT	Single Photon Emission Computed Tomography
SPV	Special Purpose Vehicle

Abbreviation	Original Ward
SSK	Sosyal Sigortalar Kurumu (Social Insurance Institution)
SUT	Sağlık Uygulama Tebliği
TITUBB	T.C.İlaç ve Tıbbi Cihaz Ulusal Bilgi Bankası
TL	Turkish Lira
TPN	Total Parenteral Nutrition
TSE	Türk Standartları Enstitüsü
UPS	Uninterruptible Power Supply
VAT	Value-added Tax
WHO	World Health Organization
YPK	Yüksek Planlama Kurulu (Supreme Planning Council)

## **CHAPTER 1. OUTLINE OF THE SURVEY**

## Chapter 1. Outline of the Survey

### 1. Background of the Survey

The population of Turkey has exceeded 76 million people (2013) and continues to increase approximately 1 million people each year. In such circumstance, delivery of healthcare service of sufficient quality and quantity is required. The universal health public insurance system was introduced by the Social Security Institution (SOSYAL GUVENLIK KURUMU; SGK) which was established in 2008, and along with population growth and enhancement of insurance system, the healthcare need has significantly increased. From 2005 to 2012, the number of outpatients became 1.9 times, and the number of inpatients became 1.7 times. On the other hand, quantity of medical resources such as hospitals, hospital beds and healthcare workers has not grown. The number of hospital beds per 10,000 people is as small as 26.5 (In Japan, 137 beds per 10,000 people (average of 2005-2012, WHO World Health Statistics)). Therefore, development of healthcare delivery system is an urgent need.

In addition, the disease structure is transitioning towards the so-called developed countries type. The number of cases of infectious diseases is drastically reduced, while cancer, cardiovascular disease, and respiratory diseases demonstrate an increase as well as the needs for advanced medical care for these diseases. Also, patients tend to concentrate to National Hospitals where medical cost is basically free by universal health public insurance system and the daily number of outpatients is estimated to be 3 times more than that of Japan.

Furthermore, although Turkey has maintained a high economic growth rate, there are no particular natural resources and import surplus is continuing. Therefore permanent current account deficit has been a problem. The Turkish government is required to respond to this increase of needs for high quality medical services as well as stabilizing the expenditure and increasing the debt as little as possible.

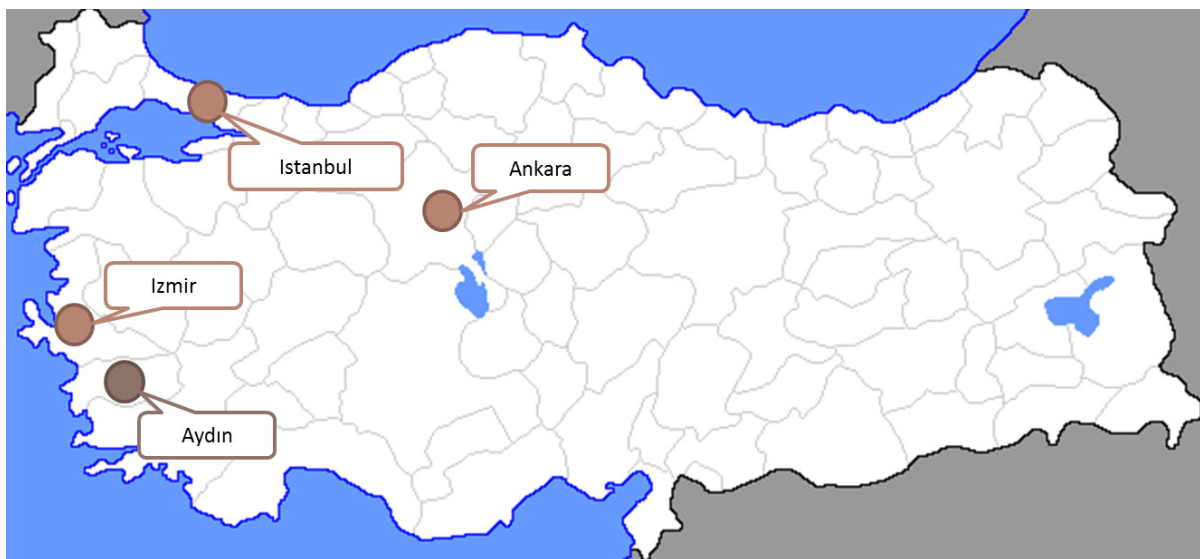
Hence in December 2012, the Turkish government developed the Strategic Plan 2013-2017 and announced a policy to re-establish the National Hospitals using PPP scheme and implement it as a national project, in order to provide high efficiency medical services by utilizing the energy of private companies. Since 2008, the Hospital PPP Project is mainly promoted by the Ministry of Health (MOH), and as of the end of June 2015, 65 hospital projects (total of 55,606 beds) are being planned, including a number of huge hospitals with over 1,000 beds. The tender (international tender) has been conducted for 25 projects out of 65 projects, and 20 projects have successful bidders such as Turkish and European construction companies. The Hospital PPP Project targets to develop a total of 90,000 beds and more than 40 projects are expected to be announced in the future.

## 2. Target and Objectives of the Survey

### 2-1. Target of the Survey

[Target Project] Hospital Establishment Project in Aydın Province, Republic of Turkey  
(Project scale: 800 beds)

[Survey Sites] Efeler City, Aydın Province, Republic of Turkey  
Ankara City, Republic of Turkey  
Istanbul City, Republic of Turkey  
Izmir City, Republic of Turkey



Source: Survey Team using map from <http://turkey.areastudy.net/ja/imagemap.html>

Figure-1 Map of Turkey and Location of the Main Cities and the Site City

### 2-2. Objectives of the Survey

The purpose of Hospital Establishment Project in Aydın Province (Aydın City Hospital Project) is to establish a national general hospital in Aydın Province and provide stable-and high-quality medical services to the province, under the concluded contract and cooperation between MOH of Turkey and SPV composed of private companies, all within the Hospital PPP Project promoted by MOH.

With the aim of composing the SPV by Japanese companies and successfully bidding on this Project, the "Private Sector Investment Finance (PSIF)" of the Japan International Cooperation Agency (JICA) shall be considered as the procurement method of hospital development fund.

Therefore, the objective of the Survey is to develop a detailed plan for the Project (such as



demand forecasting, project scope, project cost, financing methods, implementation schedule, construction methods, project implementation structure, operation and management system, impact to environmental and social aspects, project effect, etc.) and to implement a necessary survey for PSIF.

### **3. Contents and Policies of the Survey**

#### **3-1. Contents of the Survey**

The survey plans to implement construction site inspection, study of the surrounding environment, discussion with MOH of Turkey in the on-site survey, and to verify the feasibility by making proposals for optimal project plan through domestic analysis of result of the on-site survey. In particular, since Hospital PPP Project requires continuous and stable-management of SPV, this survey shall focus on the Survey about operation phase.

#### **3-2. Policies of the Survey**

The Survey is planned to be implemented with the basic policies of the following items, based on the nature of the target Project and objectives of the Survey.

##### **(1) To Establish a Project in PPP Scheme**

The Project is expected to be a PPP Project in the future. Therefore, research and consideration of the risk accompanied with PPP project (political and social risk, economic and market risk etc.), careful plan of the countermeasure for each possible risk and enhance feasibility as a PPP project is required. Especially, consistency with the law and regulation of Turkey shall be carefully ensured. Besides, as a premise of PPP scheme, information and opinion shall be exchanged with JICA during the survey stage, in case it is necessary to use Japanese financing scheme such as PSIF and so on.

##### **(2) To Share Information with Turkish Government**

To successfully establish the Project as PPP, information and opinion shall be exchanged by cooperating with counterparts such as Turkish government and MOH from the survey stage because of the premise that Turkish government shall positively play a leading and active role in the Project. Besides, coordination of opinion among stakeholders such as DOH of Aydın etc. shall be considered.

In addition, contents of survey shall take into consideration of the policy of Turkish government and condition of development to enhance project feasibility.

(3) To Contribute to International Expansion of Japanese Medical System

This project can be a specific case of the "international expansion of Japanese medical system" as a part of the growth strategy promoted by the Japanese government. By applying and deploying this project to similar projects, it can be expected to further promote internationalization of Japanese medical system/industry and eventually to become a foundation leading to large and permanent economic effects. In formulating the project plan, taking into consideration to this politic intention, the possibility of participation of Japanese companies to the SPV shall be studied first.

(4) To Use as a Study Material for PSIF

The results of the Survey will be used as study material in examination of PSIF for this project by JICA. Therefore, when summarizing the project plan and so on, sufficient information sharing and discussions with JICA shall be done in the course of this Survey.

In particular, for cash flow analysis, to consider project scheme and funding method, and setting of the contractual provisions of the related contracts, the Survey Team shall positively take advantage of the financial advisor (such as financial organizations or financial consulting firms) and legal advisor (such as law firms).

(5) To Comply with the Guidelines for Environmental and Social Considerations of JICA

Based on the available information as of this moment, the Project is classified as environmental category B of the Guidelines for Environmental and Social Considerations of JICA (announced on April 2010). To comply with these guidelines, such guidelines shall be carefully considered when arranging researcher and planning schedule. Furthermore, as preparation for future implementation of the Project, the procedure related to environmental and social considerations in Turkey shall be confirmed.

#### **4. Methods of the Survey**

##### **4-1. Terms of Reference of the Survey**

The Survey studied following items regarding Aydın City Hospital Project.

(1) Current Situation of the Healthcare Sector in Turkey and Outline of Hospital PPP Project

1) Healthcare Sector Trend in Turkey and the Positioning of this Project

The Survey considered the results of past similar surveys to confirm the mid and long term healthcare policy and plan of Turkey, positioning of this Hospital PPP Project, related statistics and laws, etc. through the published documents by Turkish government and interviews with MOH of Turkey.

## 2) Current Situation of the Hospital PPP Project

Through the interviews with MOH of Turkey and companies that participated in past projects, the Survey collected information about preceding projects and planned projects to study the current situations of the planned projects and progress status of the preceding projects, etc. Also, the Survey analyzed barriers or lessons to be considered during the implementation of the Project using the collected information.

### (2) Current Situations of the Healthcare Sector in Aydın Province and Efeler City

In order to analyze the background and necessity of the Project, the survey researched the situation of the healthcare sector in Aydın Province and Efeler City where the subject hospital is located, check the mid and long term policies and plans of healthcare sector of the Province and the City, positioning of the Hospital PPP Project, related statistics and laws, current situation of medical service system and medical industry through the published documents from Aydın Province and interview with the provincial Directorate of Health.

### (3) Project Plan

Project plan for the establishment and operation of the subject hospital (800 beds) was prepared and evaluated. Clinical function, required services, human resources and organization planned by MOH were studied to arrange an appropriate plan which takes into consideration the demand forecasting.

The Survey prioritized the possibilities of the participation of Japanese companies as SPV when preparing the project plan. Specifically, the 4 items that shall be provided to the hospital by the SPV; facilities, medical equipment, IT system, and hospital operation were especially considered and each of its contents, scope and role sharing between public and private sector, and a feasible project plan were developed to enable project implementation by utilizing the advantages of both public and private sector. During project planning, the Survey Team considered the possibility of introducing competitive Japanese technologies into Turkey for economical promotion and cooperation between both countries. Also the survey included the estimation of project cost considering Turkish market.

(4) Financial Plan

Financial plan required for operating the Project proposed in (3) above was studied. Financial planning, which is one of the most important points for SPV, was studied and a financial model was prepared considering a financial scheme using PSIF (Private Sector Investment Finance) by JICA.

(5) Risk Analysis and Countermeasure

Possible risks and its proposed countermeasures were studied.

(6) Environmental and Social Considerations

Environmental and social impacts on the surrounding area and societies were evaluated by studying and analyzing the current environmental and social situation. Also easing measures for these impacts were proposed.

(7) Implementation Schedule

Project implementation schedule was planned.

(8) Feasibility Evaluation

Project feasibility was analyzed by considering the survey results.

**4-2. Survey Process**

This survey began in December 2014 and completed in September 2015. Below figure shows survey schedule and reporting timing.

Contents	14	2015								
	12	1	2	3	4	5	6	7	8	9
Preparation	■									
1st Field Survey	■									
Analysis		■								
2nd Field Survey					■					
Analysis						■				
Reporting	▲ IC/R				▲ IT/R			▲ DF/R		▲ F/R

Source: Survey Team

Figure-2 Survey Schedule

## **CHAPTER 2. OVERVIEW OF HEALTHCARE SECTOR**

## Chapter 2. Overview of Healthcare Sector

### 1. Situation of Turkish Healthcare Sector

#### 1-1. Policies and Plans for Healthcare

According to the “Strategic Plan 2013-2017” issued by MOH of Turkey, improvement of capacity, quality and location of healthcare facilities are set as one of the goals, and for this, they concluded that it was necessary to construct efficient medical facilities by PPP scheme. Also, in order to maintain a sustainable finance without compromising the quality of services, they mentioned the development of optimal usage of funds and program as one of the goals and pointed out that adopting investing program such as the Hospital PPP Project is necessary.

Also according to the website of MOH of Turkey, the Hospital PPP Project is positioned to a part of “2023 Vision” which is promoted by Turkish government aimed to become the top ten of the world economy in 2023, which is the 100th anniversary of country founding.

In addition, the document “Healthcare Industry in Turkey” which ISPAT (The Republic of Turkey Prime Ministry Investment Support and Promotion Agency), an investment promotion agency under the direct control of Turkish Prime Minister’s Office published in January 2014, explains that MOH aims to increase the number of beds per 10,000 people from current 26.5 up to 32 until 2023. MOH also decided to make the future development of 90,000 beds through the Hospital PPP Project in Turkey throughout.

On the other hand, according to the above-mentioned “Healthcare Industry in Turkey,” MOH is planning to increase the revenue of health tourism to an annual 20 billion US dollars until 2023. Therefore, they set a goal to increase the target of healthcare expenditure per capita to 3 times of current amount, and that target will reach 2,000 US dollars a year. By engaging these patients in the Hospital PPP Project, the Turkish government also aims acquisition of foreign currency.

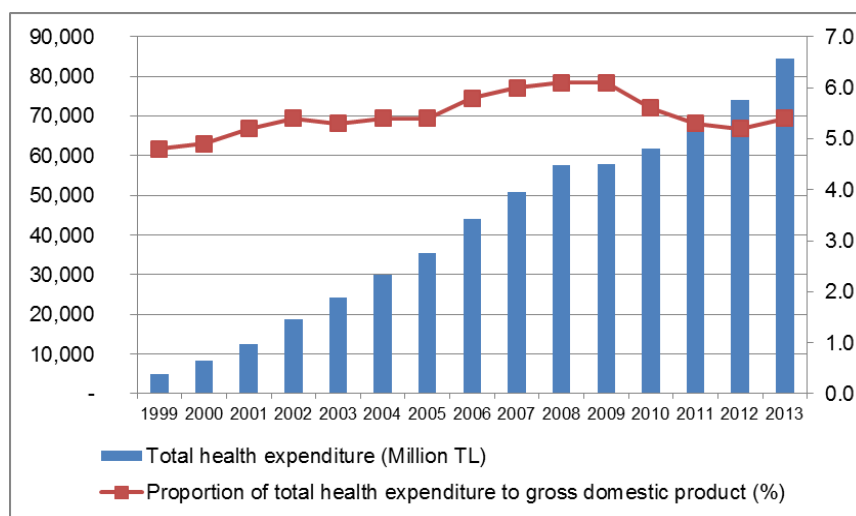
#### 1-2. Medical Economy

##### (1) Healthcare Finance

Medical expense is increasing every year in Turkey. National medical expense in 2013 is 84,390 million Turkish liras, and it has increased to about 10 times that of 2000. The GDP ratio of national medical expense in 2013 is 5.4%, and has increased 0.5% from 4.9% in 2000. To GDP ratio of national medical expense has decreased from 2010 to 2012, which is most likely due to the significant increase of GDP in Turkey during this period and adding to that, medical expenses containment measures such as drug price cuts were implemented.

In addition, according to the OECD Health Statistics 2015, Turkish medical expense per capita in 2013 was 941 US dollars (purchasing power parity), and increased to about 2.3 times from 415 US dollars (purchasing power parity) in 2000. On the other hand, when compared

with the other OECD countries, both ratio of national medical expense and medical expense per capita of Turkey are one of the lowest countries in the OECD countries.



Source: Turkey Statistical Institute “Indicators on health expenditures, 1999-2013”

Figure-3 Transition of National Medical Expense in Turkey

## (2) Public Insurance System

### 1) Circumstances

Social security system of Turkey used to be divided into 3 types by the attributes of the insured person; the general social insurance union (SSK), the pension fund for retired public officials (Emekli Sandığı), and the insurance union for self-employed person (Bağ-Kur). The contents of the medical benefits were also different in each insurance service, so there were some problems, such as that a person insured of SSK can be treated only in the hospitals which have a contract with the SSK. In 1992, a public insurance system called Green Card was established for low-income people who cannot be insured, but initially, it provided benefits to inpatient service only. It was in 2005 that the system became applicable to outpatient service too.

After the establishment of Recep Tayyip Erdoğan regime in 2002, the government came up with the reform of healthcare system, enacted "Health Transformation Program" in 2003, and aimed to expand the medical benefit and introduce the national insurance system. SGK was established in 2008, and the insurance funds that have been separated before were integrated to this institution. In 2012, Green Card holders were also decided to join SGK.



## 2) Scope of Benefits, Insurance Rates

Employees, public officials, self-employees, etc. are obliged to purchase the insurance of SGK. The pensioner, unemployment insurance beneficiaries, dependents etc. are considered to be covered by SGK. According to the statistics of SGK, number of insured people is 65 million and coverage for the total population is about 84% in 2014. People who are not covered by SGK are prisoners, military personnel, people who are insured by foreign insurance by bilateral agreement (Japanese are not included), parliamentarians and the unemployed at age 18 or over and their families. The unemployed at age 18 or older and their families take out a policy of General Health Insurance which is under the jurisdiction of SGK, paying insurance fee by themselves or by the country. So, they can receive the health benefits, but they are not counted to the coverage rate of SGK.

SGK has signed contracts with not only National Hospitals but also private hospitals and university hospitals. Therefore, people not in the high-income earners are also able to visit private hospitals and thus medical access in Turkey has greatly improved.

The insured can receive the medical benefits and cash benefits. As for the medical benefits, they can receive medical service at the hospitals that has contracts with the insurer. Items included in the scope of benefits are preventive service, outpatient service and inpatient service, services for pregnancy, drug, etc., but services not approved by MOH and treatment for cosmetic purposes are not included. As for cash benefits, there are short-term benefits (temporary disability benefits, workers' accident survivors pension, etc.) and long-term benefits (disability pension, elderly pension, etc.).

Insurance premiums should be borne by both of employee and employer. Insurance rates for medical benefits are defined as 12.5%. The insured person bears 5% and employer bears 7.5%.

## (3) Medical Service Cost Payment System

Generally, the patients (the insured persons) need not pay the medical costs by themselves because they are covered by the medical benefits of the insurance. However, as for the costs for medical service not covered by the medical insurance system provided at the private hospitals, patients have to pay it themselves (National Hospitals are strictly prohibited to charge on self-payment).

For drugs and medical materials provided along with the medical services, patients must pay about 10-20% of the costs. Unlike in the case of Japan, some kinds of glasses that are prescribed by doctors are covered by the medical insurance system.

Regarding the reimbursement scheme, the comprehensive payment system by Diagnosis Related Groups (DRG) payment system is adopted. It was introduced tentatively to the National Hospitals in 2010, and now has been expanded to all hospitals including university hospitals and private hospitals.

With regard to the claim from hospitals and the payment from the insurer, if it is within the scope of medical insurance system, the hospital claims the expense for medical service, drugs, medical materials, glasses, etc. to SGK, the insurer, and then SGK makes payment to hospitals based on the claim. Online claim from hospital to SGK is becoming popular.

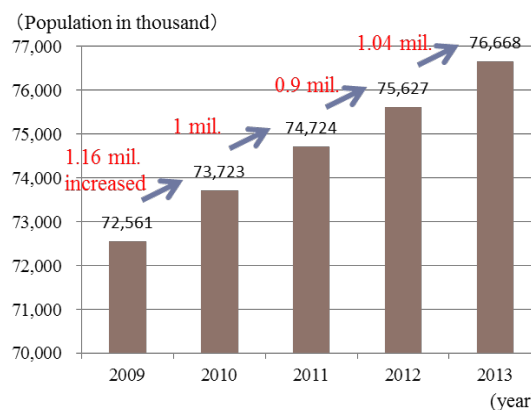
At National Hospitals, the medical service payments from SGK are paid to MOH, not to each hospital. SGK calculates the amount of payment depending on economic trends and budget and pay the monthly flat rate.

There are some medical materials such as prosthetic appliances necessary for hospital care which the patients claim directly to SGK.

### 1-3. Situation of Medical Delivery and Demand

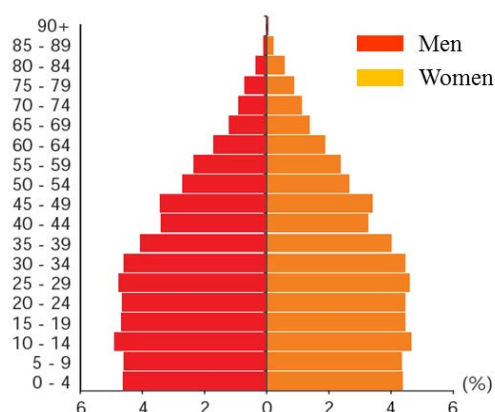
#### (1) Population Structure and the Transition

The Turkish population has exceeded 76 million people in 2013 and is ranked the 18th country with the largest population. Even now, the population continues to increase approximately 1 million people each year (Figure-4). It is a young country with the median age of 30 (Figure-5). Turkey is entering into a demographic bonus period, expecting a steady economic development for a while.



Source: Turkey Statistical Institute “Turkey’s Statistical Yearbook 2013”

**Figure-4 Trend of Population Growth (nationwide)**



Source: Turkey Statistical Institute “Turkey’s Statistical Yearbook 2013”

**Figure-5 Population Pyramid (2013, nationwide)**

In Turkey, the concentration of population to urban areas has also been progressing. Aydın Province, which is a target province of the survey, is near Izmir (the 3<sup>rd</sup> largest province of Turkey) and the population size ranks 20th.



1/3 of Population in the 3 largest provinces

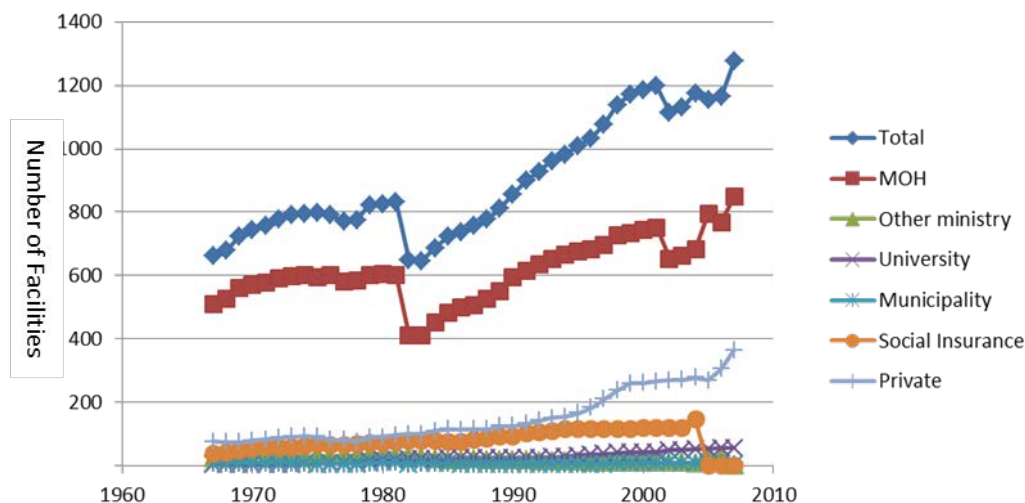
Rank	Province	No.	Rank	Province	No.	Rank	Province	No.
1	Istanbul	14,160,467	11	Kocaeli	1,676,202			
2	Ankara	5,045,083	12	Diyarbakır	1,607,437			
3	Izmir	4,061,074	13	Hatay	1,503,066			
4	Bursa	2,740,970	14	Manisa	1,359,463			
5	Antalya	2,158,265	15	Kayseri	1,295,355			
6	Adana	2,149,260	16	Samsun	1,261,810	77	Gümüşhane	141,412
7	Konya	2,079,225	17	Balıkesir	1,162,761	78	Kilis	128,586
8	Gaziantep	1,844,438	18	Kahramanmaraş	1,075,706	79	Ardahan	102,782
9	Şanlıurfa	1,801,980	19	Van	1,070,113	80	Tunceli	85,428
10	Mersin	1,705,774	20	Aydın	1,020,957	81	Bayburt	75,620

Source: Turkey Statistical Institute “Turkey’s Statistical Yearbook 2013”

**Figure-6 Population of the Provinces**

(2) Medical Facilities

The number of medical facilities (excluding outpatient institution) has been increasing every year. There were 1,273 facilities in 2007. By founder, 67% of the medical facilities are founded by MOH, 29% by private facilities and 4% by university facilities.



Source: Turkey Statistical Institute

**Figure-7 Transition of the Number of Medical Facilities (by founder)**

Along with population growth, Turkey has been progressing with the expansion of medical facilities as shown in above Figure-7. The number of beds per 1,000 people has been improving gradually as shown in the Table-1, but it is still 2.7 beds per 1,000 people in 2013 and can be said to have not caught up to the level of Germany and France. In response to such situation of medical delivery system and expected population growth, MOH of Turkey has announced a goal to increase the number of hospital beds per 10,000 people to 32 (3.2 beds per 1,000 people) and as part of its implementation measures, they have planned and been promoting the National Hospital development projects using PPP scheme.

**Table-1 International Comparison of Number of Hospital Beds**

	Hospital beds / 1,000 people			
	2000	2005	2010	2013
<b>Turkey</b>	<b>2.0</b>	<b>2.2</b>	<b>2.5</b>	<b>2.7</b>
Japan	14.7	14.1	13.5	13.3
Spain	3.7	3.3	3.1	3.0
Italy	4.7	4.0	3.6	-
France	8.0	7.2	6.4	6.3
Germany	9.1	8.5	8.3	8.3
United Kingdom	4.1	3.7	2.9	2.8
United States	3.5	3.2	3.1	-

Source: OECD Health Statistics 2015

### (3) Medical Personnel

In Turkey, the number of both doctors and nurses are significantly less than other countries. In Turkey 2013, the number of doctors is 1.8 per 1,000 people and the number of nurses is 1.8 per 1,000 people. But in other countries the number of doctors and nurses is approximately 3-4 and 10 per 1,000 people, respectively. Regarding the securement of medical personnel resources, MOH of Turkey announced in "Strategic Plan 2014-2018" which was published in 2014, the policy of development of efficient personnel resource system and expansion of personnel resources, and have set the goal to increase the number of doctors and nurses per capita.

**Table-2 International Comparison of the Number of Medical Personnel**

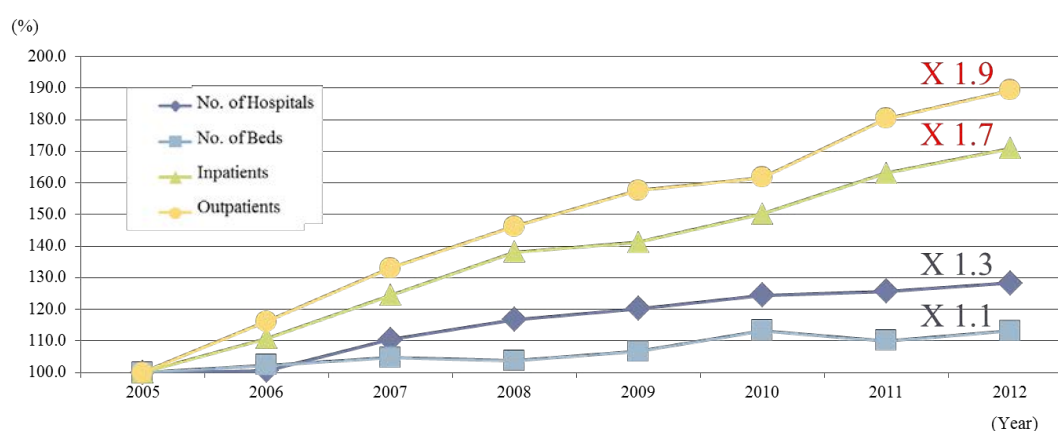
	Doctors / 1,000 people				Nurses / 1,000 people			
	2000	2005	2010	2013	2000	2005	2010	2013
<b>Turkey</b>	<b>1.3</b>	<b>1.4</b>	<b>1.7</b>	<b>1.8</b>	<b>1.0</b>	<b>1.1</b>	<b>1.6</b>	<b>1.8</b>
Japan	1.9	-	2.2	-	-	-	10.1	-
Spain	3.2	3.6	3.8	3.8	3.6	4.4	5.2	5.1
Italy	-	-	3.9	-	-	-	-	6.1
France	3.3	3.3	3.3	3.3	6.7	7.6	8.5	9.4
Germany	3.3	3.4	3.7	4.1	10.5	11.2	12.2	13.0
United Kingdom	2.0	2.4	2.7	2.8	9.0	10.2	9.5	8.2
United States	2.3	2.4	2.4	2.6	10.2	10.4	10.9	11.1

Source: OECD Health Statistics 2015

#### (4) Medical-related Indicators

##### 1) Number of Outpatients and Inpatients

Medical delivery system in Turkey is expanding every year. As shown in the figure below, from 2005 to 2012, the number of hospitals increased to 1.3 times and number of beds increased to 1.1 times. However, the number of patients has increased more quickly. During the same period, the number of outpatients increased to 1.9 times and number of inpatients increased to 1.7 times. Divergence between the increase rate of patients and increase rates of hospitals and beds has grown every year, and in conclusion, the situation of medical delivery and demand can be expressed as "excessive medical demand."



	2005	2006	2007	2008	2009	2010	2011	2012
Outpatients	187,300,274	217,540,425	249,141,099	273,702,825	295,262,190	302,984,218	337,849,536	354,636,935
Inpatients	7,011,514	7,764,651	8,720,289	9,684,245	9,901,660	10,528,173	11,436,781	11,978,827
No. of Hospitals	1,156	1,204	1,317	1,350	1,389	1,439	1,453	1,483
No. of Beds	170,972	174,342	178,000	183,183	188,638	200,239	194,504	200,072

Source: MOH of Turkey, Health Statistics Yearbook 2013

**Figure-8 Increase of Outpatients, Inpatients, Hospitals, and Beds**

The number of discharged patients (actual number of inpatients) per 100,000 people in Turkey was 7,419 in 2000. This figure is very small compared to other countries, almost half of the number for United Kingdom, and less than half of France and Germany. However, after the introduction of national public insurance by SGK in 2008, the number of patients increased significantly. The number became to 14,239 in 2010 which exceeded the number for United Kingdom, United States, and Italy. In 2013, the number increased to 16,074, near the number of France.

**Table-3 International Comparison of Number of Discharged Patients**

	Discharged patients / 100,000 people							
	2000	2004	2008	2009	2010	2011	2012	2013
<b>Turkey</b>	<b>7,419</b>	<b>8,451</b>	<b>11,202</b>	<b>13,399</b>	<b>14,239</b>	<b>15,242</b>	<b>15,762</b>	<b>16,074</b>
Japan	-	-	10,709	-	-	11,055	-	-
Spain	11,183	10,768	10,476	10,314	10,135	9,992	9,906	9,947
Italy	-	15,786	14,526	14,238	13,820	13,238	12,878	12,377
France	18,954	17,558	17,072	17,037	16,873	16,862	16,845	16,633
Germany	19,961	21,923	23,259	23,670	23,994	24,290	25,093	25,224
United Kingdom	13,143	13,352	13,230	13,232	13,210	13,051	12,998	12,902
United States	12,522	13,231	13,083	13,091	12,549	-	-	-

Source: OECD Health Statistics 2015

As for outpatients, in 2000, the number of outpatients per doctor in Turkey was 2.8, and significantly less than other countries. However, it exceeded the number of United Kingdom in 2005 and France in 2010, and increased to 8.2 in 2013. The number of both inpatients and outpatients was relatively small to its population size, but its increase can most likely be attributed to the introduction of national public insurance by SGK. Furthermore, the Turkish population is expected to definitely increase, as previously mentioned, and the aging population is progressing. Under such circumstance, sharp increase of the number of patients is expected in the future.

**Table-4 International Comparison of Number of Outpatients per Doctor**

	Outpatients per doctor			
	2000	2005	2010	2013
<b>Turkey</b>	<b>2.8</b>	<b>4.7</b>	<b>7.3</b>	<b>8.2</b>
Japan	14.4	13.7	13.1	-
Spain	-	-	-	-
Italy	6.1	6.1	-	6.8
France	6.9	7.0	6.7	6.4
Germany	7.7	8.1	9.9	9.9
United Kingdom	5.3	5.0	-	-
United States	3.7	4.0	4.0	-

Source: OECD Health Statistics 2015

## 2) Average Length of Stay

The average length of stay tends to shorten worldwide. In 2000, the average length of stay in Turkey was 6.0 days, shorter than other countries. After 2000, even in Turkey, the

average length of stay was further reduced to 3.9 days which is one of the shortest among the OECD countries. The average length of stay of each country cannot be compared unconditionally since it is greatly affected by the disease structure, medical insurance system, etc. However, in Turkey, one of the factor for the necessity to discharge inpatients in short term is because of the insufficient number of hospital beds per capita despite the fact that the number of inpatients per capita is recently at the same level as other countries.

**Table-5 International Comparison of Average Length of Stay**

Unit: day	2000	2005	2010	2013
Turkey	6.0	-	4.1	3.9
Japan	24.8	19.8	18.2	17.2
Spain	8.8	7.1	6.8	6.6
Italy	-	7.4	7.6	7.7
France	6.0	5.8	5.7	5.6
Germany	10.1	10.2	9.5	9.1
United Kingdom	9.5	8.5	7.4	7.0
United States	4.9	4.8	4.8	-

Source: OECD Health Statistics 2015

### 3) Number of Diagnostic Imaging Equipment and Tests

In Turkey, the number of MRI units was 2.8 per 1,000,000 people in 2005. In 2013, it increased to 10.5, about 3.8 times, exceeding the level of France and United Kingdom. The number of CT units per 1,000,000 people also increased from 7.1 in 2005 to 14.2, about 2 times in 2013. It can be said that the introduction of imaging equipment has advanced along with the growth of number of medical facilities.

Similarly, the number of imaging tests per 1,000 people has also increased. From 2010 to 2013, the number of MRI testings increased to about 1.5 times, and CT testing increased to about 1.4 times. In comparison with other countries, especially for MRI testing per 1,000 people, Turkey has exceeded Spain, France and United States in 2013. It can be considered that there is a growing demand for imaging tests.



**Table-6 International Comparison of Number of Apparatus and Testing of MRI and CT**

	MRI units / 1,000,000 people			CT units / 1,000,000 people			MRI tests / 1,000 people		CT tests / 1,000 people	
	2005	2010	2013	2005	2010	2013	2010	2013	2010	2013
<b>Turkey</b>	<b>2.8</b>	<b>9.3</b>	<b>10.5</b>	<b>7.1</b>	<b>12.4</b>	<b>14.2</b>	<b>79.5</b>	<b>119.2</b>	<b>103.5</b>	<b>145.0</b>
Japan	40.1	-	-	-	-	-	-	-	-	-
Spain	-	12.4	15.3	-	16.0	17.6	59.6	69.7	85.7	96.2
Italy	15.0	22.5	-	27.8	32.2	-	-	-	-	-
France	4.8	7.0	9.4	10.0	11.8	14.5	60.2	90.9	145.6	192.8
Germany	7.1	10.3	11.6	15.4	17.7	18.7	-	-	-	-
United Kingdom	5.4	5.5	6.1	7.5	6.7	7.9	40.4	-	75.7	-
United States	-	31.5	35.5	-	-	43.5	97.6	106.9	264.8	240.4

Source: OECD Health Statistics 2015

Based on the above table, the changes in the number of MRI and CT tests per unit were calculated in the following table.

From 2010 through 2013, the number of MRI tests per unit in Turkey increased to about 1.3 times, and number of CT tests per unit increased to about 1.2 times. The growth rate is higher than other countries in the table. This indicates that the increase of the number of imaging equipment is not catching up with the increase of the number of imaging tests, thus the operating rate has been increasing. It can be considered that there is room for further introduction of MRIs and CTs.

**Table-7 Number of MRI and CT Testings per Unit**

	Testing / MRI unit		Testing / CT unit	
	2010	2013	2010	2013
<b>Turkey</b>	<b>8,576.1</b>	<b>11,352.4</b>	<b>8,373.8</b>	<b>10,225.7</b>
Japan	-	-	-	-
Spain	4,802.6	4,555.6	5,432.9	5,469.0
Italy	-	-	-	-
France	8,649.4	9,659.9	12,318.1	13,287.4
Germany	-	-	-	-
United Kingdom	7,332.1	-	11,332.3	-
United States	3,096.4	3,012.1	-	5,529.0

Source: Created from OECD Health Statistics 2015

#### (5) Disease Structure

Among the hospital discharges in Turkey 2010, the most common diseases were "Pregnancy, Childbirth and the Puerperium", "Disease of the Respiratory System", "Diseases of the Circulatory System", "Diseases of the Genitourinary System", and "Diseases of Digestive System". On the other hand, among the causes of death, the most common diseases were "Diseases of the Circulatory System", "Neoplasms", "Diseases of the Respiratory System", "Diseases of the Nervous System" and "Diseases of the Genitourinary System".

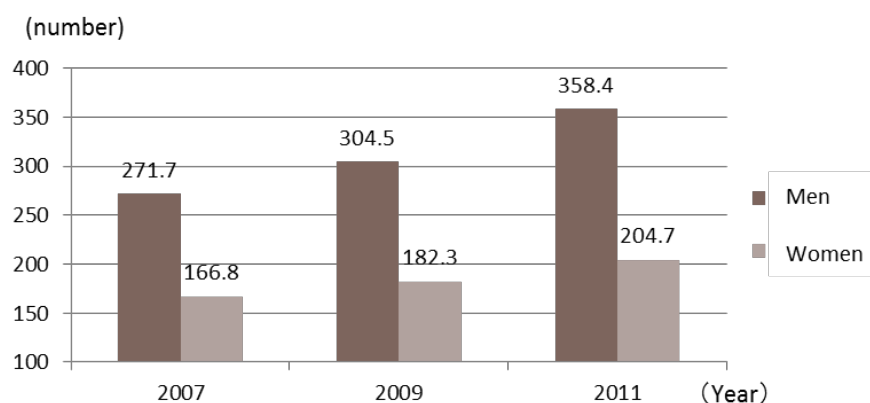
As for "Diseases of the Circulatory System" and "Diseases of the Respiratory System", both of its numbers of discharged patients and deaths are high, but especially for "Diseases of the Circulatory System", the number of deaths is significantly higher compared with "Diseases of the Respiratory System" in which discharged patients and death cases are almost at the same level.

The number of deaths for "Diseases of the Nervous System" and "Diseases of the Genitourinary Diseases" is at the same level, but the number of discharged patients of "Diseases of the Nervous System" is about 1/4 of "Diseases of the Genitourinary Diseases" and thus seems to be more likely to fall into severe condition. Diseases further more likely to lead to fatal condition are "Neoplasms" and "Certain Conditions Originating in the Perinatal Period".

**Table-8 ICD-10 Distribution of Causes of Death and Hospital Discharges in Turkey (2011)**

ICD-10	Causes of Death	Hospital Discharges
Certain Infectious and Parasitic Diseases	1.9	3.2
<b>Neoplasms</b>	<b>15.3</b>	5.9
Diseases of the Blood and Blood forming Organs and Certain Disorders Involving the Immune Mechanism	0.9	1.3
Endocrine, Nutritional and Metabolic Diseases	2.9	2.9
Mental and Behavioral Disorders	0.3	1.3
<b>Diseases of the Nervous System</b>	<b>5.5</b>	2.1
Diseases of the Eye and Adnexa	0.1	5.6
Diseases of the Ear and Mastoid Process	0.0	0.7
<b>Diseases of the Circulatory System</b>	<b>34.3</b>	<b>10.2</b>
<b>Diseases of the Respiratory System</b>	<b>11.4</b>	<b>11.2</b>
Diseases of the Digestive System	4.2	8.3
Diseases of the Skin and Subcutaneous Tissue	0.2	2
Diseases of the Musculoskeletal System and Connective Tissue	0.5	5
<b>Disease of the Genitourinary System</b>	<b>4.5</b>	<b>8.6</b>
<b>Pregnancy, Childbirth and the Puerperium</b>	0.4	<b>13</b>
<b>Certain Conditions Originating in the Perinatal Period</b>	<b>5.5</b>	2.2
Congenital Malformations, Deformations and Chromosomal Abnormalities	1.3	1
Symptoms, Signs and Abnormal Clinical and Laboratory Findings, Not Elsewhere Classified	5.0	4.8
Injury, Poisoning and Certain other Consequences of External Causes	2.8	4.3
External Causes of Morbidity and Mortality	1.8	1
Factors Influencing Health Status and Contact with Health Services	1.2	5.2

Source: MOH of Turkey, Health Statistics Yearbook 2012



Source: MOH of Turkey, Health Statistics Yearbook 2012

**Figure-9 Growth of Number of Cancer Cases (per 100,000 people)**

#### 1-4. Healthcare Related Industries

As for the healthcare related industries in Turkey, there are many service providers such as medical equipment, medical consumables and service (including outsourcing). There are many foreign companies especially for medical equipment and medical consumables. On the other hand, there are a large number of Turkish companies for outsourcing service providers which provide services such as IT, imaging, security, food and cleaning. These companies are doing comprehensive business model including human resources, and therefore the companies are composed with local companies.

##### (1) Laboratory Center

There are many laboratory centers that are available for outside testing. Major laboratory centers are “Ankalab” whose headquarters is in Ankara and “synevo” located in Istanbul. “Ankalab” is a German capital company which provides services especially for the special item testing in Ankara, Istanbul and Izmir. Their major clients are private hospitals and provide high-value added services. “synevo” provides services in Istanbul and Ankara, but and their service is limited in Izmir. On the other hand, there are few laboratory centers providing routine testing service, and generally their service is limited to special items, which are not tested inside healthcare facilities. Sample testing in healthcare facilities in Turkey is generally provided inside hospitals, and laboratory centers market is limited in the healthcare related industries.

Besides, it seemed that some centers received proposal for composition of SPV for Hospital PPP Projects, however they have not started serious consideration of participation due to the high requirements for laboratory testing.

##### (2) Branch Type Medical Service Providers

Branch type medical service providers targeting wealthy population are doing solid management. Such providers have diagnosis imaging equipment, external diagnosis medical equipment and employ technicians for imaging or laboratory to provide medical services to the patients. Contents of medical services include a variety of medical checkup, consultation for menopause health care, lifestyle-related diseases or sexually transmitted diseases or quick treatment. Each medical service is at the patient’s own expense and with a certain limitation, it seems that they are able to perform their services with the price range for enough profit.

## **2. Current Situation of the Healthcare Sector in Aydın Province and Efeler City**

### **2-1. Overview of Aydın Province**

Aydın Province locates southwest region of Turkey and belongs to the Aegean Sea district. Prefectural area is about 8,000 km<sup>2</sup> and its population is about 1 million. Main industry is agriculture and tourist business. It is famous for the production of figs, olives, citruses and etc. Because of its genial climate, many people emigrate from urban area of Turkey and neighboring countries, to get relief from the heat or to live after retirement.

Izmir Province, the 3rd largest province of Turkey, locates northern part of Aydın. It takes about an hour from Aydın to İzmir by car using the highway. Aydın Province is a relatively affluent area supported by tourist business and etc., even if industrials are less developed. There is no problem in security, according to Foreign Security Information released by Ministry of Foreign Affairs of Japan.

Prefectural capital is Efeler city and its population is about 200 thousand. This city was previously known as Aydın city but its name changed by the legal amendment in 2014. The population is increasing and developing as a central city of Aydın Province.

#### **(1) Natural Environment**

##### **1) Climate**

Aydın Province is composed of the watershed of the Büyük Menderes River that meets the Aegean Sea. It is in the Mediterranean climate zone with the largest monthly mean precipitation in December, and annual precipitation of approximately 640 mm. The annual mean temperature is 17.7°C, the monthly mean maximum temperature is 36.0°C in July, and the monthly mean minimum temperature is 4.3°C in January.

**Table-9 Climate of Aydın**

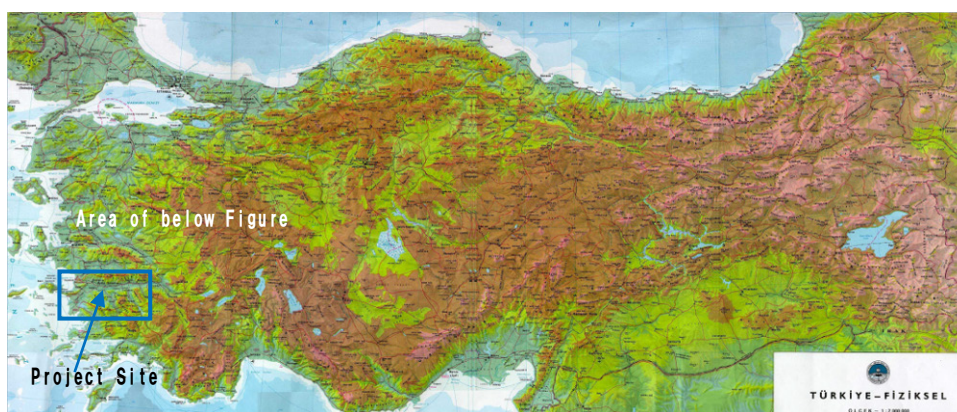
Month	1	2	3	4	5	6	7	8	9	10	11	12	Year
Mean temperature (°C)	8.2	9.3	11.9	15.8	20.9	25.9	28.4	27.5	23.4	18.4	13.3	9.6	17.7
Monthly mean maximum temperature (°C)	13.2	14.6	17.9	22.4	28.1	33.4	36.0	35.5	31.9	26.3	19.8	14.5	
Monthly maximum temperature (°C) (1954 - 2013)	23.2	25.2	32.4	35.4	40.2	44.4	44.6	43.8	43.3	37.8	30.7	25.9	
Monthly mean minimum temperature (°C) (1954 - 2013)	4.3	4.9	6.7	10.0	14.1	18.1	20.4	20.1	16.5	12.7	8.7	5.8	
Monthly minimum temperature (°C) (1954 - 2013)	-7.6	-5.2	-5.0	-0.8	4.6	8.4	13.4	11.8	7.6	2.0	-2.0	-5.2	
Mean duration of sunlight (hour)	4.1	4.3	5.5	6.4	8.2	10.0	10.5	9.6	8.3	6.3	4.3	3.4	
Monthly average number of rainy days (day)	11.8	10.3	9.5	8.9	6.1	2.0	0.8	0.5	2.1	5.5	8.0	13.0	
Monthly mean precipitation (kg/m <sup>2</sup> )	107.0	93.3	70.0	54.1	34.3	12.6	4.0	1.8	12.9	42.1	80.0	124.6	636.7

Source: Turkish State Meteorological Service

<http://www.dmi.gov.tr/veridegerlendirme/il-ve-ilceler-istatistik.aspx?m=AYDIN>[2014/12/22 18:31:49]

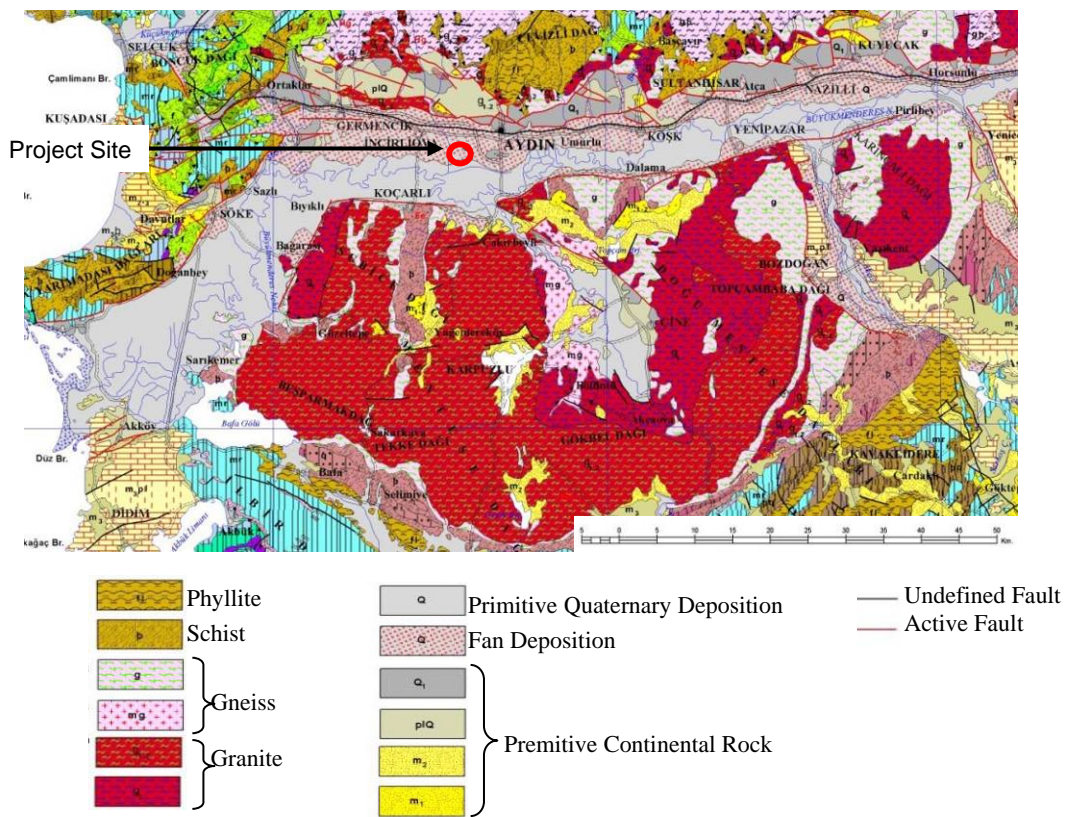
## 2) Topography, Geology, Rivers and Groundwater

The project site is situated on diluvial deposits on the north bank side of the Büyük Menderes River between mountains on the north and south as shown in the figure below. Mt. Aydın is behind the site and it is slope ground toward the south. A fault is observed in the mountains.



Source: Under Confirmation

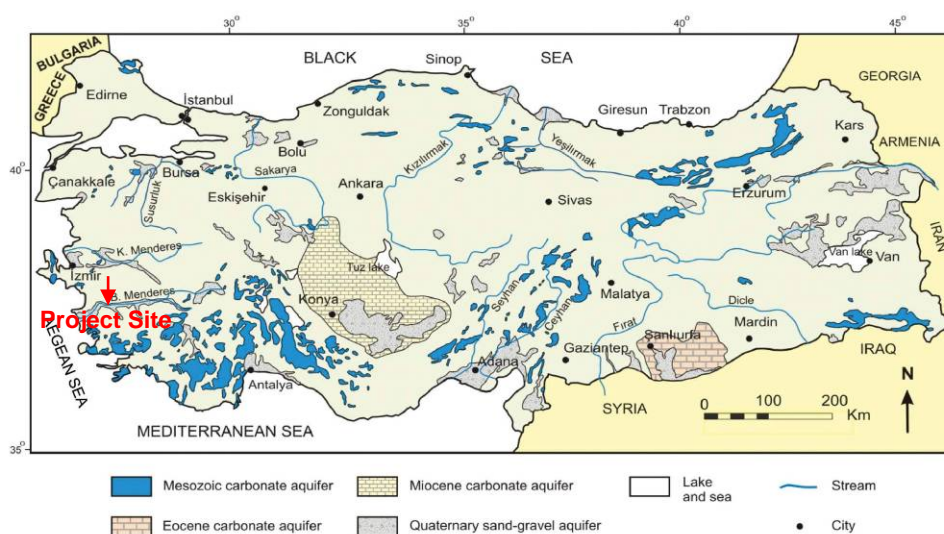
**Figure-10 Topography of Turkey and Area around Project Site**



Source: Geological Map of Turkey, Denizli  
 General Directorate of Mineral Research and Exploration,  
<http://www.mta.gov.tr/v2.0/eng/maps/images/1-500/DENIZLI.jpg> [2015/6/2]

**Figure-11 Surface and Faults around Project Site**

Groundwater resources of the gravel layer of the diluvial epoch are observed in the watershed of the Büyük Menderes River.



Source: Ahmet Apaydın (2011) Groundwater legislation in Turkey: problems of conception and application, *Water International*, 36:3, 314-327, DOI: 10.1080/02508060.2011.586750, <http://dx.doi.org/10.1080/02508060.2011.586750>  
 10.1080/02508060.2011.586750, <http://dx.doi.org/10.1080/02508060.2011.586750>

**Figure-12 Rivers and Groundwater Resources in Turkey**

**Table-10 Laws related to Water Resources in Turkey**

Water type	Regulation	Ownership	Right to use
Surface waters	The Law of Establishment of DSI	State	The DSI constructs hydraulic constructions on the streams. It also allocates the surface waters from streams
Spring waters	The Civil Law	Public or private	The owner of the discharging land is allowed to use private springs
Ground waters	The Law of Groundwater	State	Each person has to obtain licenses from the DSI to abstract groundwater
Thermal and mineral waters	The Law of Geothermal Resources and Mineral Waters	State	Each person has to obtain licenses from governorship to abstract groundwater

Source: Groundwater legislation in Turkey: problems of conception and application, Ahmet Apaydın, General Directorate of State Hydraulic Works (DSI), Ankara, Turkey, Published online: 27 Jun 2011.

Ahmet Apaydın (2011) Groundwater legislation in Turkey: problems of conception and application, *Water International*, 36:3, 314-327, DOI: 10.1080/02508060.2011.586750, Link of this article: <http://dx.doi.org/10.1080/02508060.2011.586750>

River water is used for drinking, agricultural irrigation and fisheries in Turkey. Groundwater contamination is in progress due to household, industrial and agricultural effluent. It is also contaminated by fertilizers and pesticides applied on farmland and also affected by sediment runoff from farmland.

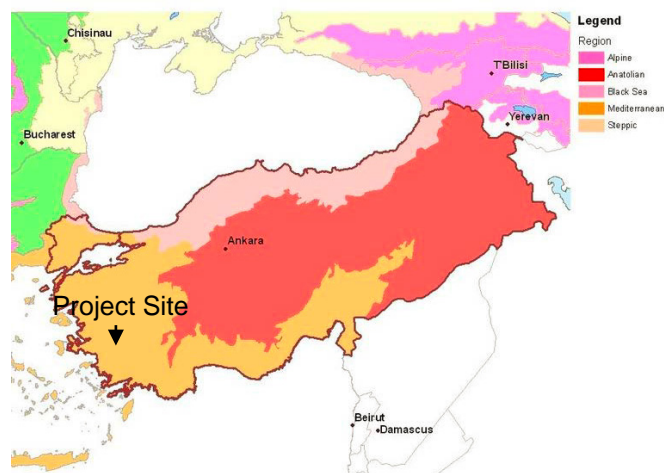


The river that runs west of the project site is also used for agricultural irrigation and irrigation that runs from northeast to southeast is developed on the south of the project site. They are both on the southwest of the site and run into the Büyük Menderes River.

### 3) Vegetation and Flora

The biogeography of Turkey is largely divided into three regions of Mediterranean, Anatolia and Black Sea regions. The project site is in the Mediterranean region.

The vegetation around the project site is that of highly modified agricultural environment and rural and urban environment and animals that live there are mainly livestock animals.



Source: European Environment Agency

[http://www.eea.europa.eu/soer/countries/tr/soertopic\\_view?topic=biodiversity](http://www.eea.europa.eu/soer/countries/tr/soertopic_view?topic=biodiversity) [2014/12/22 22:39:39]

**Figure-13 Biogeographic Regions of Turkey**

### 4) Protected Area

#### a) Nature Reserve

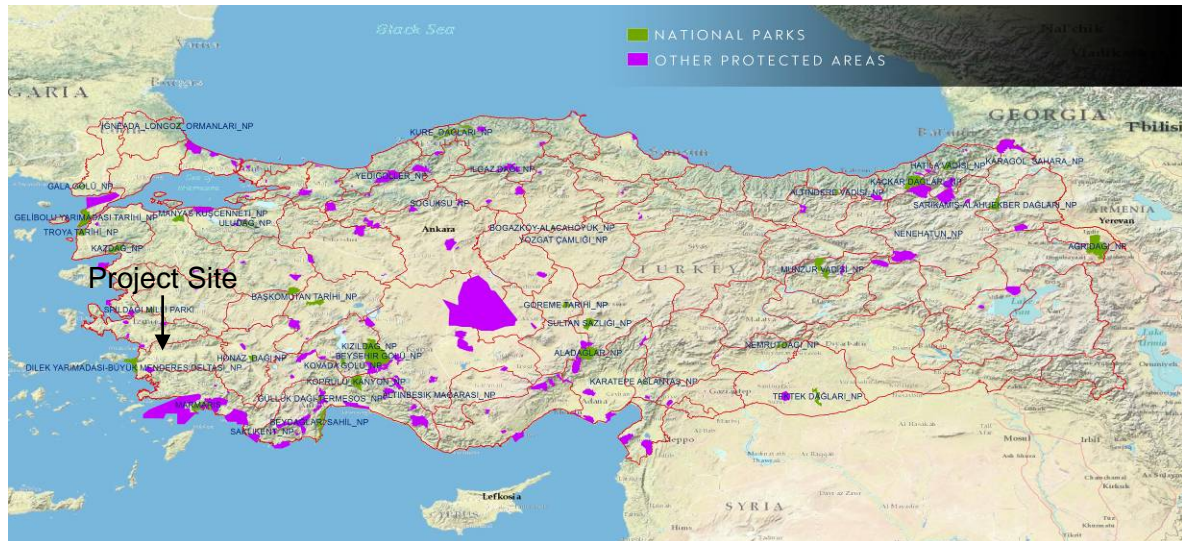
There are seven types of designated nature reserves shown in the table below in Turkey. They account for approximately 6% of the national land in total. There are two such reserves in Aydın Province and both situated 40km to 60km away from the project site.

**Table-11 Nature Reserves in Turkey**

Type	Nationwide		Aydın Province	
	Number	Area	Number	Area
National parks	41	898,044 ha	1	27,598 ha
Nature reserve	31	46,575 ha	0	-
Nature parks	34	79,299 ha	1	6,000ha
Natural monuments	103	5,541 ha	0	-
Special protected areas	14	1,211,254 ha	0	-
Wildlife protection areas	81	1,201,285 ha	0	-
Ramsar sites	13	203,762 ha	0	-

Source: European Environment Agency

[http://www.eea.europa.eu/soer/countries/tr/soertopic\\_view?topic=biodiversity](http://www.eea.europa.eu/soer/countries/tr/soertopic_view?topic=biodiversity)[2014/12/22 22:39:39]



Source: Ministry of Forest and Water Management

<http://nationalparksofturkey.com/natioanal-parks-and-other-protected-areas-of-turkey-map/>

**Figure-14 Nature Reserves in Turkey**



Source: Ministry of Forest and Water Management

<http://nationalparksofturkey.com/natioanal-parks-and-other-protected-areas-of-turkey-map/>

**Figure-15 Nature Reserves in Aydın Province**

**Table-12 Nature Reserves in Aydın Province**

Name	Overview
Dilek Peninsula – Great Menderes Delta National Park	Opened in 1966, designated area expanded in 1994. 27,598 ha Anatolia cheetah and wild horses and other rare wildlife in Turley can be observed.
Lake Bafa Nature Park	Opened in 1994. 60km2 (combined with adjacent Muğla Province)

Source: Ministry of Forest and Water Management

<http://nationalparksofturkey.com/dilek-peninsula-kusadasi-national-park/>

Lake Bafa Conservation Organization <http://www.bafagolu.org/>

b) Archeological Sites and Cultural Assets

According to the Turkish government’s Tourism Bureau website (February 19, 2015), there are cultural assets listed below in Aydın Province, which are all far from the project site. There is no UNESCO world heritage site in the province.

**Table-13 Major Archeological Sites and Cultural Assets in Aydın Province**

Place	Description	Distance from project Site
Aydın (Trollies Ancient City Excavation Area)	Situated at the bottom of mountains overlooking central Efeler. It is also known as Trollies in ancient times. The oldest ruins remaining today are those of the 2 <sup>nd</sup> century.	4.8km
Kuşadası	A small port called “bird island.” A cove particularly beautiful in the Aegean Sea can be overlooked from the terraced town.	47km
Lake Çamiçi (Bafa)	There are cloister, church and chapels built by bishops of Greek Orthodox Church who moved from Constantinople. Ruins of ancient city of Heraclea are near the lake as well as ruins of Alindaon on the east of the mountain.	45km
Güllü Bahçe (Priene)	Busiest port in the Ionian times. Hippodamus of Miletus created the city design of grid pattern road in the 4 <sup>th</sup> century BC.	50km
Millet (Miletus)	A busy port in the Ionian times. Home of philosophers and wise men. There are performing art theater, bath of Faustyna, and archeological museum.	60km
Didim (Didyma)	The Temple of Apollo is regarded as the most sacred temple among the ancient heritage. It is surrounded by colonnade portico in two lines.	70km
Geyre (Aphrodisias)	It was most prospered in 1 <sup>st</sup> century BC and the treasure regarded most valuable in ancient heritage is excavated there. Such public buildings as temple, monument, bath, performing art theater, chamber and stadium are decorated with amazingly skillfully engraved marbles. The rumor about mature skills of the craftsmen of the town spread to make it a center of sculpture schools. Most of art pieces are kept at local museums.	110km
Sultanhisar	Situated 35km east of Aydın. An art and culture festival is held every spring. Ancient ruins of Nysa surrounded by olive trees are in the vicinity. It was known as a town with a famous educational institute in the 2 <sup>nd</sup> century.	35km

Source: Turkish Embassy Japan, Office of The Cultural and Information Counselor website viewed on February 19, 2015 [http://www.tourismturkey.jp/guide/aegean\\_sea/aegean\\_ado.html](http://www.tourismturkey.jp/guide/aegean_sea/aegean_ado.html)

## (2) Social Environment

### 1) Local Administration

The project site is situated in Efeler City. Because the city was designated as a metropolitan municipality (required to have a population of 750,000 or more, hereinafter called “Aydın Metro”) and administered by the former Aydın City Government together with Aydın Province in 2014, it was newly organized as an administrative body that administers the former Aydın City zone.

Şevketiye village where the project site is situated is part of Efeler City and the village mayor also serves as a city officer in addition to the duties as the mayor.

Responsibilities of Aydın Province and Aydın Metro are divided as follows:

- Aydın Province: Local agencies of ministries of the national government manage progress of policies in the province, as before.
- Aydın Metro: Provides services including water and waste treatment, which used to be provided by each city government, across the province.

**Table-14 Main Index of Aydın Province and Efeler City**

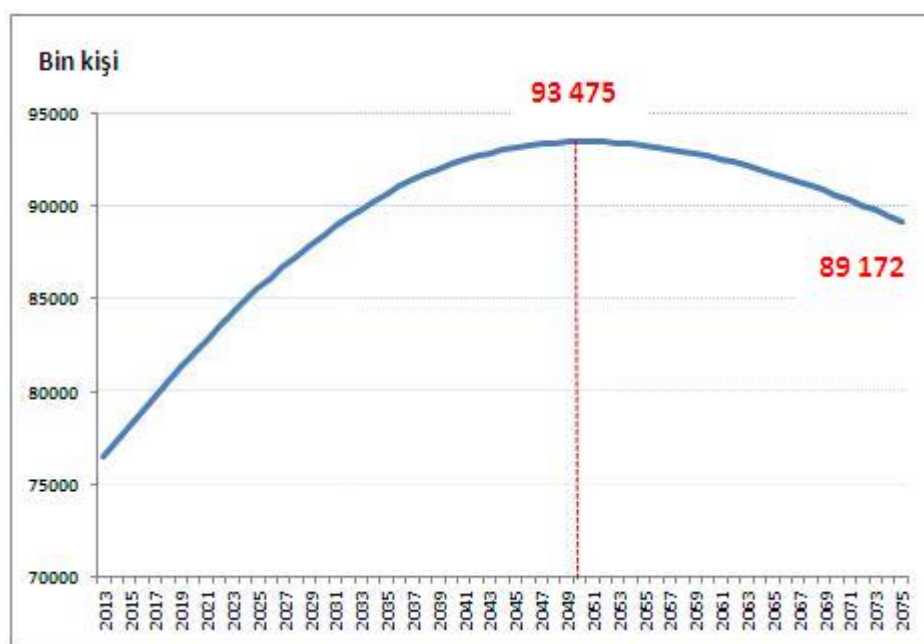
	<b>Aydın Province</b>	<b>Efeler City</b>
Area (km <sup>2</sup> )	8,007	1,582
Population (2014)	1,020,957	265,234
Population density (person/km <sup>2</sup> )	130	168
Industrial parks (location)	8	7
Farmland that was developed as arable land (ratio)	368,336 ha	48%
Annual number of tourists	5,556,000	5,065,759
Number of tourism facility beds	63,400	19,483

Source: Efeler basic index 5-year plan 2014-2019-stratejik-plan-efeler,  
Aydın basic index general plan 2015-2019-stratejik-plan-1

## 2) Current and Estimated Future Population

The population of Turkey was approximately 77.7 million at the end of 2014. It is on a rising trend to be estimated to hit the peak of approximately 93 million in 2049.

The population of Efeler City was 265,234 in 2014 and that of Şevketiye village and Kuyulu village was 271 and 1,195, respectively, in 2010.<sup>1</sup>



Source: Turkish Statistical Institute  
<http://www.tuik.gov.tr/PreHaberBultenleri.do?id=15844> (data as of February 27, 2015)

**Figure-16 Estimated Future Population of Turkey**

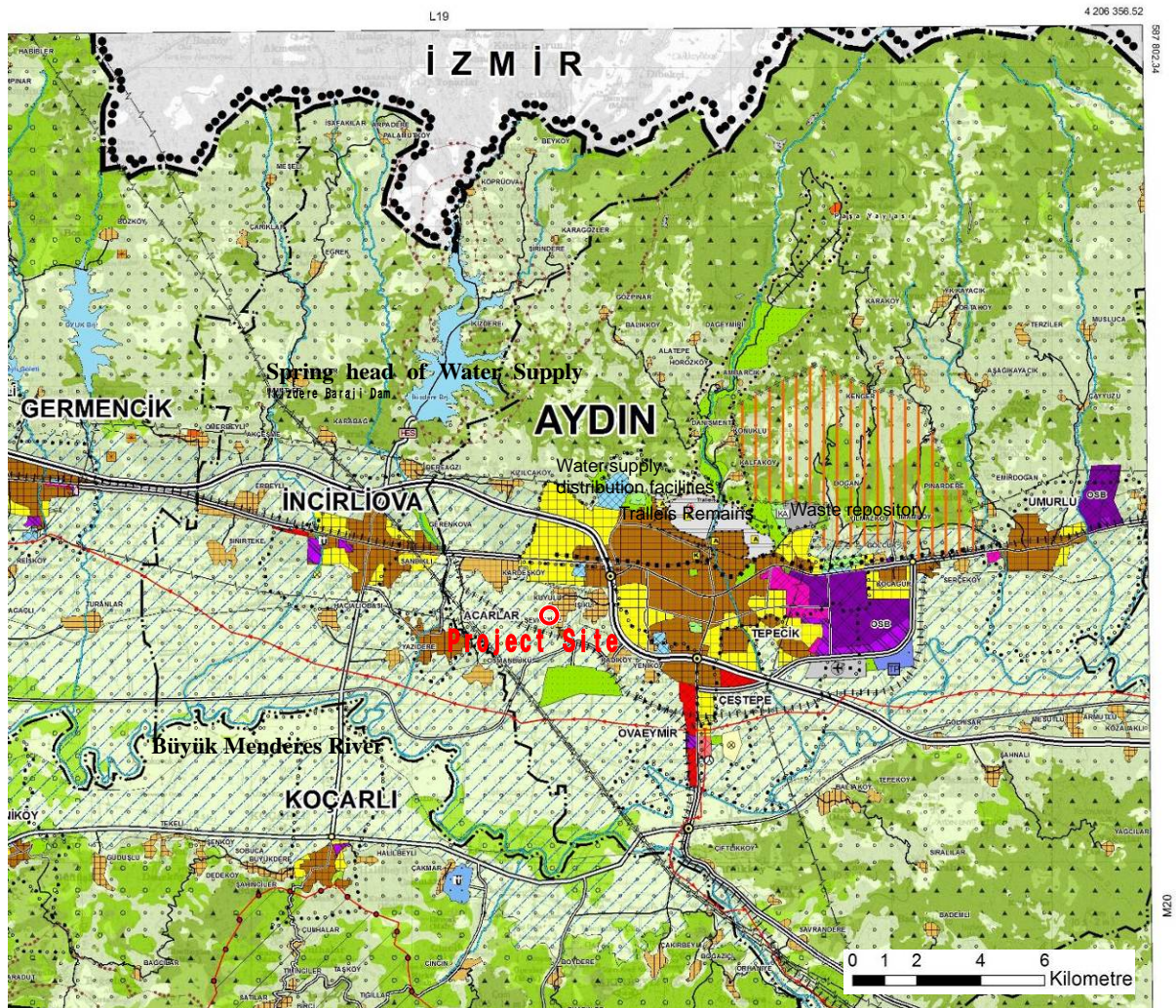
<sup>1</sup> Source: Efeler City Strategic Plan 2014-2019 EFELER BELEDİYESİ 2014 – 2019 STRATEJİK PLANI

### 3) City Planning

In the city planning maps of Aydın Province (year of publication unknown), designation of use and location of infrastructure in the surrounding area of the project site are provided below.

The use of the project site is shown as irrigated farmland.

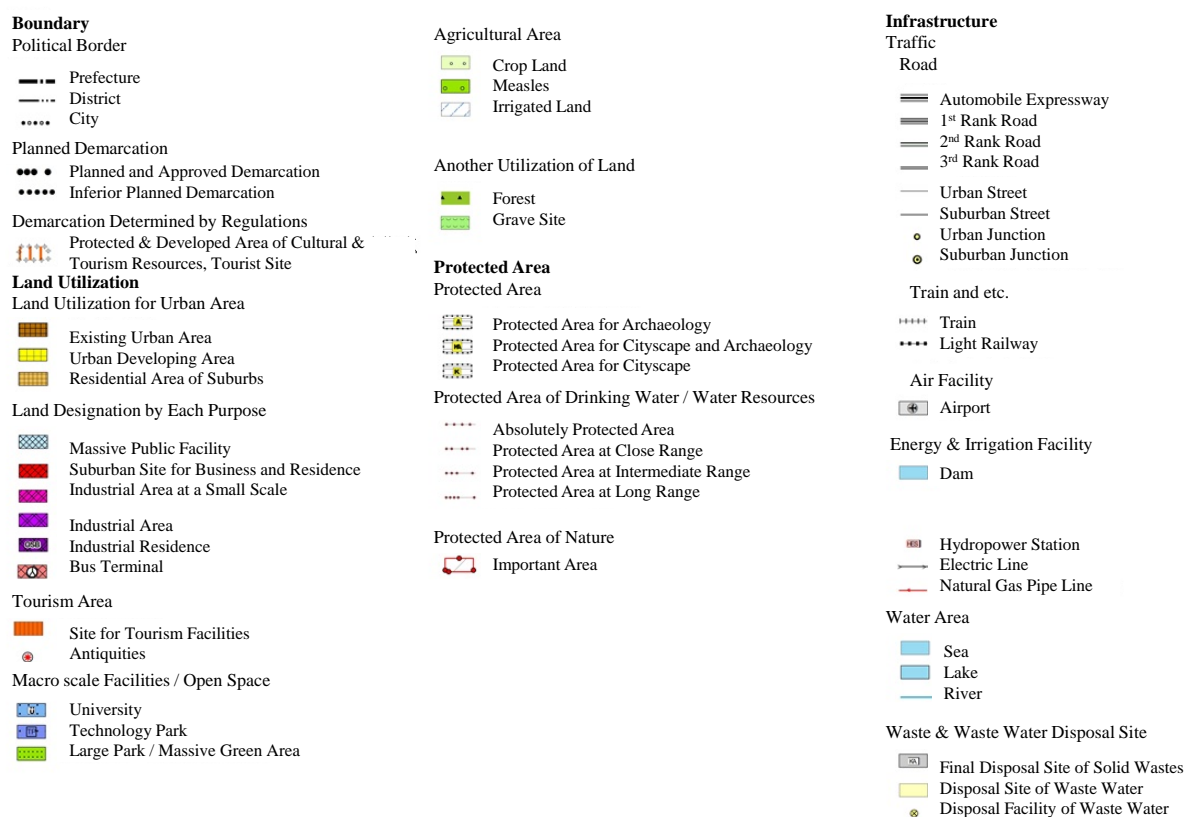
According to the Aydın Directorate of Health, logging of trees (eucalyptus plantation) on the site has been already approved by the Aydın Ministry of Forest and Water Management. However, according to the MOEU, it is desired that it should be informed of it again before the launch of the project.



Source: Turkish Ministry of Environment and Urbanization

[http://www.csb.gov.tr/db/mpgm/editordosya/file/CDP\\_100000/amd/m19.jpg](http://www.csb.gov.tr/db/mpgm/editordosya/file/CDP_100000/amd/m19.jpg) (data as of February 27, 2015)

**Figure-17 Urban Plan around Project Site**



Source: Turkish Ministry of Environment and Urbanization

[http://www.csb.gov.tr/db/mpgm/editordosya/file/CDP\\_100000/amd/m19.jpg](http://www.csb.gov.tr/db/mpgm/editordosya/file/CDP_100000/amd/m19.jpg) (data as of February 27, 2015)

**Figure-18 Urban Plan around Project Site (Legend)**

#### 4) Main Economic Activities

Main economic indicators of Turkey are shown in the table below. The unemployment rate in November 2014 was 10.7%.

**Table-15 Main Economic Indicators of Turkey**

Consumer price index (annual %)	January 2015	7.24
Unemployment rate (%)	November 2014	10.7
GDP growth rate (%)	Q3 in 2014	1.7
Industrial production index (%)	February 2014	1.2

Source: Turkish Statistical Institute <http://www.turkstat.gov.tr/>

According to the Strategic Plan of Efeler City (2014-2019)<sup>2</sup>, the main industry of Aydın is agriculture and tourism business. 55% of population makes their living by agriculture, and there are a lot of manufacturers and commerce related to agriculture.

For sightseeing, Aydın Province is abundant of historical and cultural resources such as 23 antiquities, and the area itself is regarded as a museum of several civilizations. In 2013, the number of tourist was about 5.4 million and the hotel occupancy rate was 76%.

For agriculture, there is about 800 thousand hectares of agricultural land along Büyük Menderes River. Especially, the production of ficus and chestnut ranks 1st, olive ranks 2nd and strawberry & peanuts ranks 3rd in food production ranking of Turkey. For farming, about 300 thousand of cows, goats and sheep each are grown commercially. Honey is also produced.

**Table-16 Main Agricultural Production Items and Amount of Production of Aydın Province**

Production Item	Production in Turkey (t)	Production in Aydın (t)	Production Rate of Aydın (%)	Domestic Rank
Corn (feedstuff)	12,446,450	744,942	6.0	4
Cotton	2,150,000	223,563	10.4	4
Olive	1,414,952	206,502	14.6	2
Corn (food)	4,310,000	182,946	4.2	7
Ficus	254,838	162,115	63.6	1
Strawberry	299,940	30,070	10.0	3
Chestnut	59,171	18,605	31.4	1
Peanut	97,310	6,120	6.3	3
Artichoke	29,070	3,766	13.0	5
Okra	36,748	2,473	6.7	5

Source: Comprehensive Plan of Efeler City (2014-2019)

Figures of farming industry of 2013 are described as below.

**Table-17 Items and Amounts of Main Livestock Products of Aydın Province**

Number of Cows	326,520
Number of Goats and Sheep	299,105
Number of Chickens	2,909,508
Amount of Milk	415,071 t
Amount of Fish Cultivation	11,210 t
Amount of Honey	3,162 t

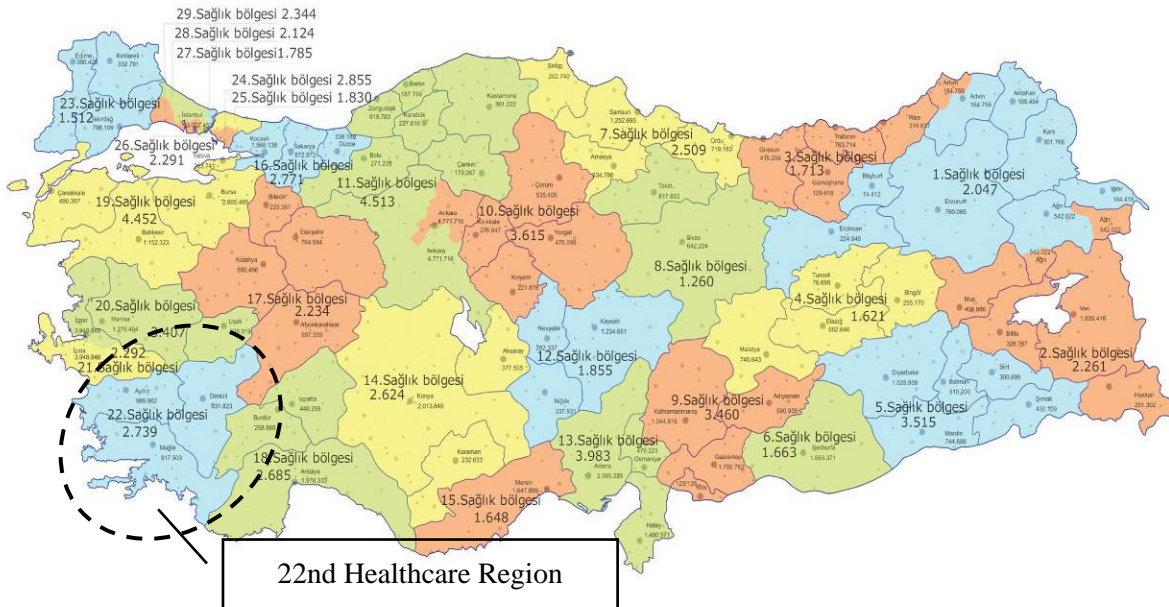
Source: Comprehensive Plan of Efeler City (2014-2019)

<sup>2</sup> EFELER BELEDİYESİ 2014 – 2019 STRATEJİK PLANI,  
[http://efeler.bel.tr/\\_eskisite/attachments/article/19/2014-2019-stratejik-plan-efeler.pdf](http://efeler.bel.tr/_eskisite/attachments/article/19/2014-2019-stratejik-plan-efeler.pdf)



## 2-2. Healthcare Region

Aydın Province including Efeler City is the 22nd healthcare region of the 29 healthcare regions defined by MOH. It consists of 3 provinces, Aydın, Denizli, and Muğla.



Source: Guidelines for Planning Hospitals with Beds 2011, MOH

Figure-19 Healthcare Region in Turkey

## 2-3. Current Situation of Healthcare Delivery

### (1) Structure and Changing of the Population

The table below shows the population structure of 22nd healthcare region in 2013.

Table-18 Population Structure of 22nd Healthcare Region

Province	Female population	Male population	Total population
Aydın	510,445	510,512	1,020,957
Denizli	483,240	480,224	963,464
Mugla	416,606	434,539	851,145
Total	1,410,291	1,425,275	2,835,566

Source: Directorate of Health of Aydın

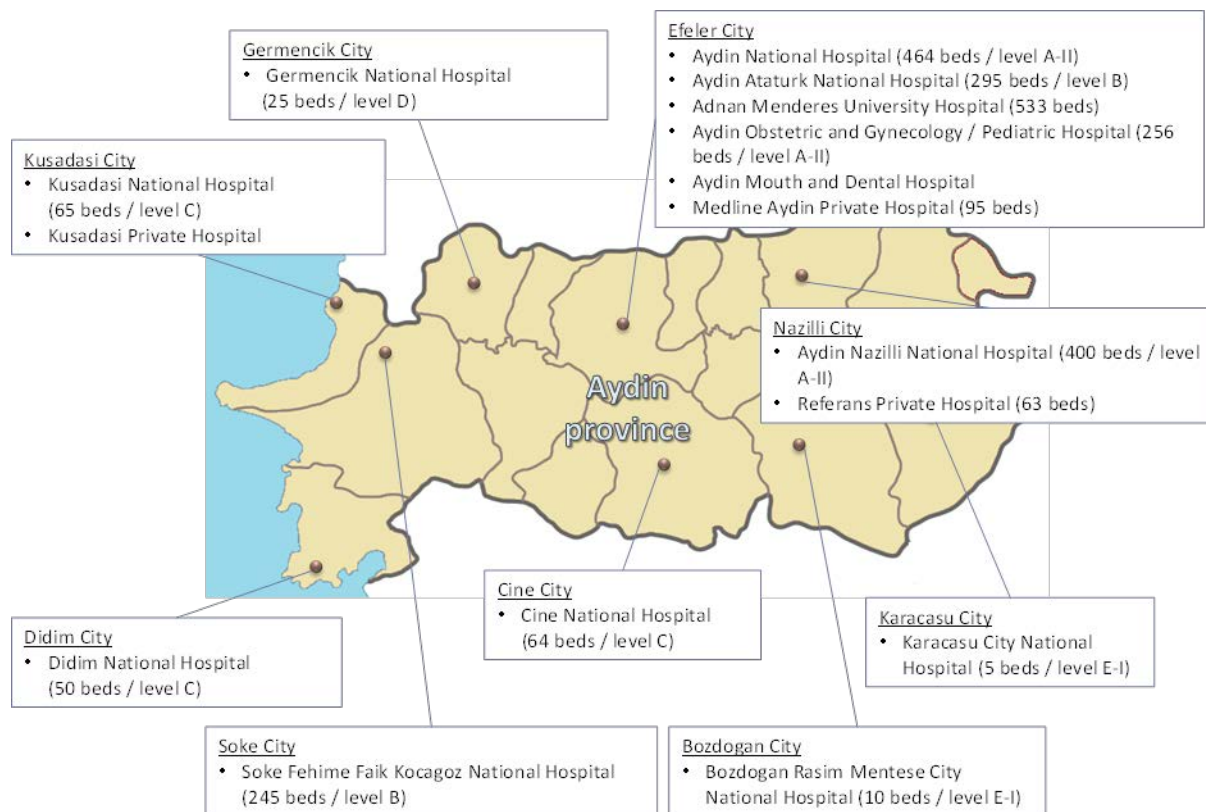
## (2) Medical Facilities

Medical services are delivered by national hospitals, university hospitals and private hospitals in Aydın Province. There are 18 hospitals (total 2,647 beds) consisting of 11 national hospitals (total 1,879 beds), 1 university hospitals (533 beds), and 6 private hospitals (235 beds). The table and figure below show the hospital and the number of beds

Table-19 Major Hospitals and Number of Beds in Aydın Province

Hospital Name	Number of Beds
Aydın Ataturk National Hospital	295
Aydın National Hospital	464
Aydın Bozdoğan Rasin Menteşe District Hospital	10
Aydın Nazilli National Hospital	400
Aydın Söke Fehime Faik Kocagöz National Hospital	245
Aydın Kuşadası National Hospital	65
Aydın Karacasu City National Hospital	5
Aydın Maternity and Child Health Hospital	256
Aydın Çine National Hospital	64
Aydın Didim National Hospital	50
Aydın Germencik National Hospital	25
Adnan Menderes University Hospital	533
Private Hospitals (6 institutions)	235

Source: Directorate of Health of Aydın



Source: Survey Team

**Figure-20 Location of Main Hospitals in Aydın**

### (3) Medical Human Resource

The table below shows the breakdown of medical workers in Aydın Province.

**Table-20 Number of Medical Workers in Aydın Province (2013)**

Medical worker	Number
Specialist Physician	930
Assistant Physician	209
General Physician	578
Nurse, Midwife	2,983
Other	4,387
Total	9,087

Source: Directorate of Health of Aydın

#### (4) Medical Indicators

The table below shows major medical indicators of medical facilities in Aydın Province in 2013.

**Table-21 Medical Indicators of the Hospitals in Aydın Province (2013)**

Hospital Name	Number of Outpatient Examination	Number of Inpatient	Number of Surgery	Number of Delivery
Aydın Atatürk National Hospital	783,154	32,951	23,214	-
Aydın National Hospital	812,503	16,475	43,110	-
Aydın Bozdoğan Rasim Menteşe District Hospital	46,831	126	-	-
Aydın Nazilli National Hospital	882,656	21,996	54,948	728
Aydın Söke Fehime Faik Kocagöz National Hospital	572,555	15,648	21,763	674
Aydın Kuşadası National Hospital	428,360	6,933	9,096	208
Aydın Karacasu City National Hospital	32,276	-	-	-
Aydın Maternity and Child Health Hospital	369,296	26,610	13,477	3,038
Aydın Çine National Hospital	209,100	2,250	4,503	9
Aydın Didim National Hospital	311,780	4,135	3,436	137
Aydın Germencik National Hospital	94,442	679	1,267	-
Adnan Menderes University Hospital	487,587	39,788	28,680	-
Private Hospitals (6 institutions)	545,747	30,101	18,357	-
Total	5,481,939	197,692	221,851	4,794

Source: Directorate of Health of Aydın

#### (5) Disease Structure

Disease structure of each province is not published by Turkish Statistical Institute (Turkstat). It was difficult to search the disease structure of Aydın.

#### (6) Medical Insurance

Table-22 shows the coverage rate of social security of the region in 2014. Even if coverage rate of Aydın is inferior to the 3 largest cities, it is higher than national average.

**Table-22 Coverage Rate of Social Security**

Province	Number of Prefectural Population (2014)	Population of Object Person of Social Security	Population of Object Person of Social Security (except person applied only General Health Insurance)	Coverage Rate of Object Person of Social Security (except person applied only General Health Insurance)
Aydın	1,041,979	1,036,049	898,776	86.26
Ankara	5,150,072	5,123,516	4,744,438	92.12
İstanbul	14,377,018	14,262,482	12,947,782	90.06
İzmir	4,113,072	4,102,259	3,700,891	89.98
National Average	77,695,904	76,319,472	65,023,070	83.69

Source: SGK website

([http://www.sgk.gov.tr/wps/wcm/connect/5446988e-9467-4fee-b90e-cb37dc68a08f/2015\\_05\\_Temel\\_Gostergeler.pdf?MOD=AJPERES](http://www.sgk.gov.tr/wps/wcm/connect/5446988e-9467-4fee-b90e-cb37dc68a08f/2015_05_Temel_Gostergeler.pdf?MOD=AJPERES))

#### 2-4. Healthcare Needs

According to Health Statistics Yearbook 2013 published by MOH, number of hospital beds per 10,000 is 26.7 beds (national average is 26.4 beds) and hospital occupancy rate is 71.6% (national average is 66.0%). From these statistics, Aydın Province has more health facilities than national average; hospital bed is not extremely in shortage.

On the other hand, the new hospital is constructed by eliminating and consolidating Aydın Atatürk Hospital and Aydın National Hospital. So, the number of hospital beds of new hospital needs to be more than 759 beds which is the total number of hospital beds of existing hospitals. Therefore, MOH plans 800 beds for the new hospital, and this hospital scale can be considered reasonable.

#### 2-5. Medical Industry

There are few medical companies which locates their head office function in Aydın Province. The companies which locate the head office in large cities such as Istanbul, Ankara, and Izmir provide the medical facilities, equipment and operational services.

## **CHAPTER 3. OUTLINE OF THE PROJECT**

## **Chapter 3. Outline of the Project**

### **1. Outline of the Hospital PPP Project in Turkey**

#### **1-1. Objective and Necessity of the Project**

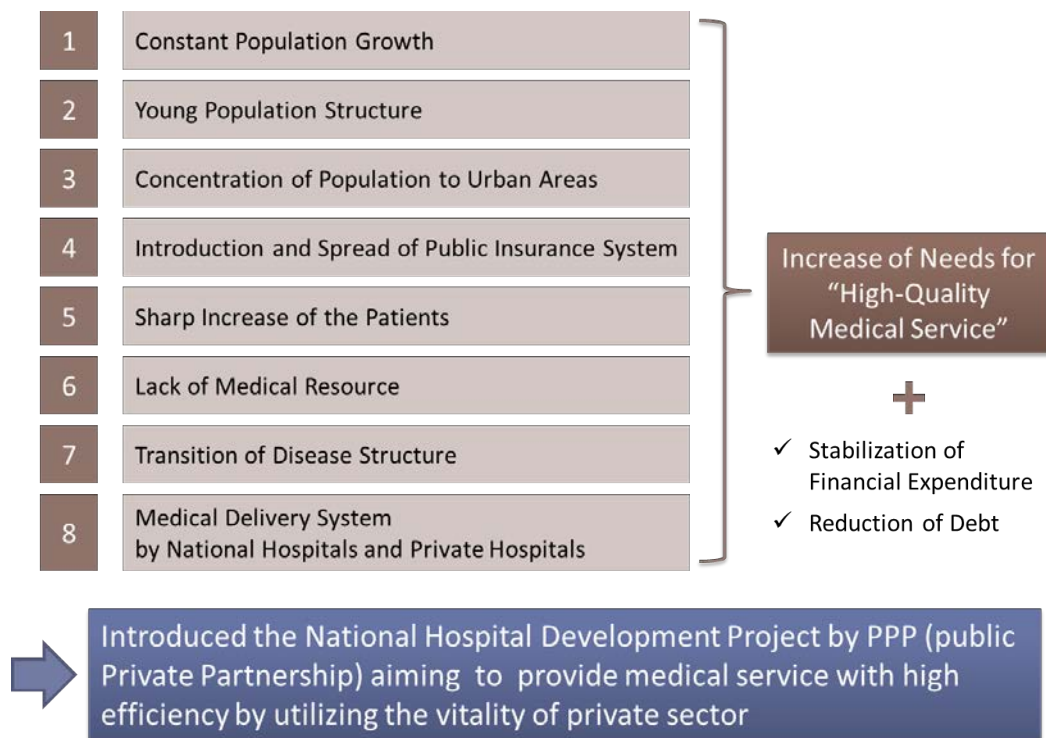
For Turkish healthcare, there are some unique features as mentioned in Chapter 2. Specifically, in healthcare structure there is conspicuous shortage of hospital beds and medical personnel compared against the sharp increase of population supported by young population structure, population concentration to cities and needs increase by the enhancement of social security system. Additionally, disease structure is transitioning towards the so-called developed countries type due to the improvement of hygienic environment and change of lifestyle. The top three causes of death are cardiovascular disease, cancer and respiratory disease. It indicates that diseases that generally require advanced medical care are increasing.

On the other hand, as for medical delivery system in Turkey, configuration of medical facilities is that national hospitals occupy 60% and private hospitals occupy 10% of total beds. Social medical insurance covers all medical cost in national hospitals thus its number of outpatient is distinguishingly high. However, regarding the medical content, national hospitals are considered to be at a lower level compared with private hospitals, because of deterioration of facilities and equipment etc.

In addition, one of the recent features is that Turkey is positively challenging to attract medical tourism mainly from the wealthy population of Middle East countries as well as European with its strength that medical care is provided at a lower cost compared with European countries. Considering these facts, it can be said that the needs for "high-quality medical care" is increasing in Turkey.

Otherwise, although Turkey has maintained a high economic development, chronic current account deficit due to import surplus is continuing. The government is required to smoothly implement public projects as well as stabilizing the expenditure and increasing the debt as little as possible.

Therefore, the Turkish government has planned, developed and is implementing on a national scale the establishment project of National Hospitals using PPP scheme which requests private companies to procure the initial investment cost and the built hospital is paid by lease charge which puts them in an off-balance state of finance but is able to secure the necessary number of beds.



Source: Survey Team

Figure-21 Necessity of Hospital PPP Project

## 1-2. Related Laws

### (1) Hospital PPP Law

Turkey is one of the frontier countries which legislated the PPP Law. In 1984, the private sector was approved to participate in the power plant projects (Law No. 3096). In 1994, the law that defines the BOT scheme intended for the infrastructure field such as transportation, energy and water was established (Law No. 3996). Then, BOT and BO scheme was introduced mainly in energy and water projects. From 1995 to 2001, total of 30 power plants have been established through BOT and BO scheme.



Table-23 Turkish Laws Related to Privatization

Build-Operate-Transfer (Law No:3096, 3465, 3996) ⇒Law No 3996 is basic law that defines the BOT method in Turkey.
Build-Operate (Law No: 4283)
Transfer of Operational Rights (Law No: 4046, 5335, 3465, 3096)
Long Term Rent (Law No:5335, 4046)
Build-Rent-Transfer (Law No: 5396) ⇒It permits PPP projects by BRT method in the healthcare field.

Source: Survey Team

With regard to the healthcare field, in 2005 the Supplemental Article 7 was added to Health Service Basic Law (Law No. 3359) and the “Regulation Regarding Construction of Health Facilities in Return of Leasing and Renewal of such Facilities in Return of Operation of the Services other than the Medical Services, (Regulation No. 26236)” was enacted on the basis of the Supplemental Article which stipulated the laws regarding Hospital PPP Project.

However in 2012, the Turkish Medical Association and others filed a lawsuit against Hospital PPP Project and in July, the Council of State, the supreme administrative court, issued a suspension order to the Hospital PPP Project. The Turkish government was required to immediately develop the legal basis for carrying out the Hospital PPP Project. Especially, the fact that the private company employs medical personnel and that the private company can commercially use the site of existing hospitals even if it is a non state-owned land have been regarded as a problem and judged as unconstitutional by the Constitutional Court.

In response to this situation, in March 2013, the New Hospital PPP Law (Construction of Facilities, Renovation of Existing Facilities and Purchasing Services by MOH by Public Private Partnership Model Law No. 6428) was enacted which clearly and systematically stipulated the law which previously regulated the Hospital PPP Project. By the enactment of the New Hospital PPP Law, the problem of commercial use of existing hospital site which had been a reason for the suspension order for Hospital PPP Project was settled to be restricted within the project site (Temporary Article 1), and thus the response to the unconstitutional judgment has been made. In addition, the Project is considered to have advanced to become a bankable business for financiers because the repayment guarantee for loan by the Turkish government and the Ministry of Finance has been stipulated (Article 13, 14, 15), countermeasures to exchange risk has been clarified (Article 5) and the authority of the loan team when at the time of dissolution of contract has been clarified etc.

Since then, as the administrative instructions of the Law, "The Implementation Regulation Regarding the Construction, Renovation of Facilities and Procurement of Services by MOH under the Public Private Partnership Model" was enacted in May 2014, thus, it is considered that legal basis to promote the Hospital PPP Project has been prepared.

## (2) Laws and Regulations on Establishment of SPV

Foreign companies can establish joint stock company, limited company (both joint stock company and limited company are limited liability corporation), branch and liaison office. Liaison office and branch are on the line that extends to parent company and do not have independent juridical personality in Turkish laws. Therefore foreign companies tend to choose joint stock company or limited company especially. The procedure about establishment of these two companies is substantially the same but there are some differences about whether there is shareholder responsibility for official debt or not and tax matters as main difference.

The procedure of establishment of company proceeds as going through the formalities such as preparation of articles of incorporation, authentication, admission of company's account book, tax payment procedure, financing and registration. It takes seven to ten days after submission of necessary documents as the schedule of establishment. General approximate cost for establishment of company is 2,500 - 3,500 euro (cost of translation, authentication and registration) although it should be paid attention to that the costs may fluctuate according to number of document pages which requires translation and authentication. In regard to SPV, there are cases that documents required authentication and identification increases against ordinary establishment of company and thus the approximate cost raises to 3,000 - 3,500 euro. Also SPV has to pay a quarter of capital stock before registration and in addition, SPV has to deposit 0.04% of capital stock into bank account of the Fair Trade Commission. In that respect, it is necessary to take capital stock into consideration as cost for establishment of company at the time of establishing company.

## (3) Tax System on Establishment of SPV

Taxes that need to be paid for SPV operation are corporation tax, withholding tax, value-added tax (VAT), property tax and stamp tax, etc. Corporation tax is 20% of pre-tax income. Withholding tax is paid by deducting from personal income. Besides that, 10% is deducted as withholding tax when transferring the benefits obtained in Turkey to foreign countries.

Although VAT rate is 18%, according to the confirmation of MOH, the VAT that is added onto the commission fee paid to outsourcing service provider will be reimbursed by MOH. Furthermore, VAT rate for daily necessities is 8%.

Besides, property tax is exempted in this Project and maximum 1% of the contract amount will be applied as stamp tax.

## (4) Other Related Laws

As for the laws related to Hospital PPP Project, it is described in detail in "Research Project on the Globalization of Japan's Medical Services by Japan's Ministry of Economic, Trade and

Industry, Research on Environments for the Hospital Operation in Turkey, 2011” p.65 to 91. Related Laws shall be confirmed as necessary throughout the planning to implementation of this Project.

### **1-3. Method and System of Project Implementation**

#### **(1) Project Implementation System**

In Hospital PPP Projects that are currently implemented in Turkey, the Turkish government (MOH) and contracted SPV composed of private companies establish and manage a national hospital sharing the scope and role between public and private sector. MOH provides medical practice such as consultation, nursing, examination and treatment, and also owns the land and lends it to SPV at no charge.

SPV composed of private companies is selected by tender. The initial investment of the Project is procured by collecting funds from the consortium members and shareholders and applying a loan from the lender. SPV is required to provide facility design, construction and equipment procurement as initial investment, and after hospital opening it shall own the facility and provide services such as maintenance of facility and equipment, leasing and maintenance of medical equipment and information systems, goods management, and laboratory testing. Regarding implementation, SPV shall employ a design office and building constructor, and in operation period it shall outsource the operating services to subcontractors in order to provide each of its service.

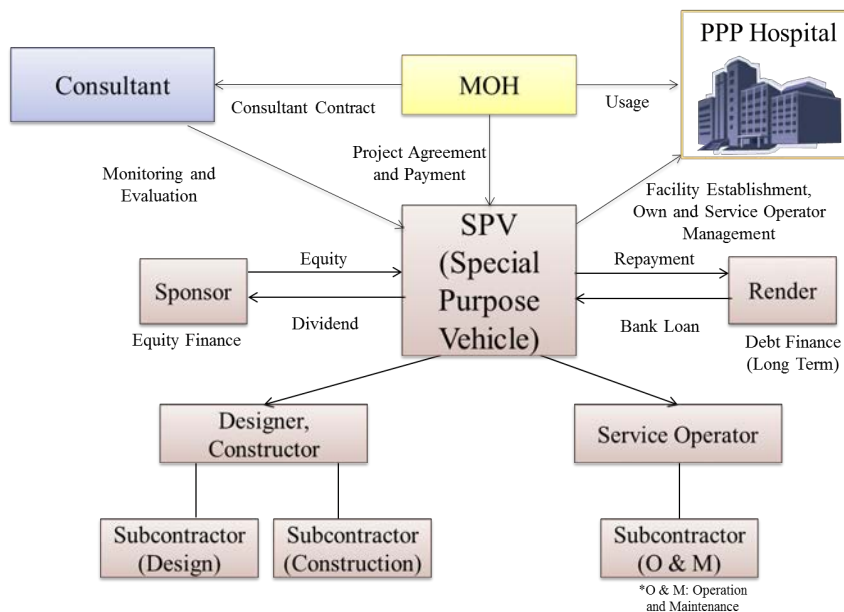
On the other hand, MOH pays the consideration for the SPV services and provides medical services to local residents by utilizing the facility.

In addition, apart from selection of the SPV, MOH carries out the tender to select a Government Consultant after SPV is decided. The consultant concludes a consultant contract with MOH with the business scope of evaluating the design and operation plan of the SPV as project operator and supervising and monitoring the project implementation on behalf of MOH.



Source: Survey Team

**Figure-22 Roles of Public and Private**



Source: Survey Team

**Figure-23 Contract Scheme of Hospital PPP Project**

(2) Management Plan

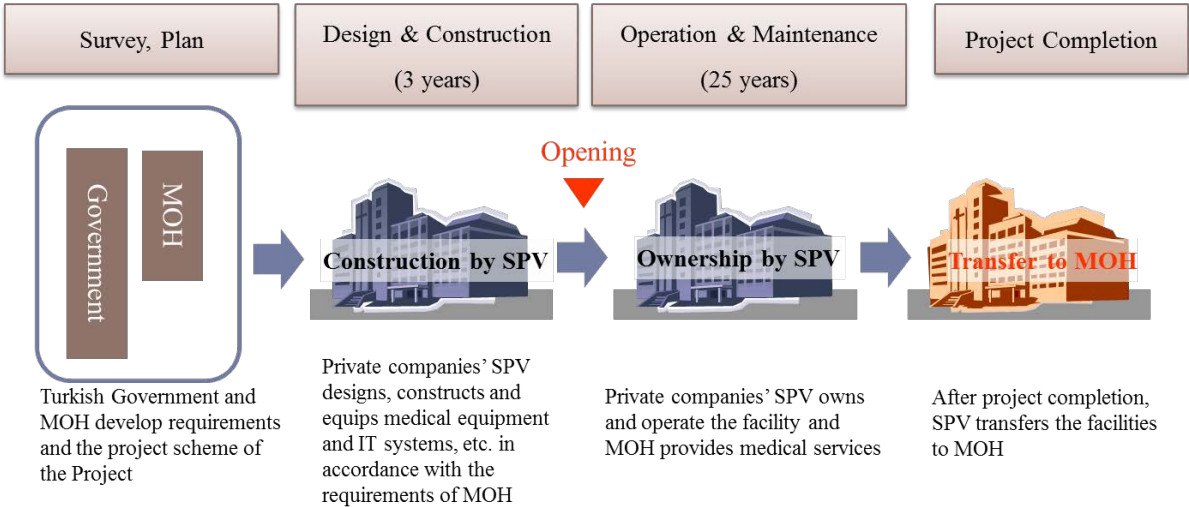
Turkish Hospital PPP Project is similar to hospital PFI (Private Finance Initiative) system in Japan. One large difference between Turkey and Japan is that whereas Hospital PFI Projects in Japan are implemented mainly by BTO (Build- Transfer-Operate) scheme, the Hospital PPP Projects in Turkey adopts BOT (Build-Operate-Transfer) scheme.

Table-24 Types of PPP / PFI Scheme

Project Method		Content
BOT	Build • Operate • Transfer	The method that the PFI business operator itself conducts fund-raising and constructs facilities ( <b>Build</b> ), operates and manages the facilities throughout the contract period ( <b>Operate</b> ), and transfers the ownership rights of the facilities to the public sector after recovering the fund ( <b>Transfer</b> ).
BOO	Build • Own • Operate	The method that the PFI business operator constructs facilities ( <b>Build</b> ), successively owns the facilities ( <b>Own</b> ), and operates the project ( <b>Operate</b> ). In the BOT method, facilities are transferred to the public sector at the time when the contract period is terminated, whereas, in the BOO method, the facilities are not transferred and the PFI business operator successively owns or demolishes it.
BTO	Build • Transfer • Operate	The method that the PFI business operator constructs facilities ( <b>Build</b> ) transfers the ownership rights of the facilities to the public sector ( <b>Transfer</b> ) and <b>operates</b> the facilities ( <b>Operate</b> ).
BLO	Build • Lease • Operate	The method that the PFI business operator constructs facilities ( <b>Build</b> ), the public sector purchases and leases the facilities to the PFI business operator ( <b>Lease</b> ) and the PFI business operator operates the facilities ( <b>Operate</b> ).
BLT	Build • Lease • Transfer	The method that the PFI business operator constructs facilities ( <b>Build</b> ), leases to the public sector for a certain period ( <b>Lease</b> ), and transfer the ownership rights of the facilities to the a public sector after recovering the project cost ( <b>Transfer</b> ).
DBO	Design • Build • Operate	The method that the public sector owns facilities, conducts fund-raising, and commissions <b>design (Design)</b> , construction ( <b>Build</b> ), and operation ( <b>Operate</b> ) of the facilities to the PFI business operator.

Source: p. 6 “Hospital PFI Guideline” Japan Association of Healthcare Management Consultant

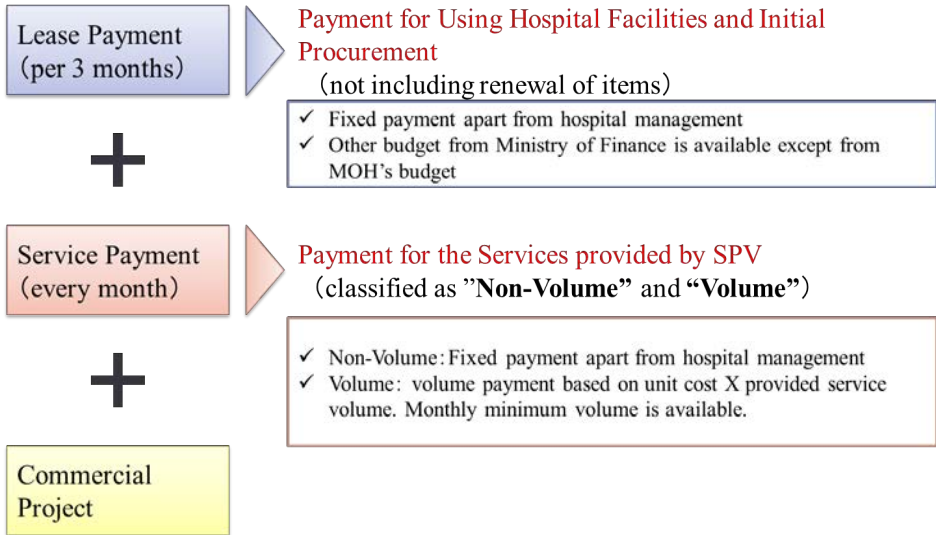
Turkish Hospital PPP Project adopts the above described BOT scheme, in which the SPV conducts facility design, operation design and construction of hospital facilities. After construction completion, SPV carries out the facility management (FM) keeping the ownership of the hospital facilities, and after the operation period of 25 years, transfers the ownership of the facilities to the Turkish government. (Figure-24)



Source: Survey Team

**Figure-24 Management Scheme of Hospital PPP Project**

For income of SPV, it is divided into 3 parts consisting of lease payment, service payment, and profitable business as shown in Figure-25. Lease payment is for hospital facilities and initial procurement goods to be paid every 3 months during the operational period in a fixed amount payment. In other words, the investment cost that SPV has been conducted is to be recovered in installments in the operation period after hospital opening. SPV should recover the interest rates for the loan, financing fees, and their own administrative costs in the deferred payment of this lease payment.



Source: Survey Team

**Figure-25 Income of SPV of Hospital PPP Project**

Service payment is intended to be paid every month for the services SPV provides and two types, non-volume and volume are stipulated depending on the type of service. Non-volume is fixed amount payment that is separated from the hospital operation and includes maintenance of facilities and IT services, etc. Volume services is usage-based payment by provided service amount and is calculated by the product of the set price and provided service amount. The guaranteed minimum monthly amount is defined for this service amount.

In addition to the above, it is approved for SPV to obtain the revenue from the profit facilities provided within the site, which is an incentive for SPV.

#### **1-4. Implementation Flow of the Project**

Referring to the existing projects with the successful bidder, the Hospital PPP Projects in Turkey are formed by the following flow and takes necessary steps of public announcement, selection of contractor, construction, operation and transfer. However, this method has some problems as mentioned below, so the projects selected by this method have not yet reached the commencement of project.

##### **(1) Launch of Project**

After MOH of Turkey determines to establish the new hospital to meet medical needs in the region, MOH shall begin to prepare the Pre-FS. At this time, document called Requirement Program which describes the function of the hospital assumed by MOH is prepared and become the foundation of the survey. In Pre-FS, the surveys of current situation of local healthcare, needs and site etc. are conducted by MOH and number of beds, function and project cost of the hospital etc. are studied.

##### **(2) Examination of Pre-FS by YPK**

The Pre-FS prepared by MOH of Turkey is examined by Ministry of Development, Ministry of Finance, Financial Agency of Prime Minister's Office and finally the Supreme Planning Council (YPK). Once the project scale and investment eligibility is approved, MOH begins the tender process of contractor selection. YPK consists of Ministers from 8 Ministries such as MOH or Ministry of Finance as well as the Prime Minister, and it is the decision-making body for approving all investment projects including Hospital PPP Projects.

##### **(3) Tender Process**

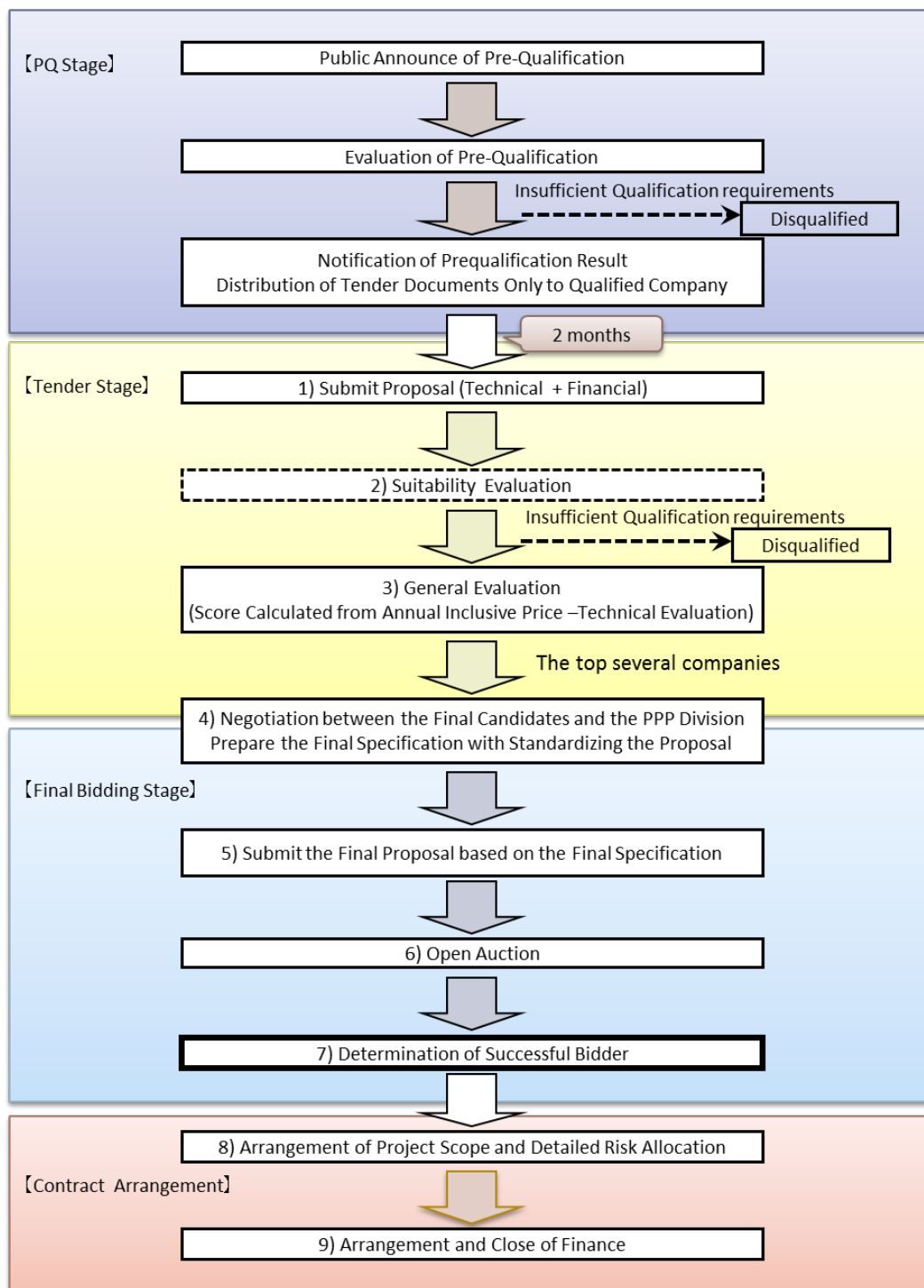
Tender process of Hospital PPP Project in Turkey is as shown in the figure below.

The tender is separated to three steps. After confirmation of qualification requirements on the

prequalification (PQ) stage, tender documents (contract draft, facility requirements, technical specifications, requested operational level, etc.) are distributed, and then technical and financial evaluation is conducted as the first step. In this first step tender, all companies propose their All Inclusive Yearly Price, which includes the divided Lease Payment of initial investment such as hospital facilities and medical equipment and Service Payment of mandatory services.

After that, several companies which pass the first stage with high rank receives new specification which is standardized with participants' proposal, and will propose a revised All Inclusive Yearly Price again (the proposed price in the first step is not used any more). These new financial proposals are brought together in the tender room, and they participate in open auction, a bidding method where reduction of proposed price is encouraged starting from the lowest proposal. The company who proposed the lowest price wins the bid and gets the first right of negotiation. The winning company performs detailed negotiations about the range of contract with MOH, as well as composing the SPV and finance. When these are all completed, the contract is concluded and the project can be started.





Source: Survey Team

Figure-26 Tender Process in the Preceding Project

#### (4) Finance Composition

In Hospital PPP Project, because the SPV is required to compose finance and procure the fund for the initial investment, it is necessary to cover the project cost combining investment and loan. SPV arranges the loan conditions and concludes the loan agreement in order to get the equity from sponsors and the loan from the banking facilities, and if it leads to finance close, the project can start.

#### (5) Implementation of the Project

The SPV who has obtained approval to enter the project site shall conduct the site survey and start facility design. The consultant employed by MOH as an advisor evaluates the design and oversees the project implementation of the SPV on behalf of MOH. The SPV constructs the facility based on the approved design, procures the equipment before the hospital opening, and performs commissioning. After the hospital opening, it supports medical practice which MOH provides while providing about 20 operational services. During the ownership period of 25 years, while the hospital is managed and operated, MOH pays the initial investment such as facility in installment and the consideration to the operational services. After completion of the project period, SPV transfers the facility to MOH.

### 1-5. Preceding and Planned Projects

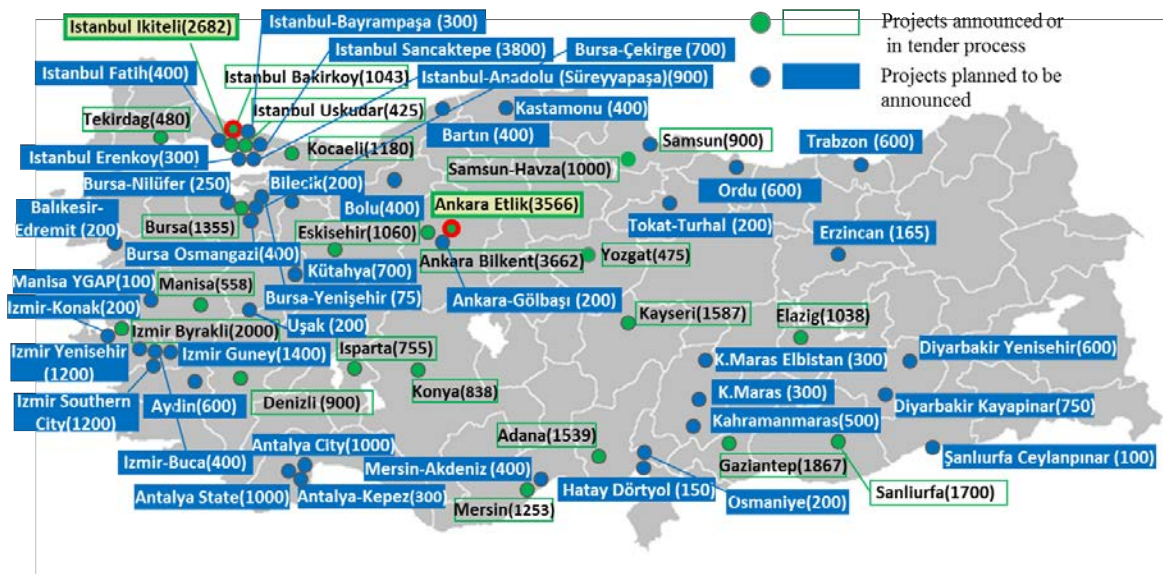
#### (1) Current Situation of Announced or Planned Projects

The Hospital PPP Project promoted by Turkish government is the project to re-establish the National Hospitals throughout the country. In 2011, the first project “Kayseri Project” was successfully bid and since then to June 2015, total of 65 projects were planned as establishment projects by PPP scheme<sup>3</sup>. The projects vary from rebuilding of existing hospital, integration of two or more existing hospitals and new hospital construction etc. Also, the project scale is diverse and hospitals with 75 beds to 3,800 beds are scheduled.

Among them, in June 2015, total of 25 projects have advanced to the bidding process and 20 projects already have successful bidders.

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<sup>3</sup> Source: TEBA News



Source: Survey Team

Figure-27 Location of Hospital PPP Project (June 2015)

**Table-25 List of Announced Projects of Hospital PPP Project**

No.	Name of project	Planned number of beds	SPV who implements the project	Financial Situation
1	Kayseri Integrated Health Campus	1,587	YDA group (T, I)	Almost Finance Close
2	Ankara Etlik Integrated Health Campus	3,566	Astardi group (I, T)	
3	Ankara Bilkent Integrated Health Campus	3,660	IC İçtaş group (T)	Almost Finance Close
4	Elazığ Integrated Health Campus	1,038	Sıla Dan group (T)	
5	Konya Karatay Integrated Health Campus	838	YDA group (T, I)	
6	Manisa Education and Research Hospital	558	YDA group (T, I)	
7	Yozgat Education and Research Hospital	475	Sıla Dan group (T)	Almost Finance Close
8	Bursa Integrated Health Campus	1,355	Şentürkler group (T)	
9	Istanbul İkitelli Integrated Health Campus	2,682	Emsaş group (T, US)	
10	Mersin Health Campus	1,259	Dia Holding group (T, I)	Almost Finance Close
11	Adana Health Campus	1,539	Sıla Dan group (T)	Almost Finance Close
12	Gaziantep Health Campus	1,867	Samsung group (K, T, I, N)	
13	Physical Therapy and Rehabilitation (PTR), Psychiatry (P) and High Security Forensic Psychiatry (HSFP) Hospitals	2,400	Sıla Dan group (T)	
14	Kocaeli Health Campus	1,180	Gama group (T)	
15	İzmir Bayraklı Integrated Health Campus	2,000	Türkerler group (T)	
16	Turkish Public Health Agency & Turkish Pharmaceuticals and Medical Devices Agency	-	Yıldızlar group (T)	
17	Eskisehir Health Campus	1,060	Akfen group (T)	
18	Isparta City Hospital	755	Akfen group (T)	
19	Istanbul Üsküdar State Hospital	425	On PQ evaluation	

No.	Name of project	Planned number of beds	SPV who implements the project	Financial Situation
20	Istanbul Bakırköy Health Campus	1,043	On PQ evaluation	
21	Tekirdağ Health Campus	480	Akfen group (T)	
22	Samsun Health Campus	900	On PQ evaluation	
23	Denizli City Hospital	1,000	On PQ evaluation	
24	Şanlıurfa Health Campus	1,700	YDA group (T)	
25	Kütahya Health Campus	600	On PQ evaluation	

\*Representation of the Country: (T: Turkey, US: United States, I: Italy, N: Netherlands, K: Korea)

\*Bold: Representative companies

Source: Survey Team

MOH of Turkey sets the goal to develop the hospitals of total 90,000 beds by PPP scheme, thus it is expected that many projects will be publicly noticed in the future. There are about 40 projects which have not yet be noticed and the new projects are also expected to be added in the future. However in March 2015, it was found that some of these planned projects may be reconsidered and canceled. The 10 projects in the following table are projects that have not yet been announced but tangible preparation for investments are being carried out. It includes the Aydın City Hospital, the targeted Hospital of this Survey.

Table-26 List of Projects Progressing among the Hospital PPP Project to be Announced

1	KÜTAHYA PUBLIC HOSPITAL	600	PQ announced during Survey
2	SANCAKTEPE CITY HOSPITAL	3800	under the evaluation of YPK
3	ANTALYA CITY HOSPITAL	1000	under the evaluation of YPK
4	DIYARBAKIR KAYAPINAR PUBLIC HOSPITAL	750	under the evaluation of YPK
5	DIYARBAKIR YENISEHIR CITY HOSPITAL	705	under the evaluation of YPK
6	<b>AYDIN CITY HOSPITAL</b>	<b>800</b>	<b>under the evaluation of YPK</b>
7	ORDU CITY HOSPITAL	600	under planning
8	KAHRAMANMASRAŞ PUBLIC HOSPITAL	500	under planning
9	BURSA ÇEKİRGE PUBLIC HOSPITAL	700	under planning
10	BARTIN PUBLIC HOSPITAL	400	under planning
	Total	9,855	

Source: Survey Team

## (2) Progression Status

As mentioned above, successful bidders are already determined in some projects thus advancement of those projects is expected, however, in present situation, progression of the projects is poor. Even in the 20 projects with successful bidders, contract negotiation and financing negotiation has been prolonged and the progress has been slow. Due to the above mentioned amendment of Hospital PPP Law and enactment of implementation regulations, finally after November 2014, the European Bank for Reconstruction and Development (ERBD) and local banks determined the loan for the three Projects of Kayseri, Mersin, and Adana after a long negotiation period. In addition, there is some information to say Istanbul Bilkent and Yozgat project almost reach finance close. However the other projects have not yet led to loan commitment or final agreement of contract and construction work has not commenced at all.

**Table-27 Projects to Reach Finance Close**

Name of Project	Time of Finance Close	Total Project Cost	Debt Finance	Lender
Kayseri Integrated Health Campus	November 2014	420mil €	315mil €	unknown
Ankara Bilkent Integrated Health Campus	March 20115	unknown	890mil €	<ul style="list-style-type: none"> <li>• Türkiye Garanti Bankası</li> <li>• DenizBank</li> <li>• Türkiye İş Bankası</li> <li>• Finansbank</li> <li>• Siemens Financial Services</li> <li>• Garanti Bank</li> <li>• Yapı ve Kredi Bankası</li> <li>• UniCredit Bank Austria</li> </ul>
Yozgat Education and Research Hospital	June 2015	139mil €	111mil €	<ul style="list-style-type: none"> <li>• SMBC</li> <li>• BTMU</li> <li>• Siemens</li> <li>• Intesa etc.</li> </ul>
Mersin Health Campus	December 2014	unknown	272mil €	<ul style="list-style-type: none"> <li>• Denizbank</li> <li>• Yapı Kredi etc.</li> </ul>
Adana Health Campus	December 2014	542mil €	430mil €	<ul style="list-style-type: none"> <li>• EBRD</li> <li>• Denizbank</li> <li>• Yapı Kredi etc.</li> </ul>

Source: Survey Team from TEBA news, etc.

### (3) Problems in the Preceding Projects

Looking at the current state of Hospital PPP Project, as a whole, its progress is poor. The primal reason is the problem in finance composition. Hospital PPP Project is conducted in BOT scheme, thus SPV is required to cover the initial investment cost for construction by the capital and loan from financial facilities. Therefore SPV is necessary to compose enough finance to cover the initial investment before the project starts. However, the successful bidders are identified before the financial composition in the current tender method. And as a result, an extremely long time is spent on the contract negotiation after bidding. Even for the projects

where the successful bidders are identified, it still takes time for finance composition. In Turkey, as mentioned above, due to the Open Auction system where adjustments are made to the price of bidders after the final financial proposals, there are no rules to ask submission of LOI or financial commitment. On the other hand, because other PPP projects in Japan or other countries do not have open auction system and possibility to adjust the final financial proposals, the progress of the project after the success of tender is smooth due to the LOI or financial commitment which shall be attached to the final financial proposal. Therefore, it is assumed that the original tender system in Turkey has an effect to the progress of projects.

**1. Insufficient Period for Bidding Document Preparation**

⇒ Only 60 days are allowed for preparation of bidding document after PQ and this is not sufficient for document preparation including financial commitment

**2. Tender Process focused in Price as shown in Open Auction**

⇒ Successful bidder is decided with open auction for the unified specification based on the proposals of final bidders at the final tender stage

**3. Tender Process to decide Successful Bidder without Financial Commitment**

⇒ Successful bidder is decided before financial commitment

⇒ Preceding Projects are being stuck due to the difficult finance arrangement after the tender

**4. Ambiguous Requirement Standard for Work Allocation, Risk Allocation or Cost Allocation between Public and Private**

⇒ Shared role of Public and Private is not described clearly in the tender document and it can be the risk for making good proposal

⇒ High risk make financial condition worse and will be an obstacle of finance arrangement.

Source: Survey Team

**Figure-28 Problems in Current Tender Scheme**

**(4) Countermeasures and Current Situation**

Turkish government also recognizes the poor progress of preceding projects as an issue and has been making an effort to resolve the problem. In August 2013, MOH held a joint meeting with successful companies to discuss about ambiguous points of the contract for the services which are barriers for loan. In September the same year, led by Prime Minister Erdoğan (at that time), a grand signing ceremony was held and attended by the Prime Minister, Minister of Health and the SPV. Since August 2013, groundbreaking ceremonies have been held for some projects. While after the above, lack of progress in design approval and construction continued.

However in 2014, due to the above mentioned amendment of law and enactment of

regulations, the banks began to evaluate the Hospital PPP Project as bankable, and since the second half of 2014, movement towards finance close has been seen in some projects. In March 2015, it is reported that lending team and SPV concluded the financial contract and currently 5 projects are reported as financially closed. Hereafter, accelerating progress is expected for the long-stagnant projects.

**2. Outline of Aydın City Hospital PPP Project**

**2-1. Objective and Necessity of the Project**

The purpose of this Project is to provide stable and high quality medical services to the area under contract and cooperation of Turkish government (MOH) and SPV composed of private companies within the Hospital PPP Project promoted by MOH.

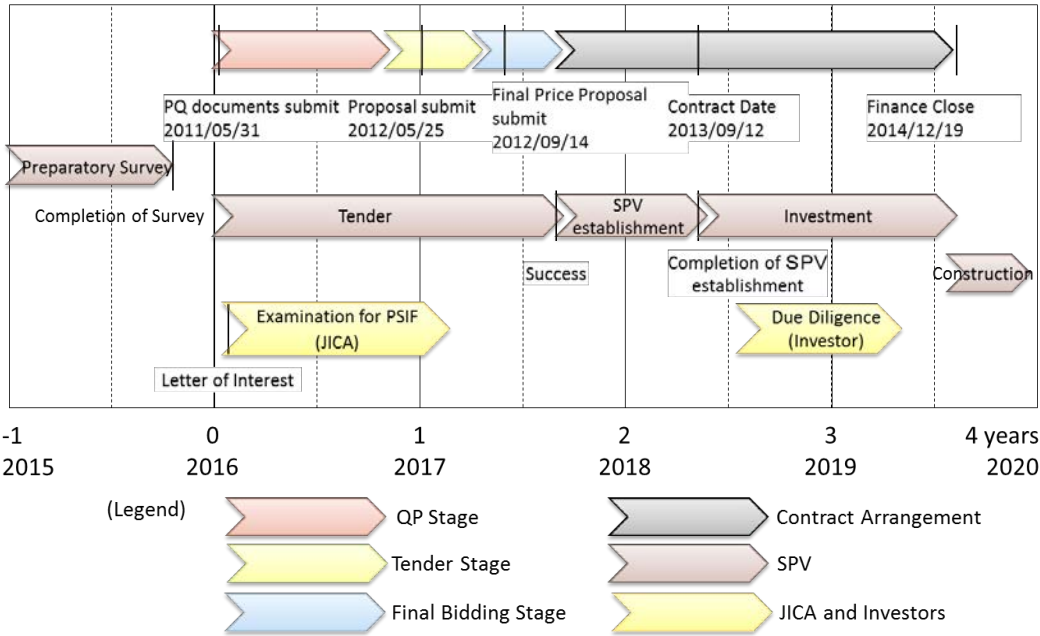
The project plans to build 800 beds hospital which integrates the function of the antiquated 2 hospitals. The new hospital is planned to become a higher-level hub emergency medical institution (emergency level III) and expected to be a central hospital of the wider area, including surrounding provinces.

**2-2. Project Schedule**

(1) Example of Preceding Hospital PPP Project

1) Current Schedule

Tender process of Adana National Hospital Project (Reference)



Source: Survey Team



Figure-29 Tender Process of Hospital PPP Project (based on the preceding project)

The tender process of Adana Health Campus Project that has already led to finance close shall be referred in order to clarify the tender process, establishment of SPV and capital subscription after completion of JICA cooperation survey until starting of the construction working. Also the period of tender establishment of SPV and capital subscription shall be studied based on this preceding project.

For Adana Health Campus Project, from the submission of PQ document (May 31, 2011), it took approximately 1 year to submit the proposal (May 25, 2012) and approximately 1 year and 4 months to submit the final price proposal (September 14, 2012). Furthermore, it took approximately 1 year from the date of submission of the final price proposal through the successful bid to the contract date (September 12, 2013), and it took an additional 1 year and 3 months from the contract date to finance close (November 19, 2014). In other words, from the submission of PQ document to finance close, it took indeed approximately 3 years and 7 months.

The cause of the process took such long-term period is conceivable that MOH and the bidders were not familiar with the tender procedures and evaluation in the early project right after the starting of Hospital PPP Project. On the other hand, it is also mentioned that the Hospital PPP Law was adverse to the bidder. This Law was revised in 2013 to eliminate the adverse conditions for most part. According to news source, after the subsequent of the Law in September 2014, financial institution gradually began to accept and 4 projects including Adana have led to finance close. In addition, MOH has also been continuing the improvement of the bidding documents, taking into account the mitigation of financial conditions and improvement of the tender documents, it is expected that bidding period and capital subscribing period are significantly shortened in the future new Hospital PPP Projects.

## 2) Consideration of Financing Examination

To receive loan, it is necessary to pass the financing examination. The examination period is approximately 1 year for PSIF. This long examination period for JICA's PSIF and due diligence period after SPV establishment is to be discussed by applying it to the tender process of Adana National Hospital Project.

As mentioned above, the bidding period and capital investment period are expected to be shortened in the future tender of Hospital PPP Project. Thus, how the examination for JICA's PSIF and due diligence of SPV which is performed simultaneously with this process will correspond, is an issue of concern.

## 3) Process from Tender to Start of Building in Hospital PPP Project

Process of Hospital PPP Project can be roughly divided into Building, Operation and Transfer. The figure below shows the items SPV shall perform in the Building stage. This process is clarified by the information of the tender in the past Hospital PPP Project.

The process from tender announcement to start of building can be divided into 4 steps; i) bidding, ii) establishment of SPV, iii) capital investment and vi) building. Of these, establishment of SPV shall start after "5. Public announcement of successful bidder". On the establishment of SPV, the successful bidder shall get the interest letter from the financial facility and collect the investors who will provide capital. After SPV is established, it concludes the contract with MOH for the Hospital PPP Project.

Financial facility which makes loan to SPV begins the financing examination prior to the establishment of SPV, but due diligence by capital investors is started after the establishment of SPV. After the due diligence by capital investors has been completed, the contract with the shareholders is executed and introduction of capital is performed. The SPV orders the building work to the construction company based on the funds received by the loan and capital investment.



Source: Survey Team

Figure-30 Process from Tender to Construction of the Preceding Hospital PPP Project

(2) Implementing Schedule for This Project

Figure-31 shows the implementing schedule for this project in case bidding will be started in early 2016 after JICA preparatory survey’s completion in September 2015. Bidding in Turkey takes normally approximately 18 months due to these processes; 1- PQ (Pre-qualification) level,

2- Bidding level, 3- Final bidding level. After that, as a result of contract adjustments, design and construction works will be implemented within 3 years since the date of contract and hospital is planned to be opened in 2021.

Implementing Item	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1 JICA Preparatory Survey	■									
2 Bidding		■	■							
3 Contract Adjustment				■						
4 Establishment of SPV				■						
5 Financing				■						
6 Detailed Design				■	■					
7 Construction Work				■	■	■				
8 Hospital Operation							■	■	■	■

Source: Survey Team

Figure-31 Implementation Schedule of the Project

### 2-3. Subjective and Necessity for Participation to the Project

It is expected to be able to provide most advanced medicine by integrating and rebuilding the antiquated 2 Hospitals in Efeler City on this Project. Hospital development by PPP scheme is generally the project to which many kind of industry and service business participate and is expectable of the benefit effect on not only Japan and Turkey, but also neighboring countries. In particular, it is expected to lead to job creation in industry involved in hospital construction in Aydın region, service providers for hospital operation, companies related to infrastructure development, etc.

By that Japan which has experience of more than 10 years of hospital development by PFI, carries out this Project from planning and designing step and realizes efficient and stable operation, utilizing the experience and know-how, benefit effect can be continuously produced to the region for long period. Additionally, it becomes a project which can produce economical effect through industries in both of Japan and Turkey.

Especially, since Turkey, similar to Japan, is a frequent earthquake occurrence zone, MOH has been promoting the plan of base isolating in major hospitals. This portrays high expectation towards Japanese advanced isolation technology, as Japan actually has experienced earthquake disasters. Aydın Province also belongs to areas of high earthquake risk, but introducing the

isolation technology will make it possible to provide medical service to the area even when disaster occurs. Introducing not only isolation technology but also Japanese technology and know-how to planning, construction and operation also lead to technology transfer. If the Japanese technologies are transmitted to Turkey, it would contribute to the friendship between the both countries. Transfer of technology is also the aim of this Project.

### **3. Current Situation of the Target Hospitals of Integration**

The Survey team visited the existing 2 hospitals (Aydın National Hospital and Aydın Atatürk National Hospital) which are to be integrated into the Aydın City Hospital PPP Project. The current situation of both hospitals is as follows.

#### **3-1. Aydın National Hospital**

##### **(1) Overview**

###### **1) Facility**

Aydın National Hospital is the general hospital located in the center of Efeler City and established in 1892. The site area is 34,239 m<sup>2</sup> and the total floor area is 28,088 m<sup>2</sup>. The number of beds is 475, composed of 198 beds for surgical department, 211 beds for internal department, and 58 beds, etc. for intensive care section.

###### **2) Departments**

Departments for outpatient are Forensic Medicine, Neurosurgery, Dermatology, Pediatric Psychiatry, Internal Medicine, Physical Therapy, Gastronomy, General Surgery, Respiratory, Respirator Surgery, Ophthalmology, Infectious Diseases, Cardiovascular Surgery, Cardiovascular, ENT (Ear, Nose, and Throat), Kidney Disease, Neurology, Plastic Surgery, Psychiatry, Rheumatism, Urology, Sports Medicine, Genetic Medicine and Neoplasms.

###### **3) Medical Function**

Aydın National Hospital is defined as A-II level regarding level setting of public hospital stipulated by MOH. Also both ICU and emergency department in this hospital have medical care environment of III level (supreme level) and provide the highest medical care, where high emergency life-saving and emergency handling for 24 hours are required, in this region.

Medical service area of the hospital covers the entire Efeler City, and target population is about 270 thousand people. Also, it has a function of A-II level, so that this hospital accepts patients with severe disease and referral patients from the entire Aydın Province.

**Table-28 Role of Hospital Services**

Role	Education and research function	Departments which are necessary to be established	Service level	Number of doctors	Level of intensive care	Level of emergency services	No. of beds	Plans
A-I	At least 5 departments	At least 4 departments, internal medicine, general outpatient, obstetrics and gynecology, pediatrics (obstetrics and gynecology, and pediatrics section. It might not be applied in case that there is a special hospital in the province.) Brain surgery, orthopedics and traumatology, cardiology, anesthesiology and ICU.	3	6 + doctors per a department	III	III		*It is planned in main province in the area or provinces which belong to the main province.
A-I	equipped	Department which provide services	3		III	III		*It is planned in main province in the area or provinces which belong to the main province.
A-II	Nil	At least 4 department including internal medicine, general outpatient, obstetrics and gynecology (except for communities which have related special hospital)	2	6 + doctors per a department	III	III		*It is planned in main province in the area or provinces which belong to the main province.
A-II	Nil	Department which provide services	2		III	III		*All special hospital except for educational and research hospital
B	Nil		2		At least II	At least II		*It is planned in the strengthened cities in the central area of the provinces (outside of the service area of A- I and A- II group hospital)
C	Nil	4main departments + at least 2 additional departments = at least 6 departments	2	At least 6 medical specialists	At least I	At least I		*It is planned in the strengthened cities.
D	Nil	4 main departments + a home doctor	2	More than one medical specialist			At least 25 beds	*It is planned in the strengthened cities. *Providing special treatments for inpatients. *There are an operation room, a treatment room for postoperative patients, dentistry, a delivery room and an observation room with a monitor. *it is possible to equip a dialysis unit if necessary.
E	Nil		1+2				25-	*A facility which provides primary care in addition to diagnosis and treatment
EI	Nil	4 main departments + a home doctor	1+2	A home doctor + a practitioner + 4 main departments				*Providing special treatments for inpatients. *There are an operation room, a treatment room for postoperative patients, dentistry, a delivery room and an observation room with a monitor. *it is possible to equip a dialysis unit if necessary.
EII	Nil	At least one home doctor	1+2	A practitioner and a home doctor				*Establish in districts with more than 18,000 total populations. *Emergency health care services

Role	Education and research function	Departments which are necessary to be established	Service level	Number of doctors	Level of intensive care	Level of emergency services	No. of beds	Plans
				specialist				are provided according to Article 5 (b) of "Home Doctor Implementation Regulation". *A laboratory for diagnostic imaging is equipped. *It is possible to conduct normal birth delivery. *There is a dentist.
EIII	Nil		1+2	At least two doctors				Establish in areas with less than 9,000 total populations. *off-duty hours emergency services are provided according to Article 5 (b) of "Home Doctor Implementation Regulation". *It is possible to conduct normal birth delivery. *Plain radiography, laboratory and dentistry are provided. *Being able to accept patients' stay and follow up of follow-up patients.

Source: Document received from MOH

#### 4) Medical Level

According to a nationwide-hospital search site in Turkey<sup>4</sup>, Aydın National Hospital is defined as a flagship hospital in Aydın Province and described that it provides high quality service by competent staff.

Also according to a website of Aydın National Hospital, quality control division which is called SKS is available. SKS is composed of 1 doctor as the representative and nurses as the member in charge of quality control inside the hospital. Quality control division has committees regarding infection control, patient security, staff security and so on, and is approaching improvement of medical level inside the hospital.

Additionally, this hospital especially puts effort into cardiology so that a cardiovascular center is available in the hospital. This hospital supports regional medical service for several decades as a flagship hospital of the region and high function as a national hospital is required. From these aspects, it is considered this hospital has efficient experience and medical staff regarding medical level.

#### (2) Statistics

The following table shows major medical activities from January to October 2014 in Aydın National Hospital.

<sup>4</sup> Hospital search site "hastanebul" (<http://www.hastanebul.com.tr/>) A hospital search site which is registering 19139 medical institutions and pharmacies in Turkey; 1574 medical institutions and 17565 pharmacies, especially including 869 national hospitals, 636 private hospitals, 47 university hospitals and 22 military hospitals.

**Table-29 Medical Information in Aydın National Hospital (January to October 2014)**

Indicator	
Number of bed in ward for Surgical Department	198
Bed occupancy rate in ward for Surgical Department (%)	66
Number of bed in ward for Internal Department	211
Bed occupancy rate in ward for Internal Department (%)	90
Number of beds for intensive care	58
Bed occupancy rate of intensive care unit	98
Total number of operating beds	475
Bed occupancy rate of operating beds	79
Number of outpatients (including dental and emergency)	713,794
Number of death in Emergency Department	50
Number of patients	169,656
Number of inpatients	29,453
Number of discharged patients	27,803
Number of death (person)	650
Total number of surgery	27,451
Number of CT unit	1
Number of CT imaging	28,823
Number of MRI units	1
Number of MRI imaging	31,080
Average length of Stay (day)	4
Number of Physician (Internal Medicine)	61
Number of Surgeon	53
Number of Medical Specialist	114

Source: Directorate of Health of Aydın

### (3) Characteristics of Hospital

#### 1) Clinical Departments

##### a) Diagnostic Imaging Department

Diagnostic Imaging Department owns X-Ray, CT, MRI, Angiography, etc. Some of the equipment is operated by outsourcing company. According to interviews, the operating status of CT and MRI deserves special mention that they deal with more than 100 patients (200 to 300 images) per day. Generally, diagnostic imaging for cancer patients leads to decrease in operation rate because dose of contrast agent is necessary for it. However, in the hospital, it seems that the high operation rate is kept by 24-hour operation. It is also

assumed that the high operation rate is the result of lowering the resolution and reducing the number of imaging for MRI, etc. because it is common for one MRI to image 2-3 patients in an hour.

b) Laboratory Testing Department

Laboratory Testing Department is operated by doctors and laboratory technicians employed by the Hospital. The items which are tested in the Hospital laboratory are biochemistry, hematology, infectious disease, hormone, tumor marker, urine, morphology, microbiology and pathological examination. Number of testing order to the number of patient is large, and more than 1,000 specimens per day are examined in the biochemical tests. Also, there is an emergency testing room, where tests for emergency and night time are conducted and more than 1,200 testing process per day are examined. Each testing field is independent and operated by a full-time laboratory technician. Reporting of test results to the clinical departments depend on the consideration of the testing physician. It is distinctive that number of ordered item per specimen of biochemical test etc. is less although number of specimen per day is large.

Laboratory Information System (LIS) installed in each room is compatible with time series, graphing, statistical processing, etc., and seamless operation has been established.

On the other hand, testing for out-of-hospital is not basically performed, so all of the testing orderings from the departments are treated within the hospital. Testing devices are mainly composed of products with competitive price such as Mindray (China) and Erba (Germany and India). The analyzers from Europe or US companies focusing on precision are limited to microbiological testing equipment, pathological testing equipment and some hormone testing equipment.

2) Situation of the Outsourced Services

The following items are the major services which Aydın National Hospital outsourced. In the bid for outsourcing services, the company which offered the lowest price among the bidders who meet the required specifications wins the bid. The contract period is 1-3 years. During the contract period, the outsourced service is monitored by the monitoring committee in the Hospital. If the service does not meet the required specification, certain penalty (payment reduction) is to be imposed. The staff engaged in the outsourced services is continuously employed even after changing of the outsourcing company.

a) Security Service

The contract period is 3 years. The outsourcing company has its headquarters in Ankara and employs about 300 employees. 156 staffs are working in whole Aydın Province and 48 security staffs are working in Aydın National Hospital. 150 CCD cameras are installed



by Aydın National Hospital and there is a special room for 24-hour monitoring. Security staffs also guide patients in addition to guard work described in the contract.

b) Patient Reception and Data Input Service

The contract period is 2 years. The outsourcing company has its headquarters in Sivas. 177 staffs are engaged in the hospital and perform general reception, department reception, and secretary service for doctors (data input). Data input for claiming to SGK is also performed, 3 special staffs are engaged. Hardware such as PC is prepared by the hospital. In Emergency Department, reception desk is opened also in the night-time, but secretary service of the outsourcing company is provided from 7:30 - 16:30. Therefore, reception is performed by nurses in the night-time.

c) Cooking Service

The contract period is 1 year. The outsourcing company has headquarters in Ankara. 35 staffs are engaged in this service in the hospital composed of 9 chefs, 22 serving staffs, 1 dish washer, 2 cleaning staffs and 1 storekeeper. Menu of meals are planned by 5 hospital nutritionists and cooking ingredient is procured by the outsourcing company. They provide meals to approximately 850 hospital staff and 300 patients (and their families) per day. Meal time is 5:30-7:30 for the breakfast, 12:30-13:30 for lunch and 17:30-19:30 for dinner. Therapeutic diet occupies 12% of total. Kitchen equipment are installed by the hospital until 2013, but from the current contract, they shall be procured by the outsourcing company. Tableware is stocked in the wards, so meal serving and tableware washing are performed in the ward. Eating record is checked by nurses.

d) IT Service

The contract period is 1 year. The outsourcing company has its headquarters in Izmir. Main service is maintenance and management of the hospital information system. System is developed by the same company with another contract in Aydın National Hospital. Hardware is procured by the hospital and approximately 600 PCs are installed. Master lists of medical materials, etc. are prepared by the hospital, and the service of the outsourcing company is limited to the action to problems in the system. The company does not manage the treatment schedule table for patients.

e) Diagnostic Imaging Service

The contract period is 3 years. The outsourcing company has its headquarters in Istanbul. 12 staffs are engaged in this service in the hospital and perform only MRI service among the diagnostic imaging. Equipment is procured by this company. Number of imaging is 200 to 300 per day. Maintenance service of the equipment is also included.

f) Cleaning Service

The contract period is 2 years. The outsourcing company has its headquarters in Sivas. 200 staffs are engaged in this service in the hospital and works in 3 shifts (8 hours per 1 shift). The services are cleaning, linen service, nursing assistance and patient transporting. Since there is no official qualification for nursing assistance, the outsourcing company provides training for the staff. Service which requires direct contact with patient is not performed. Waste transporting service is limited to the transportation of waste inside hospital to the keeping booth of the hospital.

(4) Situation of the Facility

	
Hospital Panoramic View	Hospital Entrance
	
Emergency Entrance	Emergency Department



Source: Taken by Survey Team

Figure-32 Facility of Aydın National Hospital (photos)

### 3-2. Aydın Ataturk National Hospital

#### (1) Overview

##### 1) Facility

Aydın Ataturk National Hospital, established in 1963, is the general hospital located in the center of Efeler City. The site area is 414,000 m<sup>2</sup> and the total floor area is 22,618 m<sup>2</sup>. The number of operating beds is 295, composed of 127 beds for surgical department, 135 beds for internal department, and 33 beds for intensive care section.

## 2) Departments

Departments for outpatient: Cardiovascular, Dermatology, Infectious Diseases, Plastic Surgery, Orthopedics, Consultation for Stop Smoking, Urology, Ophthalmology, ENT, Neurosurgery, Neurology, Psychiatry, Cardiovascular Surgery Respiration Surgery, Respiratory, Physical Therapy, Internal Medicine and Neoplasms.

## 3) Medical Function

Aydın Atatürk Hospital is defined as B level regarding level setting of public hospital stipulated by MOH. Also both ICU and emergency department in this hospital are defined as II level and it plays a role of assistance of Aydın National Hospital which has the highest medical level in this region.

Medical service area of the hospital covers the entire Efeler City, and target population is about 270 thousand people.

## 4) Medical level

According to the website of Aydın Atatürk Hospital, quality control division is available in the hospital. This division is composed of 1 doctor as a representative and nurses as member, and is responsible of quality control inside the hospital. Quality control division has various committees and it can be confirmed this hospital is acting about quality control and medical security of each medical care services, patient and staff satisfaction etc.

Additionally, this hospital puts effort into cancer treatments so that an outpatient chemotherapy center and a radiotherapy center are located in the hospital and this hospital accepts patients from outside of Aydın City. According to the interview to the hospital director, that patient satisfaction exceeded 85%, therefore it is confirmed this hospital provides constant medical level in the region.

## (2) Statistics

The following table shows major medical activities from January to October 2014 in Aydın Ataturk National Hospital.

Table-30 Medical Information in Aydın Atatürk National Hospital (January to October 2014)

Indicator	
Number of beds in ward for Surgical Department	127
Bed occupancy rate in ward for Surgical Department (%)	72
Number of beds in ward for Internal Department	135
Bed occupancy rate in ward for Internal Department (%)	96
Number of beds for intensive care	33
Bed occupancy rate of intensive care unit	109
Total number of operating beds	295
Bed occupancy rate of operating beds	87
Number of outpatients (including dental and emergency)	653,967
Number of deaths in Emergency Department	61
Number of patients	186,535
Number of inpatients	14,607
Number of discharged patients	13,654
Number of deaths (person)	516
Total number of surgeries	20,924
Number of CT units	1
Number of CT imaging	27,830
Number of MRI units	1
Number of MRI imaging	20,504
Average length of Stay (day)	6
Number of Physicians (Internal Medicine)	42
Number of Surgeons	29
Number of Medical Specialists	71

Source: Directorate of Health of Aydın

### (3) Characteristics of Hospital

#### 1) Clinical Departments

##### a) Diagnostic Imaging Department

Diagnostic Imaging Department owns X-Ray, CT, MRI, etc. Some of them are operated by outsourcing company. Operation rate of the imaging devices is high as it is in Aydın National Hospital.

b) Laboratory Testing Department

Laboratory Testing Department is operated by doctors and laboratory technicians employed by the hospital. The items which are tested in the hospital laboratory are biochemistry, hematology, infectious diseases, hormone, tumor marker, microbiology and pathological examination. Additionally, there is an emergency testing room operated for 24-hours.

Laboratory Information System (LIS) is installed in each room.

Out-of-hospital testing is outsourced to Aydın National Hospital. Testing equipment is selected mainly from the products of manufacturers with competitive price same as Aydın National Hospital. The analyzers from Europe or US companies focusing on precision are limited to pathological testing and some hormone testing.

Necessary time for each testing is posted in the blood sampling booths for the patients' consideration.

2) Situation of the Outsourcing Services

The following items are the major services which Aydın National Hospital outsourced. In the bid for outsourcing services, the company which offered the lowest price among the bidders who meet the required specifications wins the bid. The contract period is 1-3 years. During the contract period, the outsourced service is monitored by the monitoring committee in the hospital. If the service does not meet the required specification, certain penalty (payment reduction) is to be imposed. The staff engaged in the outsourced services is continuously employed even after changing of the outsourcing company.

a) Diagnostic Imaging Service (CT)

The contract period is 3 years. The outsourcing company has its headquarters in Istanbul. The company provides services for CT and MRI, but in this hospital they only provide CT service. 12 staffs are engaged in this service and perform repair and maintenance service excluding interpretation of the radiography which is re-outsourced to another company. CTs are operated for 24-hours. The number of imaging is about 100 per day.

b) Diagnostic Imaging Service (MRI)

The contract period is 3 years. The outsourcing company provides MRI (1 tesla) service. 1 radiologist, 5 technicians, 1 secretary, and 1 report writer are engaged in this service in the hospital. Maintenance of the device and supply of consumables and spare parts are also included. The number of imaging is 2,000 per month.

c) Nuclear Medicine Service

The contract period is 2 and half years. The outsourcing company provides Gamma Camera service. 8 staffs are engaged in this service which consists of 3 radiologists, 3 technicians, 1 cleaning staff and 1 report writer. Imaging for 600-650 patients are performed in 1 month. Reservation is necessary for imaging and business hour is 7:30-20:00. Monitoring of RI waste is not performed.

d) Cleaning and Reception Service

The contract period is 2 years. 220 staffs are engaged in this service in the hospital which consists of 109 cleaning staff and 111 staff for reception and data input. 1 staff for data input is arranged for 1 doctor. As for medical waste disposal, 3 staffs that has been trained at government agency and certified are in charge. Responsibility of waste collection is of the city.

e) Security Service

The contract period is 3 years. The outsourcing company has its headquarters in Ankara. 25 staffs are engaged in this service. 10 staffs for emergency department, 15 staffs for outpatient department are working for security service in 3 shifts for 24-hours. 90 CCD cameras are installed by the hospital. Security staffs have powers of arrest and they are carrying handcuffs but no firearms.

f) Patients Guiding and Technical Service

The contract period is 2 years. 24 staffs are engaged in this service in the hospital which consists of 15 staff for guiding for patients and 9 staff for technical service. Technical service is building maintenance service for the pipes and air conditioners. The spare parts are procured by the hospital. Malfunction of the facility can be checked by the PC and monitored in a special room.

(4) Situation of the Facility

	
<p>Emergency Entrance</p>	<p>Ambulance</p>
	
<p>Resuscitation Room</p>	<p>Reception Desk</p>
	
<p>Chemotherapy Room</p>	<p>Ward</p>





Source: Taken by Survey Team

Figure-33 Facility of Aydın Atatürk National Hospital (photos)

## **CHAPTER 4. PROJECT PLAN OF AYDIN CITY HOSPITAL**

## **Chapter 4. Project Plan of Aydın City Hospital**

### **1. Policy of Project**

Based on the Pre-FS prepared by MOH, Aydın City Hospital is going to be built newly by removing and integrating the aging Aydın National Hospital and Ataturk National Hospital.

### **2. Contents of Project**

#### **2-1. Number of Hospital Beds**

New hospital has 800 beds.

#### **2-2. Contents of Diagnostics and Treatment**

The new hospital is planned as a general hospital covering all diagnostic and treatment departments of surgery and internal medicine, but excluding pediatrics, obstetrics & gynecology and dentistry. The medical practice area is residents from Efeler City which includes patients from Aydın National Hospital and Ataturk National Hospital. Furthermore, the new hospital shall receive emergency patients and critically ill referral patients from Aydın Province and function as one of the optimal level hospitals in the area.

#### **2-3. Organization and Departments**

Based on the Pre-FS prepared by MOH, the personnel allocation by occupation of the new hospital is planned as 250 specialized doctors, 39 general doctors and 561 nurses as summarized in below table. A total of 1,861 personnel are allocated. Staffs that will be employed by SPV are not included in this figure.

**Table-31 Personnel Allocation by Occupation and Salary (TL)**

Occupation	No. of Personnel	Salary	Total Salary
Hospital Administrator	1	5,000	5,000
Hospital Director	1	5,000	5,000
Deputy Hospital Director	3	1,700	5,100
Manager	3	1,600	4,800
Deputy Manager	6	1,000	6,000
Specialized Doctor	250	5,000	1,250,000
General Doctor	39	4,000	156,000
Dentist	2	4,000	8,000
Pharmacist	14	2,000	28,000
Nurse	561	1,300	729,300
Midwife etc.	92	1,300	119,600
Medical Clerk	319	1,300	414,700
Laboratory Technician	76	1,300	98,800
Radiology Technician	72	1,300	93,600
Anesthesia Technician	55	1,400	77,000
Nutritionist	7	1,400	9,800

Occupation	No. of Personnel	Salary	Total Salary
Clinical Psychologist	7	1,300	9,100
Social Worker	5	1,400	7,000
Staff related to Social Work	96	1,200	115,200
Engineer	6	1,200	7,200
Technician	25	950	23,750
Clerical Staff	11	700	7,700
Menial	71	650	46,150
Driver	7	700	4,900
Paramedic	31	1,300	40,300
Other Staff	90	900	81,000
Physical Therapist	11	1,500	16,500
Total	1,861	50,400	3,369,500

Source: Survey Team

#### 2-4. The Prediction of Future Patients

As previously described, Aydın City Hospital will be established by integrating 2 existing hospitals. The new hospital will be located in agricultural land far from the current urban district, thus access to the new hospital by Efeler residents is expected to be inconvenient compared to the existing 2 hospitals which are located in the city. Regarding hospital access, the establishment of roads, public transportation and other infrastructure were mentioned at the MOH interviews. Also, car parks which are insufficient in existing hospitals located in the city are well secured, thus effects on hospital access for patients are considered as temporary. Furthermore, in hospital removal-and-integration cases in Japan, due to the free access to healthcare facilities, there is a general trend for patients to concentrate to new hospitals equipped with new facilities and advanced technology. Therefore, number of future patients were predicted based on the assumption that effects on patient regarding relocation of new hospital to the suburbs is limited and the new hospital shall receive equivalent or larger number of patients than the existing 2 hospitals.

### (1) Inpatients

Bed occupancy rate is 91.01% in Aydın National Hospital and 80.87% in Ataturk National Hospital respectively. In case the new hospital has 800 beds, it is assumed that bed occupancy rate is about 90% and the number of inpatients is about 700 per day. Under the current health insurance system in Turkey, there is free access to healthcare facilities. Thus the target demographic is open to all levels.

The following summarizes the review results of number of inpatients and bed scale from the perspective of estimation of medical demand. The estimated number of inpatients and bed scale of the new hospital was calculated by first estimating the medical demand of entire Aydın Province then using the share percentage of the existing 2 hospitals of Aydın Province.

Although the sum of inpatients of Aydın Province was available, the data per disease was only available for Turkey, and not by Province. Thus we multiplied the sum of inpatients of Aydın Province with the percentage of discharged patients of Turkey according to each ICD10 disease, in order to estimate the number of inpatients of Aydın Province per ICD10 disease in 2013, as summarized in the below figure.

The medical demand per disease is greatly influenced by population structure, but because the existing 2 hospitals do not collect data according to patient age group, as an alternative measure, we multiplied the Japanese percentage of patient age group per disease to the estimated number of patients per disease of Aydın Province in 2013, in order to calculate the number of patients per disease by age group of Aydın Province. The percentage of number of patient per disease by age group of Aydın Province was then multiplied to the future estimated population by age group, in order to calculate the future estimated extended inpatient number of Aydın Province, as summarized below. The future estimated population by age group of Aydın Province was calculated by converting the change of increase rate and age structure of the future estimated population of Turkey (Source: United Nations World Population Prospects 2015), onto the population of Aydın Province.

In the estimation of the below figure, the increase rate of diseases of circulatory system is the highest in Aydın Province. The new hospital is planned to place emphasis on circulatory system diseases, thus the medical function is considered as appropriate.

**Table-32 Number of Future Estimated Inpatients/day in Aydın Province**

ICD-10	Turkey	Number of future estimated inpatients/day in Aydın Province				
	Percentage of discharged patients (2013)	2013	2020	2025	2030	2013-30 Increase Rate
Infectious and parasitic diseases	3	60	72	82	98	61.5%
Neoplasms	4	76	90	105	124	63.4%
Diseases of blood and blood-forming organs	2	33	39	44	52	56.6%
Endocrine, nutritional and metabolic diseases	3	53	63	73	87	66.1%
Mental and behavioral disorders	1	27	32	36	42	54.0%
Diseases of nervous system	2	35	42	48	56	61.0%
Diseases of eye and adnexa	4	84	99	116	139	66.2%
Diseases of ear and mastoid process	1	12	14	15	18	51.8%
Diseases of circulatory system	8	154	188	219	265	71.8%
Diseases of the respiratory system	13	250	301	345	414	66.0%
Diseases of the digestive system	11	214	254	293	347	61.6%
Diseases of the skin and subcutaneous tissue	3	58	70	81	97	65.6%
Diseases of the musculoskeletal system and connective tissue	4	86	102	119	142	65.2%
Diseases of the genitourinary system	8	158	189	220	263	66.5%
Pregnancy, childbirth and the puerperium	12	232	235	235	236	1.6%
Certain conditions originating in perinatal period	2	45	41	39	38	-14.9%
Congenital malformations, deformations and chromosomal abnormalities	1	14	14	15	15	11.0%
Unclassified	3	66	79	91	109	64.1%
Consequences of external causes	5	105	126	145	173	64.7%
Other Diseases	10	189	209	226	252	33.1%
<b>Total</b>	<b>100</b>	<b>1,952</b>	<b>2,261</b>	<b>2,547</b>	<b>2,967</b>	<b>52.0%</b>

Source: Turkey MOH "Health Statistics Yearbook 2013", Japan MOHLW "Patient Survey of 2011", United Nations "World Population Prospects 2015" and prepared by Survey Team

Aydın Province is approximately 30%. We multiplied the above calculated future estimated inpatient number of Aydın Province with the share percentage of the 2 hospitals in order to calculate the future estimated patient number/day of the new hospital (a) as shown in below table.

In 2013, the average length of hospital stay of both hospitals was 4.7 days, and is longer than the average length of hospital stay of Aydın Province 3.7 days. Therefore, in order to expect shorter average length of hospital stay in the future, we divided the future estimated patient number with the average length of hospital stay of 2 hospitals, in order to calculate the future estimated actual inpatient number/day (c).

**Table-33 Future Estimated Actual Inpatient Number/day of Aydın New Hospital**

			2013	2020 (est)	2025 (est)	2030 (est)
Future estimated patient number/day	Person	(a)	643.7	745.6	840.0	978.6
÷						
Average length of hospital stay	Day	(b)	4.7	4.7	4.7	4.7
↓						
Actual inpatient number/day	Person	(c=a÷b)	135.6	157.1	177.0	206.2

Source: Survey Team

Then, we increased and decreased by 0.5 days the current average length of hospital stay 4.7 days, and multiplied it with the future estimated actual inpatient number in order to calculate the extended inpatient number per day of the new hospital (d) as shown in below table.

**Table-34 Future Estimated Extended Inpatient Number/day of Aydın New Hospital**

Length of hospital stay			2013	2020 (est)	2025 (est)	2030 (est)
5.7 days	Persons	(d=c×days)	773	895	1,009	1,175
5.2 days			705	817	920	1,072
4.7 days			637	738	832	969
4.2 days			570	660	743	866
3.7 days			502	581	655	763
3.2 days			434	503	566	660

Source: Survey Team

Finally, the estimated inpatient number for each case of hospital stay was divided by the expected hospital occupancy rate 90%, in order to calculate the required bed scale of the new hospital. If we shorten the length of hospital stay of the new hospital to around the average length of hospital stay of Aydın Province, approximately 3.6 days, the required bed scale is

considered as roughly 800 beds.

**Table-35 Bed Scale of Aydın New Hospital (Bed Occupancy Rate 90%)**

Length of hospital stay			2013	2020 (est)	2025 (est)	2030 (est)
5.7 days	beds	(e=d÷90%)	860	995	1,121	1,306
5.2 days			784	908	1,023	1,192
4.7 days			709	821	925	1,077
4.2 days			633	734	826	963
3.7 days			558	646	728	848
3.2 days			483	559	630	734

Source: Survey Team

## (2) Outpatients

The number of outpatients is 858,773 in Aydın National Hospital and 781,186 in Ataturk National Hospital. In case the new hospital has 800 beds, it is assumed that the number of outpatients is 1,700,000 per year.

## (3) Relationship with nearby Hospitals

Adnan Menderes University Hospital (533 beds, bed occupancy rate 80.9%: 2013) which has a similar scale and level hospital as the Aydın City Hospital is located in Efeler city. This hospital together with the existing 2 hospitals is currently responsible of the healthcare of this area. The bed occupancy rate is fairly high, and the city is expecting a population increase, thus after the establishment of the new hospital, it is unlikely for patients to concentrate to this university hospital and have a significant effect on the number of patients of the new hospital.

At the interview with Aydın DOH during the survey, establishment plans of competitive hospitals in this area were not confirmed, thus the new hospital shall receive patients from the existing 2 hospitals and considered to have plenty of demand.

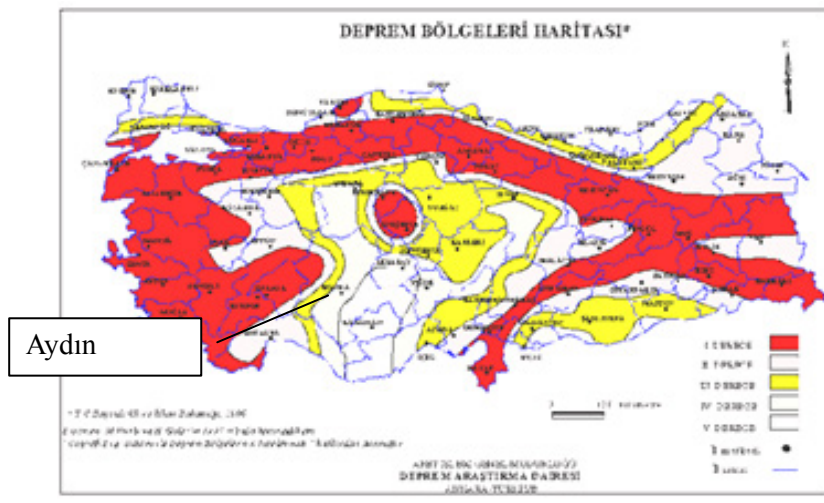
## 3. Facility Planning

### 3-1. Environmental Study

Aydın has a warm climate all the year around, belonging to Mediterranean climate. But sunlight is strong in most of the summer.

Aydın is on a seismic belt and has “Level 1” seismic risk according to Seismic hazard map of Turkey.





Source: Republic of Turkey Prime Ministry Disaster and Emergency Management Presidency (AFAD)

Figure-34 Seismic Hazard Map of Turkey

### 3-2. Construction Market Study

#### (1) Level of Construction Technology of Local Contractor

##### 1) Summary

Large facilities, including hospital, are mostly made by RC structure. Except facilities such as airport and factory, steel structured large facilities are few in Turkey.

As for concrete work, Turkish contractor cast concrete for wall and slab separately, that is not common methodology in Japan. Japanese contractor cast concrete for column, wall, and slab together.

Scaffold and curing sheet are not commonly used in Turkey. Construction flow of Turkey is different from that of Japan. In Turkey, exterior work and interior work start after completion of whole building concrete work. On the contrary, in Japan, exterior work and interior work starts soon after the concrete work of each floor, not waiting for the completion of whole building concrete work. The construction flow of Turkey seems to be less efficiency.

External material of Turkey is almost similar to that of Japan. However, since stone is not expensive in Turkey, many façades in Turkey are covered with stone such as marble, which is expensive material in Japan.

National hospital in Turkey is not constructed in high quality specification. On the other hand, many private hospitals specified high construction quality. In case PPP hospital require high quality specification same as private hospitals, price of construction would be raised.



Source: Taken by Survey Team

Figure-35 Construction Site in Turkey

	
<p>Entrance of outpatient consulting room</p> <ul style="list-style-type: none"> <li>• Electric information board on the wall</li> <li>• Wooden door</li> <li>• Small wooden door on the left side is for pipe shaft.</li> <li>• Stone flooring</li> <li>• Paint finish wall</li> </ul>	<p>Corridor of inpatient ward</p> <ul style="list-style-type: none"> <li>• Long sheet flooring</li> <li>• Spandrel wall is protected by wooden panel</li> <li>• Paint finish wall</li> <li>• Wooden door for patient room</li> <li>• Paint finish ceiling with aluminum sound absorptive panel</li> </ul>
	
<p>Patient room</p> <ul style="list-style-type: none"> <li>• Long sheet flooring</li> <li>• Floor sheet rolling up</li> <li>• Paint finish wall (Sheet finish for some part)</li> </ul>	<p>Lavatory of patient room</p> <ul style="list-style-type: none"> <li>• Tile flooring</li> <li>• Tiling finish wall</li> <li>• Paint finish ceiling</li> </ul>



Source: Taken by Survey Team

Figure-36 Interior of Aydın Maternity and Child Health Hospital

	
<p>Corridor in outpatient area</p> <ul style="list-style-type: none"><li>• Stone flooring with braille block</li><li>• Paint finish wall with hand rail</li><li>• Paint finish ceiling with aluminum sound absorptive panel</li></ul>	<p>Emergency room</p> <ul style="list-style-type: none"><li>• Tile flooring</li><li>• Paint finish wall</li></ul>

Source: Taken by Survey Team

Figure-37 Interior of Aydın Nazilli Hospital

	
<p>Expansion joint (Aydın Maternity and Child Health Hospital)</p> <ul style="list-style-type: none"> <li>• Span of expansion joint is much shorter than that in Japan.</li> <li>• Main purpose is for thermal expansion</li> </ul>	
	
<p>Water tank (Aydın Maternity and Child Health Hospital)</p> <ul style="list-style-type: none"> <li>• Water tank is placed beneath the ground</li> <li>• Check up on all 6 surface is not required.</li> </ul>	<p>Solar panels on roof (Aydın Maternity and Child Health Hospital)</p> <ul style="list-style-type: none"> <li>• Solar panel is for hot water</li> <li>• Solar panel is popular in Aydın</li> </ul>

Source: Taken by Survey Team

Figure-38 Structure and MEP Work in Hospital

## 2) Outline of the Referential Hospitals

### a) Ankara Atatürk Hospital

- Location: Ankara
- Outline: 417beds (ICU:52beds)

12 Operation rooms (Additional room for robotic surgery)

503 medical staff (MOH employee)

291 fulltime physician (MOH employee)

No. of outsourced staff is unknown.

This hospital has educational function as a university hospital of Yildirim Beyazıt University from March 2011

- Clinical Department: Endocrinology and Metabolism Internal Medicine, Hematology, Cardiovascular Medicine, Neurology, Nephrology, Gastroenterology, Respiratory, Infectious diseases Internal Medicine, Oncology, Rheumatology, Psychiatry, Surgery, Neurosurgery, Orthopedics, Gynecology, Ophthalmology, Dermatology, Plastic Surgery, Urology, ENT, Radiology, Rehabilitation, Anesthesiology, Heart Disease Department, Family Medicine Clinic
- Note: Specification of such as interior and MEP equipment is not high. Required specification and its cost of this PPP project shall be considered.

b) American Hospital

- Name: American Hastanesi (American Hospital)
- Location: Güzelbahçe Sokak, No20 Nişantaşı 34365 Istanbul
- History: Turkey's first private hospital (in 1920 founded)  
Koç Foundation acquired in 1995 and renovated
- Outline: 300 beds (ICU:60beds)  
13 Operation room  
1,000 medical staff  
200 fulltime physicians  
American Hospital has its own nursing school.
- Area for renovation: Whole area  
(Room layout, Facility equipment update, Medical equipment update)
- Clinical Department: Endocrinology/Metabolism Internal Medicine, Hematology, Neurology, Kidney Internal Medicine, Cardiology, Gastroenterology, Respiratory Internal Medicine, Infectious Diseases Internal Medicine, Psychiatry, Surgery, Respiratory Surgery, Neurosurgery, Orthopedics, Gynecology, Pediatrics, Ophthalmology, Dermatology, Plastic Surgery, Urology, ENT, Radiology, Rehabilitation, Anesthesiology, Dental Oral Surgery, Comprehensive Emergency Department, Department of Pathology
- Note: Compare to other national hospitals, quality of specification of interior and MEP equipment is high. Also space of building has allowance.

c) Liv Hospital

- Name: Liv Hastanesi
- Location: Ahmet Adnan Saygun Cad.Canan Sok. No:5Ulus-Beşiktaş / İstanbul, Turkey
- Outline: 163 beds (ICU:22 beds)  
8 Operation room  
No. of medical staff is unknown.  
Hospital is for wealthy people.
- Clinical Department: Endocrinology/Metabolism Internal Medicine, Neurology, Nephrology, Gastroenterology, Surgery, Neurosurgery, Orthopedics, Cosmetic surgery, Heart Disease/Heart Surgery, Hair transplant, Gynecology, Pediatrics, Ophthalmology, Dermatology, Urology, ENT, Radiology, Rehabilitation, Dentistry Oral Surgery, Comprehensive Emergency Department, Department of Pathology, Bariatric Surgery, Cancer Treatment, Dialysis, Infertility Treatment, Stem Cell Therapy
- Note: Patient room is single use. Interior and MEP equipment are high quality. Also space of building has allowance.

Table-36 Hospital Architecture

	Ankara Ataturk Hospital	American Hospital	Liv Hospital
Finish	(Ceiling) Rockwool acoustic boards (Wall) Exterior: Oil paint on repaired concrete Internal: Emulsion paint (Flooring) Stone, long sheet  Stone flooring is for easy maintenance, but it is not comfortable to walk through.  Long sheet was not well installed. Peelings and bulges are observed.	(Ceiling) Louver (Wall) Panel, Wood (Flooring) Antibacterial long sheet Installed well	(Ceiling) Louver (Wall) Panel, Wood (Flooring) Antibacterial long sheet Installed well
Equipment	Although, natural light is available through window and void, illumination is sometimes not sufficient due to weather condition.  Ventilation is not adequate for the number of patients in waiting area. Air circulation is inappropriate condition.	Sufficient illumination, ventilation are secured	Sufficient illumination, ventilation are secured
Exterior Wall	Insulated glass Oil paint on repaired concrete Spray tile	Insulated glass Curtain wall	Insulated glass Curtain wall

Source: Survey Team

## (2) Labor Cost and Material Cost

Unit cost of labor per an hour in Turkey is published, and it can be compared with unit cost of labor of Japan, supporting work hour as 8 hour per a day. As described in following table, unit cost of labor in Turkey is equal to about one-tenth of Japanese one.



**Table-37 Comparison of Main Unit Cost of Labor (JPY)**

Labor	Amount	Unit	Turkey	Japan
Carpenter	1	day	2,399	22,800
Mason (Stone)	1	day	2,399	23,100
Mason (Tile)	1	day	2,399	21,700
Indoor Handyman	1	day	2,399	21,300
Plasterer	1	day	2,399	22,300
Glazier	1	day	2,399	19,800
Plumber	1	day	2,399	19,500
Driver (General)	1	day	2,436	16,700
Driver (Special)	1	day	2,773	20,200

Source: 2013 MOEU Cost Book “Yılı inşaat ve tesisat birim fiyatları”,  
 Construction Cost December 2013 (Tokyo)

Besides, in Turkey, cost of steel stock is rising recently, and RC construction is more popular than steel construction (RC construction's adoption rate is 95%). Also, cost of construction materials is rising 8~12% in 2010~2013. All construction materials can be basically procured in Turkey, because steel stock and electric cable etc. are produced within the country. In comparison of unit price of materials and labor in Turkey and Japan, Turkish concrete price is about four-fifth of Japanese one, and steel price of Turkey is three-fifth of Japanese one.

**Table-38 Comparison of Unit Price of Main Construction Materials and Labors (JPY)**

Materials	Standard	Amount	Unit	Turkey	Japan
Sand for Concrete (Material Cost)	0-5mm	1	m3	2,067	3,900
Concrete (Material and Labor Cost)	21N SL=18cm	1	m3	9,384	11,980
Formwork (Material and Labor Cost)	Normal Plywood t=12mm	1	m2	4,911	4,000
Steel (Material and Labor Cost)	D10 ~ D16	1	ton	73,656	114,000
Brick Work (Material and Labor Cost)	Single Lay	1	m2	2,067	4,410

Source: Information of Cost of Construction Materials & Labors and Construction Cost

### 3-3. Hospital Facility Plan

#### (1) Related Regulations

According to MOH of Turkey, the project would be regulated especially by following standards.

- 1) Minimum Design Standards for Healthcare Facilities 2010 <MOH of Turkey, 2010, No. of MOH publication 800>

This standard specifies minimum requirement for healthcare facility design in Turkey. It covers not only architecture but also MEP works. This standard is supposed to be based on some USA standards such as AIA standard and JCI standard.

- 2) Guidelines for Planning Hospitals with Beds <MOH of Turkey, 2011>

This guideline specifies regional health service plan. Its former part addresses outline and policy on Turkish healthcare sector. In this guideline, followings 7 healthcare segments are indicated as priority development area.

- Emergency medicine
- Intensive care
- Cardiology/Cardiovascular medicine
- Palliative care
- Burn treatment
- Mental disease/Rehabilitation
- Bone marrow transplant

Its latter part addresses regional health service plan of 29 areas in Turkey.

- 3) Minimum Technical Standards in Healthcare Facilities <MOH of Turkey, 2013>

This standard is general standards for healthcare facility design. It covers wide range of topics such as ICU equipment and seismic isolation structures.

- 4) Minimum Standard for Designing and Constructing Building Structure with Seismic Isolation Structure <Directorate of Health Investment, MOH of Turkey, March 2013, Publication No. B.10.0.SYG.0.07.00.00>

This standard specifies minimum technical requirement of seismic isolation structure for facilities of “Health Transformation Program”. This standard requests that as a condition of seismic isolation structure designing, “Design firm shall verify the experience of seismic isolation designer and special knowledge”, or “Designer shall decide seismic isolation design at the time of deciding technical characteristics such as design process, load of column, parts of seismic isolation structure, technical aspect or size, etc.” Besides, this defines the analysis of earthquake risk or general rule of design as the rule and design criteria for seismic isolation technical structure designing. In addition, this describes

condition of parts, qualification of manufacturer or contractor, necessary test such as proto-type test or manufacturer test, transportation, installation, soil test, certification, periodical care or product guarantee etc.

5) Regulations on Prison Ward <Directorate of Health Investment, MOH of Turkey, March 2013, Publication No. B.10.0.THG.0.10.00.02/010-07- 40696>

This document is prepared based on the “Regulation for the guarding, transportation and medical care for criminals or prisoners in prisons” made by Ministry of Justice, and summarizes the regulation for planning prison ward for the certain size of hospitals. This regulation defines the special waiting room or ward with iron bars to prevent escaping, cautions during transportation or method of counseling with guards. From the view of architectural design, this document explains the way of lighting (prison wards also require natural light) and securement of transportation line, etc.

It is very unusual in Japan for the prisoners to come to general hospitals, but it needs special consideration as the unique requirement in Turkish hospitals.

6) Guideline of Intensive Care Unit <MOH of Turkey, issued on 20th July 2011>

This guideline was received from PPP department of MOH of Turkey as a reference of Requirement Program. This guideline classifies ICU into 3 categories, PICU into 2 categories and NICU into 4 categories. It specifies minimum specification of staffing, and service standard according to the category.

7) Guideline of Application and Procedure of Emergency Medicine of Inpatient Hospital <MOH of Turkey, issued on 16th October 2009>

This guideline was received from PPP department of MOH of Turkey as a reference of Requirement Program. Emergency medicine of hospital in Turkey is classified into 3 levels. This guideline specifies minimum requirement of the hospital such as area of ER and waiting room, available emergency medicine, number of staff, and helipad availability according to the level.

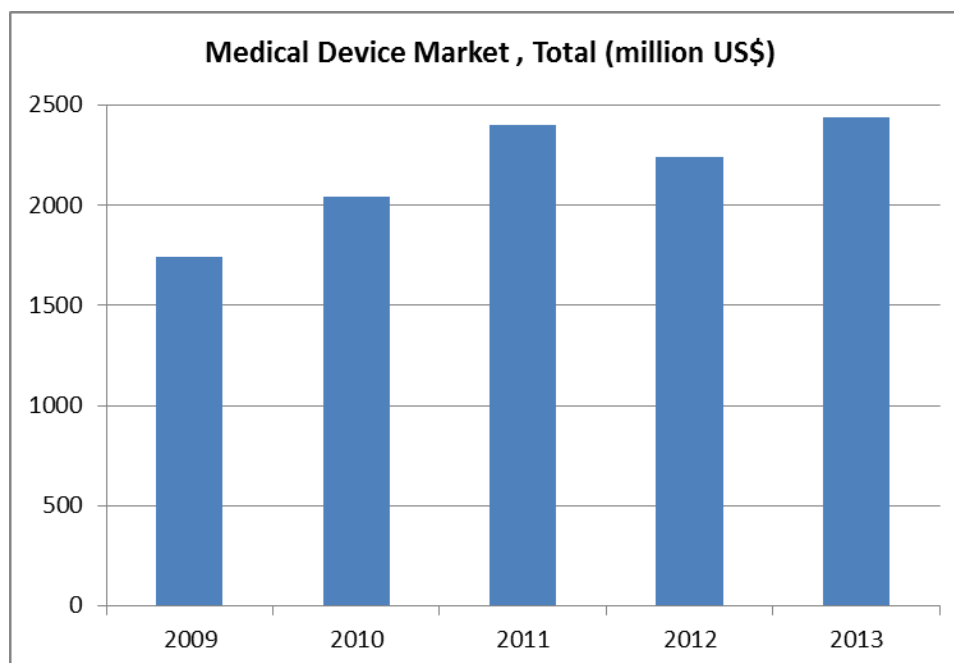
Level 3 hospitals (Aydın City Hospital is categorized as Level 3) are required to provide 24 hour advanced ER service by specialized doctor. Helipad also required on level 3 hospital. New hospital shall follow this guideline as level 3 hospital.

#### 4. Medical Equipment Plan

##### 4-1. Market Survey of Medical Equipment

In relation to procurement of medical equipment for the new hospital construction, market size, logistic situation, and after-sales services of medical equipment in Turkey were researched.

The market size of medical equipment, which is growing every year as shown in the following figure, reached 2.4 billion USD in 2013. According to a report provided by a British research company, the market size of medical equipment in Turkey ranks 21 in the world in 2013.



Source: Survey Team based on The World Medical Markets Fact Book 2013 (ESPICOM)

**Figure-39 Medical Equipment Market Share in Turkey (2009-2013)**

Breakdown of the medical equipment market size in Turkey is shown in the following table.

**Table-39 Market Size by Medical Equipment Field in Turkey**

Classification	million USD	%
Consumables	527.2	21.6
Diagnostic Imaging	472.8	19.4
Orthopedics & Prosthetics	357.3	14.7
Patient Aids	210.2	8.6
Dental Products	185.7	7.6

Hospital Furniture	62.5	2.6
Dialysis Appliances	55.7	2.3
Ophthalmic Instrument	51.8	2.1
Transfusion Apparatus	37.7	1.5
Endoscopy Apparatus	31.9	1.3
Others	444.9	18.3

Source: MOH

According to MOH of Turkey, about 85% of medical equipment in Turkey is imported from overseas and Turkish-made products remain 15%.

In order to research the situation of medical equipment distribution in each field and sustainable after-sales service, the Survey Team visited the manufacturers and the agencies. Results of the research are described as follows.

#### (1) Diagnostic Imaging Devices

Turkey has 1,142 of CT, 921 of MRI, and 4,240 of Ultrasound Diagnostic Imaging Device (US) as of 2012 (Source: MOH), which ranks within 10 in the world. The main companies in the field are foreign manufactures such as Toshiba, GE, Siemens and Philips, which occupy almost the entire market share of both public and private hospitals in Turkey. The Survey Team visited Toshiba Medical Systems Turkey and Siemens Turkey, and it turned out that the lineup of diagnostic imaging devices was not so different from Japanese ones. According to Toshiba Medical Systems Turkey, the estimated market shares on CT, MRI and Ultrasound Diagnostic Imaging Device in sales (USD base) by each manufacturer are shown in the following table. In an existing public hospital in Aydın city, CT made by Toshiba and MRI made by Siemens were installed.

Chinese companies such as Mindray and All Tech, which manufacture inexpensive MRI, US, and X-ray general devices, have advanced into Turkey. A few products are installed in Turkey. Some staffs in those Chinese companies used to be employed in other foreign companies such as Siemens or GE. Some companies commented that they cannot win Chinese companies in a bid unless the required conditions are limited.

The way of introduction of diagnostic imaging devices to public hospitals is by normal sales and outsourcing. Because contract period of outsourcing providers is 2-3 years, the device may be inherited to the new provider.

**Table-40 Market Share of CT, MRI and Ultrasound Diagnostic Imaging Device in Turkey in 2014 by Manufactures**

	Toshiba	Siemens	GE	Philips	Others
CT	41%	27%	18%	11%	3%
MRI	1%	51%	30%	18%	0%
US	25%	7%	24%	22%	24%

Source: Survey Team based on Toshiba Medical Systems Turkey's Information

The number of diagnostic imaging devices for nuclear medicine in Turkey including PET-CT and SPECT is the top rank in the world. According to POZITRON, which is the Turkish agency handling diagnostic imaging devices for nuclear medicine, the market share of PET-CT and SPECT by each manufacturer is shown in the following table.

**Table-41 Market Share of PET-CT and SPECT in Turkey by Manufacturers**

	Siemens	GE	Philips	Others
PET-CT	57%	22%	17%	4%
SPECT	43%	21%	12%	24%

Source: Survey Team based on Positron's Information

Manufacturing bases of FDG (Fluorodeoxyglucose) which is required for PET diagnosis are located in 5 spots in Turkey: Istanbul, Ankara, Izmir, Adana and Antalya. Since the facility of the manufacturing base in Izmir is old, FDG is transported from Istanbul to Aydın by air or by land.

## (2) Radiotherapy Device

Almost all Linear accelerator (LINAC) in Turkey are distributed by Elekta (Sweden), Varian (USA), and Siemens (Germany). According to Elekta, there are approximately 180 of LINAC in Turkey, and more 200 of LINAC would be in demand by 2023 in the future. Approximately 100 of LINAC are made by Varian and approximately 50 are made by Elekta out of 180 LINAC. Varian-made LINAC is targeted at high-end customers. On the other hand, Elekta-made LINAC is sold at low price as a strategy. Japanese LINAC has not been confirmed in Turkey so far.

## (3) In-vitro Diagnostic Medical Equipment

In a field of in-vitro diagnostic medical equipment, reagent, and consumables, main foreign companies already advanced into Turkey. European, American, and Japanese manufacturers

(Roche, Siemens, Abbott, Beckman coulter, Sysmex) are selling their products mainly to private hospitals which emphasize accuracy. On the other hand, Indian and Chinese manufacturers (Mindray and Erba) are selling their products mainly to public hospitals which are stressing on price. However, in the fields of bacteriological examination and pathology, a few competitors who advanced earlier to Turkey are main manufacturers such as Biomerieux, Siemens, Roche, Leica, and Sakura Finetech, irrespective of private or public.

In Turkey, claim form by accounting method in public hospitals is the mainstream. The hospitals on a payment side do not need to pay an initial cost of the device installation, and avoid loss risks about consumables and reagents. On the other hand, manufactures and pharmaceutical distributors on a proposal side take a risk to an extent and are required for price competitiveness if they participate in the field of public hospitals.

The market share of in-vitro diagnostic medical equipment is approximately in order of Roche, Abbott, Siemens, and Sysmex. Price competitive companies such as Erba and Mindray are trying to increase the share focusing on public hospitals. However those companies are expanding in a limited range due to poor accuracy and policy of agency.

(4) Hemodialysis Devices

The market share of manufacturers in the field of hemodialysis is shown in the following table, according to Nipro D.Med Healthcare which is a Turkish agency of Nipro. In Turkey, 425 of public hospitals, 405 of private hospitals, and 57 of university hospitals have hemodialysis department and there is about 52,000 of chronic hemodialysis patients. According to Nipro D.Med, since health checkup does not spread, there would be more potential hemodialysis patients. If the health checkup takes root in Turkey and hemodialysis spreads, needs of hemodialysis devices are expected to increase.

Table-42 Market Share of Hemodialysis in Turkey by Manufacturers

	Fresenius	Nipro	Baxter	B.Braun	Others
Hemodialysis device	30%	20%	8%	5%	37%

Source: Survey Team Based on Nipro D.Med Healthcare’s Information

(5) Endoscopy

Japanese flexible endoscope is spreading all over the world, and Japanese products occupy nearly 100% of the market share in the endoscope field in Turkey. Last year, Fuji Film which is the most of the Turkish market share sold 240 of their endoscope in Turkey. The market share of manufacturers in the field of endoscope in Turkey is shown in the following table, according to information by Mega Olympus which is a Turkish agency of Olympus.

**Table-43 Market Share of Flexible Endoscopy in Turkey by Manufacturers**

	Fuji Film	Olympus	Pentax	Others
Flexible Endoscope	55%	40%	5%	0%

Source: Survey Team based on Mega Olympus's Information

In the field of rigid endoscope, Carl Storz and Richard Wolf, which have a long history in Turkey, have about 70% of the market share in Turkey. Olympus, only manufacturer which sells Japanese endoscope is expected to raise their sales of rigid endoscope in Turkey.

#### (6) Bio-information Monitor

Bio-information monitors mainly include patient monitors, ECG, EEG and EMG. According to an agency of Fukuda Denshi, a top share of bed side monitor in Turkey is GE. Fukuda Denshi and Nihon Kohden advance into Turkey as Japanese manufactures and Mindray and Eden do as Chinese manufactures. Chinese manufacturers' patient monitors are inexpensive price but not adopted by high-classed hospitals due to those poor quality.

#### (7) Washing and Sterilizing Equipment

In the field of washing and sterilizing equipment which plays an important role of infection control, Western-made and Turkish-made products prevail comparatively. According to DTH, the market share of autoclave in Turkey is shown below. DTH conduct a training of handling sterilizing equipment and infection control in cooperation with MOH. Besides, DTH is doing a wide range of activities such as design of CSSD department, construction of a traceability system of surgical instrument and materials uniquely, and an outsourcing service of CSSD.

**Table-44 Market Share of Autoclave in Turkey by Manufacturers**

	Gettinge	Nuve	Steris	Others
Autoclave	30%	20%	10%	40%

Source: Survey Team based on DTH's Information

Aside from the above manufacturers, Sakura Seiki which is a Japanese manufacture concluded a sales contract with a big Turkish agency which was established in 1951. Sakura Seiki is expanding its sales and after-service of sterilize machine through the agency's network.



#### (8) Surgical Equipment

Üzümcü, which is an agency of Paramount Bed, not only sells beds made by Paramount Bed but also is a manufacturer of surgical beds, suction units, ceiling pendants, electric surgical units, and ventilators. More than 60% of the Turkish market share of Turkish-made electric surgical units and suction units are occupied by Üzümcü. However, the specification of its products is targeted at middle-end customers. Uzutech which is the Üzümcü-related company designs and installs medical gas pipes.

On the other hand, regarding products for high-end customers, Maquet which runs under Gettinge (Sweden) is advancing into Turkey, and occupies approximately 30% of the Turkish market share of surgical tables. Aside from surgical tables, Maquet and Drager have a presence in Turkey as a market leader in the field of other surgery-related equipment such as surgical lamps, anesthesia machine, etc. Both manufactures have approximately 30% of the Turkish market share respectively of Ventilators and Anesthesia machine. Both manufactures sell their products for public hospitals more than ones for private hospitals.

#### (9) Ophthalmologic Examination Device

Japanese ophthalmologic manufactures such as Canon, Nidek, Topcon, Inami, Kowa and Takagi Seiko have local agencies and sell their products in Turkey. It is recognized in Turkey that the quality of Japanese products is excellence. According to agencies of Canon and Inami, the above Japanese manufactures occupy approximately 80% of the Turkish market of ophthalmologic examination devices. Ophthalmologic devices such as Fundus camera, slit lamp, lens meter etc. are prevailing in Turkey as Japanese products.

In a field of surgical microscope, Western manufactures are advancing into Turkey. Zeiss and Leica are regarded as a market leader of the field. According to the local agency of Leica, Zeiss occupies 45-50%, and Leica does 30-35% of the Turkish market share of surgical microscopes. On the other hand, although Japanese manufacturers such as Topcon and Olympus are advancing into the Turkish market, the market share of Japanese manufacture remains 2-3%. As for Olympus, it is hardly heard about supply records in Turkey.

#### (10) After-Sales Service

According to the Turkish law No.6502 on consumer protection, 2 years of warranty and 10 years of assurance of supplying maintenance services and spare parts are basically required when a product is purchased. While contents of the services during warranty depend on contracts, the main contents are to repair malfunction of a product and to provide spare parts. The manufacturers and agencies that the survey team visited have a 24-hour call center service basically, which deal with troubles through phones. If troubles are not solved by the service, technicians who belong to each manufacture or agency deal with the troubles. Each company

whose technicians are trained in their manufactures has a tendency of focusing on their after-sales services. Regarding a supply system of spare parts, each company has their own warehouse and prepare for regular supply. Some companies outsource a logistic part to other companies in case that they have large stock beyond their capacity.

#### **4-2. Related Law**

##### **(1) Medical Equipment Law**

There is a Medical Equipment Law in Turkey No. 27957 dated June 7th 2011 applies the following three laws which are applied in EU.

- 93/42/EEC (MDD: Medical Device Directive)
- 90/385/EEC (AIMDD: Active Implantable Medical Device Directive)
- 98/79/EC (IVDD: In Vitro Diagnosis Device Directive)

The above laws, which stipulate the requirement for selling medical devices, implantable medical devices, and In-Vitro diagnosis devices, are described as medical device classification and procedures about conformity. Especially, the law requires CE marking of manufacturers as the way to verify the compatibility of the requirement.

##### **(2) Medical Equipment Permission (TITUBB)**

TITUBB, which is national database of medical equipment in Turkey, as a part of “Strengthening of Health Services Financial Management and Restructuring Project”, was started in 2004 for the purpose to access all information of products by all related persons from manufactures to customers. TITUBB provides and traces information such as specification, manufacturers, dealers, general prices of registered medical devices.

According to MOH of Turkey, one of the requirements for medical equipment in a bid is to obligate registration of TITUBB. The registration of TIUBB has on-line registration system which requires three steps, corporation registration, document registration, and medical device registration. Especially, the document registration requires CE marking as a condition. The registration procedure of TITUBB takes few months.

##### **(3) Import of Medical Equipment**

Import of medical equipment to Turkey requires speculation and approval about CE marking from Turkish standard institution (TSE) (Turkish certification authority) or the related authority. In the case of import from EU, the inspection and approval by TSE have been omissible since 2009 if those imported products have ATR (Admission Temporary Roulette) Certification and certification of origin in addition to CE.

Import of second-hand products is banned by Turkish official gazette No. 27957 (published

on 7 July, 2011).

#### (4) PPP-Related Law

The Turkish official gazette No. 6428 (approved on 21 February 2013) stipulates that 20 % of total amount of medical equipment and furniture within fixed investment shall be Turkish products. The same content is stipulated in “REGULATION ON THE CONSTRUCTION OF NEW HEALTHCARE PREMISES AGAINST LEASE AND THE RENOVATION OF EXISTING HEALTHCARE PREMISES AGAINST OPERATION OF NON-MEDICAL SERVICES AND FUNCTIONAL AREAS OF ACTIVITY”, and applied still now.

### 4-3. Medical Equipment Plan

#### (1) Development Policy

- To plan medical equipment based on the Turkish medical policy and the structure of disease in Turkey.
- To plan medical equipment with advanced medicine.
- To plan medical equipment in consideration of a maintenance management system including external backups.
- To plan medical equipment in accordance with handling level of Turkish staff.

#### (2) Medical Equipment List and Required Specification

Based on “Requirement Program” that was acquired from MOH and then referring to the medical equipment which is installed in the Japanese hospital with the same size and function as the new hospital, the draft of medical equipment list which is developed in the new hospital was made. Afterwards, comparing the list to the floor plan and the room list and coordinating through the meeting with MOH.

Similar to the medical equipment, in reference to the medical equipment which is installed in the Japanese hospital with the same size and function as the new hospital, comparing the list to the floor plan and the room list, and coordinate through the meeting with MOH.

#### (3) Consideration of Japanese Product Installation

Medical equipment which is possible to be introduced as Japanese products is shown in the following list, in consideration of status of market entry in Turkey, price competitiveness, and project profitability. As mentioned in the market survey, since Japanese flexible endoscope occupies almost 100% of the Turkish market share. Therefore there is a high possibility to introduce the flexible endoscope into the new hospital as Japanese products. Moreover,

bio-information monitors and ophthalmologic examination devices have high percentage of the Turkish market share and possible to be introduced as Japanese products. Japanese CT has comparatively high share of the Turkish market. Particularly Toshiba which puts emphasis on a sales strategy for public hospitals is highly interested in PPP hospital project, which supposedly has strong price competitiveness, and possibly introduce its products into the new hospital as Japanese products.

Japanese medical equipment which has an advantage comparing to foreign one is shown in the following table. By a further analysis in the second field survey, Japanese product will be arranged in consideration of quality, after-sales service system, price competitiveness, market situation in Turkey, profitability of this project, etc.

Table-45 Superior Japan-Made Medical Equipment in Turkey

Medical Equipment	Advantage	Japanese Manufacturer
CT	Radiology Imaging technologies including the world's only 640-slice CT	Toshiba
Flexible Endoscope	Advanced optical technology, high discrimination ability of lesion by light other than visible light	Olympus Fuji Film Pentax
Patient Monitor, ECG	High sensor technology Widely used as the world standard	Nihon Kohden Fukuda Denshi
Sample Testing Device (Hematology, Urology)	High processing capacity, High expandability such as connecting with related machine	Sysmex
Sample Testing Device (Pathology)	Pretreatment and analysis with high accuracy and high function	Sakura Finetech
Ophthalmologic Equipment	Optical technology and image processing technology	Nidek Inami Topcon

Source: Survey Team

#### (4) Procurement Plan

Procurement of the medical equipment on this project is divided into one part procured by fixed investment (i.e. medical equipment that the hospital operates) and another part procured by operation service (i.e. medical equipment that the service provider of SPV operates). Procurement of the medical equipment is planned in consideration of import regulations, PPP-related law, and marketing permissions of medical equipment.

Regarding transportation plan, procurement routes are divided roughly by 3 ways. One is the procurement from Japan. The second is from third countries which include mainly the Western countries. The third is from Turkey as the PPP-related law stipulates that more than 20% of total amount of medical equipment and furniture shall be Turkish products. Within the above ways, the procurement from Japan which is considered as the longest transportation section is a transportation by sea from the Kobe port or the Yokohama port with containers and unloading in the Izmir port which is the main port which is the nearest one from the Efeler city. There are a few companies providing transportation services between the Kobe port and the Yokohama port, and the Izmir port. Sea transportation takes 1.5 months to 2.0 months. After unloaded in the Izmir port and passed through the custom, the containers are transported by special trucks for containers through route 31 with the distance of approximately 120 km. The land transportation takes approximately 1.0 month including import custom procedure and the inspection of imported products.

Procurement of medical equipment on the project is separated by the way of fixed investment (medical equipment operated on the hospital) and of operation service (medical equipment operated by service providers contracted with SPV). Procurement of medical equipment is planned in consideration of the import regulation, PPP-related law, and medical equipment distribution license as described above.

#### **4-4. Maintenance Management Plan of Medical Equipment**

##### (1) After-Sales Service System (Maintenance system, Supply system of consumables and spare parts)

Maintenance and supply of consumables and spare parts on this project are provided by the service providers on the SPV side. Provision of after-sales service is separated as medical equipment procured in the fixed investment and procured by service providers contracted with SPV. Maintenance service of medical equipment procured in the fixed investment is conducted on the basis of the requirement standard of “other medical supporting service” and “Furniture service” within 19 services in “schedule 14 Service Requirement” which is attached to the contract. On the other hand, maintenance of medical equipment procured in operation service is conducted on the basis of requirement standard of each operation service in “schedule 14” similarly.

## (2) Medical Equipment Renewal Plan

Renewal plan of medical equipment is separated as medical equipment procured in the fixed investment and procured by service providers contracted with SPV. The medical equipment procured in the fixed investment is basically renewed every 10 years. A market research based on the renewal procedure stipulated in a contract before the renewal, appropriate medical equipment is procured on the basis of a result of the market research. Since medical equipment procured by service providers contracted with SPV does not set a renewal cycle, SPV is required to renew for an appropriate period in order to meet the required standard. Besides, there is a market research system to verify and review service provider itself every 5 years.

## 4-5. Operator Training Plan

In order to allow medical staff to operate and to handle medical equipment, the manufacturers conduct operation guidance to hospital staff for medical equipment which is procured in fixed investment, when new medical equipment is installed. On the other hand, for medical equipment procured in the operation service, each service providers train their own staff for the purpose to conduct the training based on the requirement standard of each operation service work stipulated in “schedule 14” which is attached to the Project Agreement.

## 5. IT System

### 5-1. Market Analysis of Hospital IT System

#### (1) Current Situation in the Existing National Hospitals

Although HIMS of national hospitals in Turkey has been ordered by each hospital, currently each province has its PHU which requests tender for all hospitals in a lump. Basically each hospital uses servers or equipment procured with their own budget and IT system vendor installs software selected through tender process. Generally, a tender is taken for each 3 years, and if a vender is substituted, the former vendor withdraws with their software.

IT system installation and transition process in a national hospital has 3 steps. The first step is the tender evaluation, the second is the staff training, and the third is commissioning. The system will be installed after these 3 steps. Generally it takes about 4 months to complete these 3 steps, and it takes about one year to transfer from the old system to the new system completely.

#### (2) Characteristics in the Tender Process of Hospital IT System in Turkey

In Turkey, it is required to develop a flexible system in order to respond to frequent changes in rules (modification in standard or guidelines)

For example, one of the national hospitals has 10 SEs allocated inside hospitals. 5 of them are coming from the software vendor to correspond 40 to 50 modifications in every month at the site.

### (3) Number of Hardware in the Reference Hospital

A national hospital with 1,200 beds has 1,600 terminals being used by 3,000 staff. They have prepared one terminal for one doctor and one terminal for every 7 to 8 nurses. No terminals are available for the patients.

The hospital firstly introduced IT system in 2005, and they procured 7 – 800 terminals and software with 200 million USD at that time. Generally, they procure the hardware in a bulk, and pay monthly for software as the usage fee. From that time, software vendors have been replaced twice, and they pay 20 thousand USD per month for the software. It is 0.3 to 0.5 % of the annual revenue of the hospital (annual revenue is less than 100 million USD) and this is the general estimation of investment for hospital IT systems in Turkey.

### (4) Operation in the Existing Hospitals

In the example reviewed during the survey, an outpatient visits the reception at first with his/her unique national ID number and receives a reception card. The card shows department of examination, target time, number, bar code, etc. and the patient receives doctor's consultation at the exact time.

Examination request from polyclinic is ordered by a doctor through the system. However, only imaging request needs reservation by the patient him/herself and he/she will visit the imaging department with the reservation card.

Although the hospital has a hospital IT system, the reception and waiting area is very narrow and very crowded even though there are electronic boards, LCD display or patient call in several places.

Also, they are still using paper medical records in the nurse stations at ward, and it seems complete paperless system has not been installed yet.

It should be noted that this hospital was recommended from MOH as one of the best hospitals to refer IT system in Turkey.

## 5-2. Related Laws and Policies

According to the requirements of the projects already tendered, it is confirmed that they are requesting to fulfill the functions regarding 3 items below in the national hospitals.

HASTANE BİLGİ YÖNETİM SİSTEMLERİ ALIM KILAVUZU: Specifications related to



## HIMS

<http://www.e-saglik.gov.tr/belge/1-33812/sagliknet-dokumanlari.html>

GÖRÜNTÜ ARŞİVLEME VE İLETİŞİM SİSTEMİ (PACS) ALIM KILAVUZU:  
Specifications related to PACS

[http://www.istanbulsaglik.gov.tr/w/mev/mev\\_gen/gen\\_bilgi\\_islem/PACS\\_RBS\\_V10.pdf](http://www.istanbulsaglik.gov.tr/w/mev/mev_gen/gen_bilgi_islem/PACS_RBS_V10.pdf)

2008 YILI BİLGİSAYAR, ÇEVRE BİRİMLERİ, AĞ, DEPOLAMA, YEDEKLEME ve  
GÜVENLİK CİHAZLARI ALIM KILAVUZ: Specifications related to HW

[http://www.istanbulsaglik.gov.tr/w/mev/mev\\_gen/gen\\_bilgi\\_islem/Donanim\\_2008\\_V50.pdf](http://www.istanbulsaglik.gov.tr/w/mev/mev_gen/gen_bilgi_islem/Donanim_2008_V50.pdf)

Turkey has a system called saglik.net used nationwide. This system was introduced in 2000s, and created to gather standardized data coming from the systems of several vendors in the hospitals in the country. This system requests all the systems to be able to connect to the saglik.net t. However, it is said that the gathered data is not used effectively until now.

Saglik.net

<http://www.e-saglik.gov.tr/ana-sayfa/1-33795/20150302.html>

In addition, Turkey has a system called MEDULA to share the information of medical fees online with SGK under the national social security system. Each hospital IT system is required to be connected with MEDULA, which shall be considered as another system requirement.

### 5-3. IT System Planning

#### (1) Policy

Since the specifications described in the requirement of the preceding projects are made for several hospitals and hardware and software are not made for the specific hospital, it is required to develop specific IT system plan by SPV with reference to the laws or regulations mentioned above.

Generally, the policy of system development is as follows.

1. There are 3 codes to be generally utilized; CD-10, TITUBB code and SUT code (MEDULA (accounting system of SGK)). (International codes will be considered in the future.) Connect with Saglik.net is mandate.

2. As it takes one year from selecting IT system vendor to starting operation in Turkey (including design, training, or commissioning), the procurement process starts two years advance from opening hospital to prevent obsolescence.

## (2) Service Requirements

The preceding projects include IT as a part of operational services in the service requirement standard. The main requirements are as follows.

- Provide 24hours/365days services
- Establish a system that can cover all the operational flows and processes in a hospital and evaluate them, taking into consideration the future updates.
- Achieve paperless operation
- Control access authorization for security
- Keep data security and accessibility, and accuracy/consistency
- Compatible with national/international codes and regulations, as well as change in the related regulations
- Connected to MEDULA, saglik.net, etc. established by MOH
- Includes procurement, installation, supply and establishment of all the systems, maintenance, necessary equipment, communication facility, consumables, etc., as well as allocation of necessary human resources
- Obtain necessary approval and license for the usage of software and hardware
- Transfer the data from the old hospital
- Conduct necessary test for operation
- Conduct simulation and presentation for users before hospital open, and make necessary revision based on improvement suggestion
- Conduct basic operation training for users continuously to maintain the skills of users
- Establish monitoring system and report periodically
- Enable patients to access their own medical information through website with necessary security measure as far as legally accepted
- Establish information sharing system among staff and patients by PDA
- Provide hospital staff with portal website where they have access to personal information securely

The government is responsible for data input and cost for the necessary Internet.

## (3) Scope of Function

The IT system is required to have the following modules. Some operational services are also required to be compatible with IT system or operated by IT system, so it is necessary to establish the IT system in coordination with other services.

Table-46 Required Modules

Information desk module
Patient record module
Central (Turkish MOH Central Doctor Reservation System) and regional reservation module
Outpatient module
Inpatient module
Pharmacy information system
Treatment ordering module
Laboratory information system
Radiology information system
Emergency management system
Material management system (for stock, inventory, procurement and fixed asset)
Financial management system (patient billing, accounting, etc.)
Nuclear medicine information system
Nursing management system
Surgical operation module
Dental module
Dialysis module
Medical committee module
Medical record storage module
Radiotherapy and chemotherapy information system
Oncology information system
Blood bank module
Nutrition module
Medical equipment management module
Human resources management module
Statistics and report module
Sterilization module
Housekeeping and laundry module
Document control system module
Telemedicine module
Medical research module

Source: made by survey team based on the requirement standard of the preceding projects

#### (4) Requirement of Hardware and Software

##### 1) Hardware

This project shall follow the below hardware requirements by MOH. It is necessary to obtain the government approval upon installation of the hardware. The hardware shall be equipped with security, wired or wireless Internet access, etc., according to related regulations.

- Servers necessary for system operation
- PC
- Printer
- Scanner
- Barcode/ QR code/ Smart card/ RFID reader
- Active network equipment
- Operation system including wireless adapter necessary for wired and/or wireless infrastructure
- Database system
- Antivirus/ firewall application
- Mobile infrastructure
- (computer) kiosk (\*to be used by inpatients or visitors for guidance)
- Visualization/ information display
- All the necessary consumables, spare parts, etc.

##### 2) Software

The requirements of software are as follows.

###### a) Core system Functions

- Compatible with the three standard specifications (mentioned above)
- Can record basic information such as patient data, reservation, patient visit, discharge, transfer, etc.
- Can be electronic medicine and/or other data recording infrastructure instead of paper media
- Includes the following system/ function:
  - ✓Department systems including clinical and administrative departments
  - ✓Comprehensive system that covers hospital operation activities such as human resources, accounting, patient billing and ledger
  - ✓Reporting of patient and other data
  - ✓Material management system

- ✓File management system
- ✓Call center
- ✓PACS
- Compatible with business intelligence and judgment support system (cost/ budget analysis, income/ expenditure analysis, patient service quality analysis, efficiency analysis, scientific medical research and/or application analysis, etc.)
- Compatible mobile application

b) Basic Features

- The system shall be in Turkish, and data order and comparison can be sorted in Turkish alphabet.
- The system shall be real-time, online, integrated information management system covering all the clinical departments.
- Each module shall be able to be added, deleted, linked, and independent, while using consistent patient data.
- The system shall be able to share information among modules.
- The system shall be parametric and flexible to addition of units or equipment.
- Similar functions shall be able to be used by the same menu, instruction, key or combination of keys among all the modules as much as possible.
- The system shall have error alert to minimize the users' error. The system shall be able to set different scope of functions according to user authority.
- Data input shall be able to be done according to international classification (ICD-10, CPT, ATC, GMDN, etc.) with barcode/ QR code/ RFID, image data, scanner, etc.
- The system shall have convenient graphical user interface (GUI). The system shall be designed to be appropriately compatible with international standards (click with mouse), consistent, easy to use and remember. The system shall also support mobile PC GUI (touch panel).
- The system shall be able to store image data, scanned data, X-ray image data, audio and video files. These data shall be linked to types, medical and other records, with retrievability and same visuality.
- The system shall operate for 24hours/ 7 days a week even during maintenance with backup system.
- The system shall be compatible with internationally accepted health information codes (HL7, CPT-4, ICD-10, ATC, GMDN, DICOM).
- Service and material codes shall be based on national/international code system.
- The system shall have high security and no access shall be permitted without authorization. The system shall be able to monitor users' authority to access various data. The system shall be able to monitor which users and terminals record or modify the data in the system.

- The security and reliability of data shall be secured.
- The past data shall be used for a certain period even after system update.
- The system shall have comprehensive audit system which enables the system administrator to record all the processes conducted by users and audit the state before/after modification. Every kind of data recorded in the system and produced by the system shall be attributed to the government. Personal information shall be secured and no government officials' or other personal information shall be used unless it is permitted by law.
- Medical information shall be safely communicated among necessary personnel, and compatible with electronic signatures and the data security standard approved by the government.
- Radiogram interpretation and other diagnostic reports shall be able to be input as audio data and confirmed afterwards. The system shall be integrated with RIS.
- The system shall be able to communicate data with internal and external systems through the Internet or intranet. The system shall have open system design for the connection and comply with internationally accepted standards (HL7, ASTM, XML, DICOM, Web service, etc.).
- PACS shall be compatible with international health information science standard and have good performance in similar capacity hospitals. It shall use high quality images from modalities including ultrasound, MRI, PET, CT, endoscope, mammography, etc.
- Storage capacity of PACS shall be according to connected modalities and data size of images to be taken.
- The system shall be flexible about additional devices.

#### (5) Opportunity for Japanese Products

As mentioned above, the Turkish government stipulates the unique basic requirements and national standards for establishment of IT system. All the systems are required to be in Turkish, which makes it difficult for foreign companies to enter the market. In addition, the fact that these regulations are often changed and updated makes it more difficult for Japanese companies to enter the market.

In addition, Japanese companies have limited know-how in some field compared to Turkish companies. For example, in Turkey, standardized data are nationally collected, patient profiles are confirmed by national ID, and web application is often used. These technologies are not introduced or rarely used in Japan.

For Japanese companies to enter such a market, it is indispensable to cooperate with Turkish influential vendors. Therefore, Japanese companies must start from finding a supportive local partner. However, Japanese IT system is still competitive in some points to understand patient conditions with intuition, to support team medicine (critical path, NST: Nutrition Support Team

management, decubitus management), to secure patient safety (patient identification using barcode or IC), or to protect personal information and security. Such Japanese competitiveness shall be introduced into the Turkish market with support by Turkish local partners. Also, Japanese technology in collecting and analyzing big data can be utilized for the analysis of patient data nationally collected in Turkey.

Regarding supply of hardware, Japanese products are already prevailing in Turkey, so there are few barriers for Japanese companies to enter the Turkish market.

## **6. Operational Plan**

### **6-1. General**

#### **(1) Scope of Hospital PPP Projects in Turkey**

The latest tender documents obtained from MOH specify 19 services included in the scope of Hospital PPP Project in Turkey, as described in Table-47. Some services are defined as “mandatory” services to be provided by the successful bidders at the time of hospital opening. Other services are categorized as “optional” services to be possibly excluded during the contract negotiation.

Also, there are two methods of payment for each service: non-volume rate and volume rate. The former will pay the fixed price agreed in the contract, and the latter will be based on the agreed unit price and executed volume (e.g. weight of laundry in Laundry Service).

Table-47 List of Services for Hospital PPP Projects in Turkey

	List of Service	Service Category		Payment Category	
		Mandatory	Option	Non-volume	Volume
1.1	Imaging Service		○		○
1.2	Laboratory Service		○		○
1.3	Disinfection and Sterilization Service		○		○
1.4	Rehabilitation Service		○		○
1.5	Other Medical Support Service	○		○	
2.1	Building and Ground Service	○		○	
2.2	Extraordinary Maintenance and Repairing Service	○		○	
2.3	Collective Service	○		○	
2.4	Furniture Service	○		○	
2.5	Ground and Gardening Service	○		○	
2.6	Cleaning Service		○	○	
2.7	Hospital Information Service		○	○	
2.8	Security Service		○	○	
2.9	Patient referrals / Secretarial Services		○	○	
2.10	Spraying Service		○	○	
2.11	Parking Service		○	○	
2.12	Waste Disposal Management Service		○		○
2.13	Laundry Service		○		○
2.14	Staff and Patient Food Service		○		○

Source: Survey Team

## (2) Comparison of Hospital PPP Projects in Turkey and Hospital PFI Projects in Japan

It is useful to compare Hospital PPP Projects in Turkey with Hospital PFI (same as PPP) Projects in Japan to understand the characteristics of scope of services in Hospital PPP Projects in Turkey.

One of the major differences between Turkey and Japan is the ownership of the facility. In Turkey, the projects are procured by BOT method where SPV shall own the facility throughout the operational period. On the other hand, in Japan, the projects are procured by BTO method, where the ownership of the facility shall be transferred to the government immediately after completion of hospital construction. This is because of the availability of local government bonds in Japan. The local government bonds can finance the Japanese local governments with low interest and subsidy for public hospital projects. Therefore, it is better for the Japanese local



government to issue the bonds and pay for the construction fee at one time to contractors than to utilize private project finance by contractors.

**Table-48 Overview of Hospital PPP Projects in Turkey and Hospital PFI Projects in Japan**

	Hospital PPP Projects in Turkey	Kochi Health Sciences Center (in Kochi Prefecture)	Tokyo Metropolitan Tama Medical Center Tokyo Metropolitan Children's Medical Center (in Tokyo)	Kanagawa Cancer Center (in Kanagawa Prefecture)
Procurement method	BOT	BTO <sup>5</sup>	BTO, RO	BTO
Project period	Construction + 25 years	30 years	App. 15 years	Construction +20 years
Progress	-	Open in March 2005	Open in March 2009	Open in November 2013
Client	MOH of Turkey	Hospital association (in Kochi Prefecture and Kochi City <sup>6</sup> )	Tokyo Metropolitan Government	Kanagawa Prefecture
Tender	Irregular comprehensive evaluation Open auction	Open application proposal system	General competitive bidding with comprehensive evaluation	General competitive bidding with comprehensive evaluation

Source: Survey Team

Table-49 shows the characteristics of the scope of services of Hospital PPP Projects in Turkey, compared to Hospital PFI Projects in Japan. It is notable that Hospital PPP Projects in Turkey includes “Diagnostic Imaging” and “Rehabilitation” in its scope, which are not permitted to outsource in Japan due to the national regulations.

On the other hand, some services are not included in Turkey but included in Japan. For example, “SPD management (central management of supply, processing and distribution of medical materials)” is not so common in Turkey. Also, since patients do not pay their medical bills in Turkey, “patient accounting (calculation of patient bill and payments)” is not included in Turkey, either. Furthermore, Japanese hospitals usually have “patient library”, but it is hard to find the similar facility in Turkey. These services are generally included in the scope of services of Hospital PFI Projects in Japan, but not found at all or partially in Turkey.

In addition, “Hospital Information System (IT system such as electronic medical record)” is

<sup>5</sup> Some buildings including staff residence are BOT method.

<sup>6</sup> Current name is Kochi Prefecture and Kochi City Hospital Agency.

not included in Japan, but included in Turkey. The information technology is progressing day by day, so it is difficult to ensure competitiveness in Hospital PFI Projects since it takes long time to complete the projects from tendering to hospital opening. This is why hospital information system is not included in Japan.

**Table-49 Comparison of Services of Hospital PPP Project in Turkey and Hospital PFI Project in Japan**

Category	Item	Content (example)	Turkey	Kochi	Tokyo	Kanagawa	
	Project management		△	○	○	○	
Construction	Finance		○	○ <sup>7</sup>	×	○	
	Feasibility study	Environmental and social impact assessment, radio disturbance, etc.	○	○	○	○	
	Design		○	×	○	○	
	Construction work		○	○	○	○	
Maintenance	Cleaning	Daily, periodically, special	○	○	○	○	
	Gardening		○	○	○	○	
	Maintenance	Buildings, facilities	○	○	○	○	
	(Repair)		○	○	×	×	
	Security	Entrance, patrol	○	○	○	○	
Hospital services	Medical services	Diagnostic imaging	○	×	×	×	
		Clinical laboratory	Blood, biochemistry, serum, general, microbiology	○	○	○	○
		Meal service	Complete outsourcing (incl. ingredients purchase)	○	○	○	○
		Nursing	Ward, outpatient department	×	○	○	△
		Rehabilitation		○	×	×	×
		ME maintenance	ME center	○	○	○	○
	SPD	Inventory management	Purchase, inventory, distribution, supply	△	○	○	○
		Sterilization	CSSD	○	○	○	×
		Laundry	Washing inside hospital, linen, washing outside hospital	○	○	○	×
		Bed center	Bed washing, sterilization, dry	×	×	○	×
	Hospital information	Medical information	Medical record, medical history, etc.	△	○	○	×
		Patient accounting	Inpatient and outpatient registration, patient accounting, ward	△	○	○	×
		Maintenance and updating of hospital information system		○	△ <sup>8</sup>	×	×
	Others	Patient transport	Beneficiary liability	○	○	△ <sup>9</sup>	×
		Medical gas		○	○	○	×
Office administration		General affairs (salary, documents, disaster prevention), plan, accounting, supply support, vehicle management, etc.	△	○	○	×	

<sup>7</sup> Half amount was paid by the local government bonds immediately after finance, so substantially half amount was procured by private finance.

<sup>8</sup> It is not included in the scope, but outsourced to the member company of SPV. The same is applied to procurement of hospital information system.

<sup>9</sup> Only in Children's Medical Center, where doctor vehicles are operated

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Category	Item	Content (example)	Turkey	Kochi	Tokyo	Kanagawa
	Project management		△	○	○	○
	Waste management	Collection and temporary storage only	○	○	×	○
	Parking		○	○	△	×
	Library		×	○	○	×
Procurement	ME, furniture		○	○	○	○
	Medical materials, consumables		△	○	○	×
	Medicine		△	△agency	○	×
	Hospital information system (including development)		○	△	△ <sup>10</sup>	×
Convenient facilities	Shop		○	○	○	△
	Restaurant		○	○	○	×

Legend: ○included △partially included ×not included

Source: Survey Team

<sup>10</sup> Excluding core system

Table-50 List of Hospital PFI Projects in Japan (reference)

Project	Tender method	Procurement method	Category	Announcement date
Kochi Health Sciences Center	Open application proposal system	BTO	Services Purchase Type	2001.2.21
Omiyachiman Community Medical Center, Shiga	Open application proposal system	BOT	Joint venture	2001.5.7
Yao Municipal Hospital, Osaka <sup>11</sup>	Open application proposal system	BOT	Services Purchase Type	2002.9.10
Shimane Prefectural Psychiatric Medical Center	General competitive bidding with comprehensive evaluation	BTO	Services Purchase Type	2004.3.4
Tokyo Metropolitan Tama Medical Center and Tokyo Metropolitan Children's Medical Center, Tokyo	General competitive bidding with comprehensive evaluation	BTO	Services Purchase Type	2004.10.12
Tokyo Metropolitan Cancer and Infectious Diseases Center Komagome Hospital	General competitive bidding with comprehensive evaluation	RO	Services Purchase Type	2005.12.19
Ehime Prefectural Central Hospital	General competitive bidding with comprehensive evaluation	BTO,RO	Services Purchase Type	2006.5.26
Kobe City Medical Center General Hospital, Hyogo	General competitive bidding with comprehensive evaluation	BTO	Services Purchase Type	2006.8.11
Osaka Psychiatric Medical Center	General competitive bidding with comprehensive evaluation	BTO	Services Purchase Type	2006.10.10
Tokyo Metropolitan Matsuzawa Hospital	General competitive bidding with comprehensive evaluation	BTO,RO	Services Purchase Type	2006.12.19
University of Tsukuba Hospital, Ibaraki	General competitive bidding with comprehensive evaluation	BTO,RO	Services Purchase Type	2007.2.23
Kanagawa Cancer Center	General competitive bidding with comprehensive evaluation	BTO	Services Purchase Type	2008.8.1
Kyoto City Hospital	General competitive bidding with comprehensive evaluation	DBO	Services Purchase Type	2008.8.19
Fukuoka Children's Hospital	General competitive bidding with comprehensive	BTO	Services Purchase Type	2009.3.26

<sup>11</sup> Excluding main hospital construction

Project	Tender method	Procurement method	Category	Announcement date
	evaluation			
Nagasaki Harbor Medical Center City Hospital	General competitive bidding with comprehensive evaluation	BTO,RO	Services Purchase Type	2009.8.26
Osaka Medical Center for Cancer and Cardiovascular Diseases	General competitive bidding with comprehensive evaluation	BTO	Services Purchase Type	2011.11.22
University of Tsukuba Hospital, Ibaraki (new ward)	General competitive bidding with comprehensive evaluation	BTO	Services Purchase Type	2014.8.18

Source: Website of Japan PFI/PPP Association

### (3) Terms of conditions, payment mechanism, monitoring

#### 1) Terms of Condition

As its operation services, SPV is obliged to implement “mandatory” services as specified in tender documents and “optional” services which are agreed by the contract negotiation with MOH as being included in the operation services. While no special provision is defined in the outsourcing contract between SPV and service operator who actually conducts the service, SPV is obliged to monitor if each service meet the level provided in the project agreement.

#### 2) Service Price

##### a) Payment for Services

As described in Chapter 3, service payments are borne not by each hospital but by the government. Volume service payment, the payment for service based on executed volume, and non-volume payment, the payment for fixed price agreed in the contract services other than usage-based, are paid by MOH. Draft project agreement of preceding projects provides that service price is to be paid in Turkish Lira by wire transfer to the bank account opened in Turkey.

##### b) Adjustment of Service Price

Price of services is adjusted by each project on the basis of their inflation.

In the case of preceding projects, the amount of lease payment is to be adjusted based on the past inflation rates by using the Consumer Price Index (CPI) and the Producer Price Index (PPI) published by the Turkish Statistical Institutions in the third week of January every year. On the other hand, there are some other cases in which service payment is also agreed to be adjusted based on the CPI. It is therefore necessary for the Project to confirm

with regard to the adjustment.

c) Guarantee, etc. for Volume Service Payment

In order to reduce the risk of decrease in demand taken by SPV, the amount corresponding to a certain volume of payment may be guaranteed.

In draft project agreement of a preceding project, the minimum monthly volume guaranteed is provided by types of volume service and the amount of volume service payment is to be calculated based on the minimum monthly volume guaranteed. According to an interview with a successful bidder of other project, the minimum monthly volume guaranteed for the project is approximately 70% of the average value obtained in the past statistics.

Considering the demographic change, medical demands, national hospital systems, etc. in Turkey, the rapid decrease in the number of hospital users is unrealistic. While the minimum volume guaranteed is set depending on the value set by each project, it is considered to be evaluable as covering the risk of decrease in demands taken by SPY to a large extent.

Meanwhile, according to a hearing with a successful bidder of other different project, the discount rate is to be applied to the unit price provided in the project agreement when exceeding the above minimum volume guaranteed and its payment is calculated by (Volume of use multiplied by the unit price to which the discount rate is applied). However, the discount level (%) is set according to each volume service; hence, the discount is not to be negotiated without limitation.

Based on such conditions, the upper limit of the unit price discount is clearly defined even in a case where the amount of using volume service is increased, and it could therefore avoid the risk that efforts to streamline contractor's service or responses to increase the volume of service become meaningless.

d) Reduction of Payment for Services

When SPV's service performance is recognized as unachieved as a result of monitoring, amounts of either lease payment, volume service payment or non-volume payment are reduced. See 4) "Monitoring Procedures, etc." as described below for overviews of the monitoring and reduction of the service price.

3) Service Level Required

Draft project agreement of the preceding project provides the standard commonly required for each service and individual standards required for individual services in detail. As General Service Specification, subdivided performance parameters are set for each item including 1) managerial items such as management, monitoring and monthly reporting, 2)

recruitment, training and induction and other human resource issues, and 3) service management method such as integration with administration practice and operation, health and safety, quality assurance, environmental management and contingency planning.

Moreover, as special service terms, similar detailed performance parameters for individual services are set together with its importance, monitoring method and frequency, etc.

#### 4) Monitoring Procedures

According to the draft project agreement of preceding projects, monitoring is implemented with the following procedures:

- SPV implements monitoring, submits monthly monitoring report to MOH, and reports matters which are not able to achieve the terms of project agreement. MOH monitors appropriateness of monitoring implemented by SPV when necessary.
- If services of facilities or of SPV do not meet the standard provided in the project agreement, MOH adds “Service Failure Point” to SPV.
- The Service Failure Point becomes the element of reducing the amount of both lease payment and service payment. With the importance of facility or service failed, contents of the failure, and time taken for (initial) response to and recovery from the failure set as detailed variables, the amount to be reduced is calculated with a certain formula.
- If the Service Failure Point is accumulated above a certain level in a month, MOH issues a written “Warning Notice” to SPV.
- If more than three Warning Notices are issued within three months, MOH can raise its monitoring level or the level of monitoring implemented by SPV. The costs for raising the level of monitoring shall be borne by SPV.
- If the Service Failure Point is accumulated above a certain level in a month, MOH can take necessary actions by itself or make SPV take such actions according to a time allowance and the intention and ability of SPV. In the case MOH takes necessary actions by itself, MOH can suspend the rights and obligations of SPV on its service provision. The costs required for such actions shall be borne by SPV.
- Regarding both service of facility and provision of services, if the Service Failure Point is accumulated above a certain level in six months, MOH can terminate the project agreement.



## 6-2. Detail of Each Operational Service

### (1) 1.1 Imaging Service

#### 1) Scope of Work

Imaging service is the following work for “Radiology Test and Treatment” and “Preparation of Medicine (Anticancer drugs and TPN)” that is covered by insurance which shall be comprehensively provided 24 hours a day 7 days a week.

#### [Radiology Test and Treatment]

1. Provide staff and skills required for Radiology Test and Treatment (However, “Work that shall be done by Doctor or Nurse” is excluded)
2. Prepare, storage and control information that is stipulated by related law of Radiology Test and Treatment
3. Provide and manage maintenance of medical equipment (CT, MRI etc.) required for Radiology Test and Treatment
4. Provide consumables (medical examination materials, nuclide etc.) used for Radiology Test and Treatment

#### [Preparation of Medicine]

1. Provide staff and skill required for Preparation of Medicine (However, “Work that shall be done by Doctor or Nurse” is excluded)
2. Provide and manage maintenance of medical equipment (automatic, semi-automatic preparation system etc.) required for Preparation of Medicine
3. Provide consumables (medical examination materials etc.) used for Preparation of Medicine (However “Anticancer and Serum Fraction drugs” are excluded)

#### 2) Operation Plan

##### a) Operation Plan

##### i. Working Time

According to the requirement standard of proceeding projects, provision of Imaging Service for 24 hours a day 7 days a week is requested. However, in general, the busy time period for Radiology Test and Treatment is during outpatient consultation hours and inpatient test time period. Thus after consultation hours, it is expected that provision of service shall be mainly to emergency patients.

Therefore, for this project, the maximum input of manpower resource etc. shall be set during the Core Service Time Period (08:00~17:00). By applying inclined manpower allocation plan according to hospital operation, the service quality can be maintained and excess manpower allocation avoided, which results in provision of high cost-efficient

service.

ii. Scope of Service

“Radiology Test and Treatment” and “Preparation of Medicine” has the characteristic of being a unity of service produced by both MOH and SPV and provided to the patient. However, the service condition of the scope of work of public and private for preceding projects is unclear. Therefore regarding the unity of service of Radiology Test and Treatment, there is great concern of work inefficiency such as overlap of work by public and private, negative effect to medical safety due to coordination error etc. which is recognized as an excessive risk (Interface Risk) for SPV.

In due consideration of medical safety, the following table shows clear work allocation of service scope, especially the service provision related to clinical skills.

Table-51 Work Allocation of Imaging Service

Work Allocation	Contents of Work		MOH	SPV		
				Imaging service	Other services	
Radiology test	Indication decision		◎			
	Preparation for radiology test	Preparation of medical materials and medicines	※1	◎		
	Conducting radiology test	Assist radiography (assisting patients in gowning, changing position, etc.)		◎		
		Handle radiography equipment (including portable radiography)		○	◎	
		Image inspection		※1	◎	
		Treatment (administration of radiocontrast agents, embolization, etc.)			◎	
		Registration of image and video		◎		
		Image inspection			◎	
	Recovery	Observing a patient		◎		
		Responding to sudden change in a patient's condition			◎	
	Image diagnosis/Image interpretation report	Image diagnosis/ Image interpretation		◎		
Image diagnosis/Image interpretation assistance (input, etc.)			◎			
Radiotherapy	Indication decision		◎			
	Preparation for treatment	Treatment plan	Making treatment plan	◎		
			Assistance for making treatment plan		◎	
		Preparation of fixing tool	Instruction of preparation of fixing tool	◎		
			Preparation of fixing tool		◎	
	Delivery of radiation	Handling treatment equipment			◎	
	Registration of Image (Treatment plan, Image for confirming irradiation)				◎	
	Recovery	Observing a patient, Responding to sudden change in a patient's condition		◎		
Assistance associated with above item			◎			
Mixing of medicine	Preparation of Mixing (Setting medicines on equipment)			◎		
	Supervision (request information, Regime, protocol supervision)		◎			
	Mixing of medicine (handling equipment)			◎		
	Administration of medicine		◎			
Management of radiological device and other relevant	Procurement and management of radiological system				※2	
	Management of radiological device	Management of device procured in Imaging Service		◎		

Work Allocation	Contents of Work		MOH	SPV	
				Imaging service	Other services
equipment		Management of device procured with fixed investment			※3
Waste liquid and waste disposal management				◎	※4
Management of Consumables	Purchase and storage management			◎	
Administrative tasks	Making, management and Storage of the data			◎	

- ※ 1: The costs of medical examinations and treatments (such as cardiac catheterization, etc.) in which the SPV staff do not involve are borne by MOH.
- ※ 2: Carried out by HBYS services.
- ※ 3: Carried out by Other Medical Support Service.
- ※ 4: Carried out in collaboration with Waste Disposal Management services.

Source: Survey Team

#### b) Financial Plan (Revenue and Expenditure)

##### i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue (payment for service) is defined and paid as follows.

- Revenue of Imaging Service is paid in accordance with the ratio proposed by applicants to the hospital's revenue of image.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

##### ii. Cost Items

Regarding the cost, in due consideration of terms of payment and scope of work of Hospital PPP Project, the following items marked ◎ under SPV column is expected.

**Table-52 Cost Allocation of Imaging Service**

Cost Items		MOH	SPV	
			Imaging Service	Other Services
Radiology test and radiotherapy services				
Expenses for procurement, maintenance, and repair of radiology device	Equipment installed by imaging services		◎	
	Equipment installed by fixed investment			※1,2
Expenses for procurement, maintenance, and management of radiology system	IT system (PACS, etc.)			※3
	System associated with radiology device installed in Imaging Service		◎	
Expenses for procurement maintenance and repair of fixtures and equipment (office supplies, furniture, etc.)	Equipment installed by imaging services		◎	
	Equipment installed by fixed investment			※1,2
Consumables	Medical materials (catheter, etc.)	※4	◎	
	Medicines (radiocontrast agents, nuclide, etc.)	※5	◎	
	General consumables (office supplies, etc.)		◎	
	Nuclide		◎	
Mixing Service				
Expenses for procurement maintenance and repair of mixing device	Equipment procured in Mixing Service		◎	
	Equipment procured with fixed investment	◎		
Expenses for procurement, maintenance and management of auto or Semi-auto TPN mixing system				※1,2
Furniture and fixtures (office supplies, furniture, etc.)			◎	※1,2
Expenses for consumables	Medical materials (infusion tubes, etc.)	※4	◎	
	Medicines (anticancer drugs, blood elution reagent)	◎		
	General consumables (office supplies, etc.)		◎	
Common				
Labor (including welfare, education and training, health and hygiene, transportation)			◎	
Utilities (water, electricity, gas, fuel, etc.)		※6	◎	
Communication (telephone fees, telegram, etc.)		◎		
Clothing (uniforms for staff, etc.)			◎	
Waste disposal				※7
Documents necessary for SPV's operation (manuals, etc.)			◎	
Expenses for repair of materials due to SPV failures, etc. (facility, device, equipment, fixture, system, etc.)			◎	
Expenses for repair of materials due to the MOH's failures, etc. (facility, device, equipment, fixture, system, etc.)		◎		

- ※ 1: Fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment. For those not listed, their costs are borne within the scope of Imaging Service.
- ※ 2: Expenses related to the maintenance of devices procured with fixed investment are borne by Other Medical Support Service while expenses related to the maintenance of fixtures and equipment procured with fixed investment are borne by Furniture Service.
- ※ 3: Carried out by HBYS services.
- ※ 4: Expenses of medical consumables by the MOH personnel for the equipment procured with fixed investment are borne by MOH.
- ※ 5: Expenses for medicine used for the equipment procured with fixed investment are borne by MOH.
- ※ 6: Expenses for each service other than Imaging, Laboratory, Disinfection and Sterilization, Staff and Patient Food, and Laundry are borne by MOH.
- ※ 7: Borne by Waste Disposal Management Service.

Source: Survey Team

## (2) 1.2 Laboratory Service

### 1) Scope of Work

Laboratory Service is the following work for clinical laboratory test, bacteria test and pathological test etc. that is covered by insurance which shall be comprehensively provided 24 hours a day 7 days a week with the purpose to promptly provide highly reliable laboratory data supported by quality controlled and efficient laboratory test.

1. Provide staff (Clinical Laboratory Technician, Secretary etc.) and skills required for clinical laboratory, bacteria test, pathological test, blood transfusion work etc. (However, “Work that shall be done by Doctor or Nurse” is excluded)
2. Control the quality (external and internal quality evaluation) of laboratory results based on international quality standard
3. Prepare, store and manage information that is stipulated by related law of Laboratory Service
4. Provide and manage maintenance of medical equipment (biochemical test equipment etc.) required for Laboratory Service

Provide consumables (medical materials, laboratory test reagents etc.) used for Laboratory Service

### 2) Operation Plan

#### a) Operation Plan

##### i. Working Time

According to the requirement standards of preceding projects, provision of Laboratory

Service for 24 hours a day 7 days a week is requested. However, for the same reason as Imaging Service, Core Service Time Period (08:00~17:00) shall be set.

ii. Scope of Service

For Laboratory Service, likewise with Imaging Service, the service condition of the scope of work of public and private for preceding projects is unclear. Therefore the following table shows clear work allocation of service scope, especially the service provision related to clinical skills.

Table-53 Work Allocation of Laboratory Service

Work Allocation	Contents of Work		MOH	SPV	
				Laboratory Service	Other Services
Laboratory tests - General tests -Hematology tests -Biochemical tests -Immunoserological test -Drug test	Specimen collection		◎		
	Reception	Specimen reception (including specimen for clinical trial)		◎	
		Preprocessing of sample (centrifugation · dispensing, etc.)		◎	
		Request outsource testing		◎	
	Conduct tests			◎	
	Report the results	Tests in the hospital		◎	
		Tests outside hospital		◎	
	Storage and control of specimen (including long-term storage of specimen)			◎	
Bacteria test	Specimen collection (blood · feces · sputum, etc.)		◎		
	Reception	Specimen reception		◎	
		Request outsource testing		◎	
	Conduct the tests (smear · culture · identification · Susceptibility)			◎	
	Report the results	Report the results		◎	
Report the results			◎		
Pathology test	Specimen collection (tissue fragment · body fluid, etc.)		◎		
	Reception	Specimen reception		◎	
		Request outsource testing		◎	
	Pathology specimen preparation	Tissue diagnosis		◎	
		Cytodiagnosis		◎	
	Diagnosis · Evaluation of the results	Tests in the hospital	◎		
		Tests outside hospital		◎	
Storage and control of specimen			◎		
Managing blood transfusion	Screening blood for transfusion		※1	◎	
	Blood products management	Ordering, delivering and accepting blood products	◎		
		Managing storage of blood product	◎		
		Managing supply of blood products	◎		
		Thawing frozen plasma	◎		
		Managing transportation of blood products			※2
	Practicing blood transfusion		◎		
Transportation of specimen and reservoir				※2	
Accuracy assessment			◎		
Management of laboratory device and other relevant	Procurement and management of laboratory system			◎	※3
	Procurement and management of laboratory device and			◎	※4,5



Work Allocation	Contents of Work	MOH	SPV	
			Laboratory Service	Other Services
equipment	tools			
Management of consumables and reagents	Purchase and stock management		◎	
Administrative tasks	Making, management and Storage of the data		◎	

- ※ 1: Among blood transfusion tests other than cross-matching test, (direct and indirect) coombs test and blood typing test, the test carried out by SPV is decided upon consultation between MOH and SPV.
- ※ 2: Carried out in collaboration with Transportation Service.
- ※ 3: Carried out by HBYS services.
- ※ 4: Expenses for fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment
- ※ 5: Management of device procures with fixed investment is carried out in Other Medical Support Service.

Source: Survey Team

## b) Financial Plan (Revenue and Expense)

### i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue (payment for service) is defined and paid as follows.

- Revenue of Laboratory Service is paid in accordance with the ratio to laboratory revenue of the hospital proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

### ii. Cost Items

Regarding the cost, in due consideration of terms of payment and scope of work of Hospital PPP Project, the following items marked ◎ under SPV column is expected.

**Table-54 Cost Allocation of Laboratory Service**

Cost Items		MOH	SPV	
			Laboratory Service	Other Service
<b>Laboratory Service</b>				
Expenses for procurement, maintenance and repair of laboratory equipment and device	Equipment procured in Laboratory Service		◎	
	Equipment installed by fixed investment			※1,2
Expenses for procurement, maintenance and repair of system	Laboratory systems (LIS, etc.)			※3
	System associated with laboratory device procured in Laboratory Service		◎	
Expenses for procurement, maintenance and repair of fixtures and equipment	Equipment procured in Laboratory Service		◎	
	Equipment installed by fixed investment			※1,2
Expenses for consumables	Medical consumables (blood collection tube, etc.)		◎	
	Medicines	※4	◎	
	General consumables (office supplies, etc.)		◎	
	Reagents		◎	
Expenses related to quality control			◎	
Expenses for non-hospital laboratory			◎	
<b>Common</b>				
※In accordance with “Common” of Imaging Service				

- ※ 1: Expenses for fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment. For those not listed, their expenses are borne within the scope of Laboratory Service.
- ※ 2 : Expenses related to the maintenance of devices procured with fixed investment are borne by Other Medical Support Service while expenses related to the maintenance of fixtures and equipment procured with fixed investment are borne by Furniture Service.
- ※ 3 : Carried out by HBYS services.
- ※ 4: Only expenses for procurement of blood products are borne by MOH.

Source: Survey Team

### (3) 1.3 Disinfection and Sterilization Service

#### 1) Scope of Work

Disinfection and Sterilization Service is the following work that shall be comprehensively provided 24 hours a day 7 days a week with the purpose to contribute towards improvement of medical safety by promptly and efficiently providing sterilized materials and guarantee disinfection and sterilization of reusable medical materials etc. that are used within the health service facility.

1. Provide staff (Nurse, Sterilization technician etc.) and skills required for Disinfection and Sterilization Service.
2. Implement disinfection and sterilization work of usable medical materials etc. which comprises of the following work
3. Collect used equipment and provide sterilized equipment
4. Disassemble, wash, setup, disinfect, and sterilize used equipment etc.
5. Store and control storage & quality of sterilized equipment etc.
6. Disinfect installed equipment within clean area (Operation theater etc.) and in related medical rooms (Consultation rooms, ward patient room etc.) when dirty
7. Prepare, store and manage information that is stipulated in related law of Disinfection and Sterilization Service
8. Provide and manage maintenance of required facility (High pressure steam sterilizer etc.) for Disinfection and Sterilization Service
9. Provide consumables (washing detergent, disinfectant etc.) used for Disinfection and Sterilization Service

## 2) Operation Plan

### a) Operation Plan

#### i. Working Time

According to the requirement standard of preceding projects, provision of service for 24 hours a day 7 days a week is requested. However unlike Imaging and Laboratory Service where real-time service is required, by setting an adequate inventory level and rotation plan it is possible to reduce work load during non-Consultation hours.

Therefore, Core Service Time Period (08:00~17:00) shall be set for this project. By applying inclined manpower allocation plan, the service quality can be maintained and excess man power allocation avoided, which results in provision of high cost-efficient service.

Table-55 Work Allocation of Disinfection and Sterilization Service

Work Allocation	Contents of Work		MOH	SPV			
				Disinfection and Sterilization Service	Other Services		
Sterilization services	Plan for stock rotation	Make plan for stock rotation		◎			
		Approve plan for stock rotation	◎				
	Reception of Instrument	Reception of used instruments and instruments to be sterilized		◎			
	Sterilization of instruments	Cleaning			◎		
					◎		
		Assembling · making sets					
		Sterilization	By high pressure steam		◎		
			By gas		◎		
		Management of outsourced sterilized instruments	Management of outsourced sterilized instruments	Ordering outsourced sterilization		◎	
				Conducting outsourced sterilization		◎	
				Managing delivery date		◎	
				Controlling quality of equipment		◎	
	Accepting delivery				◎		
		Printout and stick sterilized label		◎			
	Quality control and storage of sterilized equipment	Evaluation of the effects of sterilization	Physical		◎		
			Scientific		◎		
			Biological		◎		
			Storage of sterilized instruments		◎		
			Controlling expiring date of the sterilized instruments		◎		
		Respond with recall due to defective sterilization		◎			
	Handling rental instruments	Handling rental instruments	Receiving reusable rental medical instruments		◎		
			Sterilizing reusable rental medical instruments		◎		
Storing reusable rental medical instruments				◎			
Returning reusable rental medical instruments				◎			
	Recording sterilizing information		◎				
Transporting instruments	Collection and transportation of used instruments, as well as delivery and transportation of sterilized instruments		◎	※1			
Disinfection service	Disinfection of instruments and	High-risk areas		◎			
		Medium risk area		◎			

Work Allocation	Contents of Work		MOH	SPV	
				Disinfection and Sterilization Service	Other Services
	area	Low-risk area		◎	
Management of sterilizing equipment and related supplies	Procuring and managing sterilization management system				※2
	Procuring and managing sterilization equipment			◎	
	Procuring and managing instrument containers, carts, etc.			◎	
	Procuring and managing equipment and instruments (steel goods, etc.)				※3
Management of Consumables	Purchases, stocks (quality) management			◎	
Management	Management and storage of the data	Managing sterilization information and other information		◎	
		Related master maintenance		◎	

※ 1: Carried out in collaboration with Transportation Service.

※ 2: Carried out by HBYS services.

※ 3: Procured with fixed investment.

Source: Survey Team

## b) Financial Plan (Revenue and Expense)

### i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue of this service (payment for service) is defined and paid as follows.

- Disinfection and Sterilization Service is paid in accordance with the volume of disinfecting substances requested by hospitals by multiplying unit price of each category.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results

### ii. Cost Items

Regarding the cost, in due consideration of terms of payment and scope of work of Hospital PPP Project, the following items marked ◎ under SPV column is expected.

**Table-56 Cost Allocation of Disinfection and Sterilization Service**

Cost Item	MOH	SPV	
		Disinfection and Sterilization Service	Other Services
<b>Disinfection and Sterilization Service</b>			
Expenses for procurement, maintenance and repair of disinfection and sterilization equipment and device in Hospital (auto clave, etc.)	Equipment procured in Disinfection and Sterilization Service	◎	
	Equipment installed by fixed investment		※1,2
Expenses for procurement and management maintenance of relevant system	Disinfection and Sterilization systems		※3
	System associated with sterilization device procured in Sterilization Service	◎	
Expenses for procurement, maintenance and repair of fixtures and equipment (sterilization container, hospitals trolleys, etc.)	Equipment installed by disinfection and sterilization services	◎	
	Equipment installed by fixed investment		※1,2
Expenses for procurement, maintenance and repair of instruments and materials (steel goods, etc.)	Equipment installed by disinfection and sterilization services	◎	
	Equipment installed by fixed investment		※1,2
Expenses for consumables	Consumables (sterilizing bag, indicator, disinfectant, etc.)	◎	
	General consumables	◎	
Expense for quality control	◎		
<b>Common</b>			
※In accordance with “Common” of Imaging Service			

- ※ 1: Expenses for fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment. For those not listed, their expenses are borne within the scope of Sterilization Service.
- ※ 2: Expenses related to the maintenance of devices procured with fixed investment are borne by Other Medical Support Service while expenses related to the maintenance of fixtures and equipment procured with fixed investment are borne by Furniture Service.
- ※ 3: Carried out by HBYS services.

Source: Survey Team

#### (4) 1.4 Rehabilitation Service

##### 1) Scope of Work

Rehabilitation service is the following work regarding rehabilitation (physical therapy, occupational therapy, speech therapy, recreational therapy etc.) that is covered by insurance which shall be comprehensively provided 24 hours a day and 7 days a week with the purpose to encourage fast social reintegration and functional recovery of the patient.

1. Provide staff (Therapist, Secretary etc.) and skills required for rehabilitation
2. Provide physiotherapy, occupational therapy, speech therapy and recreational therapy etc. of rehabilitation (However, “Work that shall be done by Doctor or Nurse” is excluded)
3. Prepare, store and manage information that is stipulated by related law of rehabilitation
4. Provide and manage maintenance of medical equipment (physical therapy equipment etc.) required for Rehabilitation
5. Provide consumables (medical consultation materials etc.) used for Rehabilitation

## 2) Operation Plan

### a) Operation Plan

#### i. Working Time

According to the requirement standard of preceding projects, Rehabilitation Service is requested to be provided 24 hours a day 7 days a week as well. However in general, rehabilitation service is provided during outpatient consultation hours and inpatient consultation hours. Emergency response after consultation hours is not expected.

Therefore for this project, the service provision time period shall be 08:00~18:00.

#### ii. Scope of Service

For Rehabilitation service, the scope of service of public and private for preceding projects is unclear. Therefore in due consideration of medical safety, the following table sets clear work allocation of service scope, especially the service provision related to clinical skills.

Table-57 Work Allocation of Rehabilitation Service

Work Allocation	Contents of Work	MOH	SPV		
			Rehabilitation Service	Other Services	
Rehabilitation	Indication decision of rehabilitation	◎			
	Prescription for rehabilitation	◎			
	Making rehabilitation plan	Assessment of patient's situation		◎	
		Consider and make training program		◎	
		Approve training program	◎		
	Practice rehabilitation	Physical therapy		◎	
		Occupational therapy		◎	
		Recreation therapy		◎	
		Speech therapy		◎	
		Making records of the practice of rehabilitation		◎	
Evaluation	◎				
Procurement and management of rehabilitation equipment and machineries			◎		
Management of consumables	Purchases and stock management		◎		
Management	Preparation, management and storage of data		◎		

Source: Survey Team

b) Financial Plan (Revenue and Expense)

i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue of this service (payment for service) is defined and paid as follows.

- Revenue of Rehabilitation Service is paid in accordance with SUT points of each service by multiplying the ratio proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

ii. Cost Items

Regarding the cost, in due consideration of terms of payment and scope of work of Hospital PPP Project, the following items marked ◎ under SPV column is expected.



Table-58 Cost Allocation of Rehabilitation Service

Cost Items		MOH	SPV	
			Rehabilitation Service	Other Services
<b>Rehabilitation Service</b>				
Expenses for procurement, maintenance and repair of rehabilitation equipment and device	Equipment procured in Rehabilitation Service		◎	
	Equipment installed by fixed investment			※1,2
Expenses for procurement, maintenance and repair of fixtures and equipment	Equipment procured in Rehabilitation Service		◎	
	Equipment installed by fixed investment			※1,2
Expense for consumables	Medical consumables		◎	
	General consumables		◎	
<b>Common</b>				
※In accordance with “Common” of Imaging Service.				

※ 1: Expenses for fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment. For those not listed, their expenses are borne within the scope of Rehabilitation Service.

※ 2 : Expenses related to the maintenance of devices procured with fixed investment are borne by Other Medical Support Service while expenses related to the maintenance of fixtures and equipment procured with fixed investment are borne by Furniture Service.

Source: Survey Team

#### (5) 1.5 Other Medical Support Service

##### 1) Scope of Work

Other Medical Support Service is the following work regarding maintenance management of equipment and fixtures used within the hospital that shall be comprehensively provided 24 hours a day 7 days a week with the purpose to minimize failure risks of equipment and allow medical practitioner to smoothly provide medical practice.

1. Provide staff (Technician etc.) and skills required for maintenance management of equipment and fixtures
2. Provide planned inspection and maintenance management to prevent failure of equipment
3. Provide repair service upon equipment failure (repair and response to emergency situation inclusive)
4. Prepare, store and manage reports related to Service
5. Provide spare parts etc. required for implementation of Service

6. Conduct lectures for safety use of equipment

2) Operation Plan

a) Operation Plan

i. Working Time

According to the requirement standard of preceding projects, Other Medical Support Service is requested to be provided 24 hours a day 7 days a week as well. However, likewise with other Service, Core Service Time Period shall be set. An inclined manpower allocation plan shall be applied to maintain service quality, avoid excess manpower allocation which results in provision of high cost-efficient service.

Furthermore, in Japan, the “Other Medical Support Service” is referred to as “Medical Equipment Center” and this Center ensures compatibility between safety and economical aspect by centrally managing the equipment. For the Aydın Project, service provision which utilizes this know-how will be implemented.

ii. Scope of Service

For Other Medical Support Service, the description of the current service condition gives unclear scope of work for both public and private. Therefore, in due consideration of appropriate stock management and medical safety, the following table sets clear work allocation of service scope, especially for maintenance control and repair service of equipment.

Table-59 Work Allocation of Other Medical Support Service

Work Allocation	Contents of Work			MOH	SPV	
					Other Medical Support Service	Other Services
Maintenance and repair	Maintenance	Medical equipment defined in schedule 13 (Equipment)	Preparation of maintenance and inspection plan		◎	
			Implementation of maintenance and inspection plan(scheduled, immediate and emergency)		◎	
			Preparation and report of maintenance and inspection plan		◎	
		Medical equipment newly procured by MOH	Preparation of maintenance and inspection plan		◎	
			Implementation of maintenance and inspection plan(scheduled, immediate and emergency)		◎	
			Preparation and report of maintenance and inspection plan		◎	
	Repair	Medical equipment defined in Schedule 13 (Equipment)	Repair in the hospital		◎	
			Repair request to vendor		◎	
			Make and report repair records		◎	
		Medical equipment newly procured by MOH	Repair in the hospital		◎	
			Repair request to vendor		◎	
			Make and report repair records		◎	
Tests and calibration(proofreading)	Medical equipment defined in Schedule 13 (Equipment)	Conduct tests and calibration			◎	
		Make and report the records of the tests and calibration			◎	
	Medical equipment newly procured by MOH	Conduct tests and calibration			◎	
		Make and report the records of the tests and calibration			◎	
Stock management	Centrally managed equipment	Lending control			◎	
		Transporting medical equipment				※1
	Other equipment	Controlling location and numbers of equipment, etc.			◎	
Supporting procurement of medical	Supporting introduction plan	Market research			◎	
		Related law research			◎	
		Feasibility study			◎	

Work Allocation	Contents of Work		MOH	SPV	
				Other Medical Support Service	Other Services
equipment		Making procurement specification		◎	
Consulting services	Response to technical consultation on medical equipment, education for staff on medical equipment management technique, etc.			◎	
Medical gas services	Receiving gas cylinder			◎	
	Installing and managing gas cylinder			◎	
	Recording gas pressure, removing gas cylinder			◎	
	Transporting gas cylinder				※1
Management of equipment related facilities, etc.	Procurement of related items like equipment	Medical equipment defined in Schedule 13 (Medical Development)		◎	
		Medical equipment newly procured by MOH	◎		
Management of consumables	Management of purchase and stock (quality)	Consumables for maintenance Care consumables		◎	
Management	Preparation, management and storage of data			◎	

※ 1: Carried out in collaboration with Transportation Service.

Source: Survey Team

b) Financial Plan (Revenue and Expense)

i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue of this service (payment for service) is defined and paid as follows.

- Revenue of Other Medical Support Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

ii. Cost Items

Regarding the cost, the following items marked ◎ under SPV column is expected.

Table-60 Cost Allocation of Other Medical Support Service

Cost Items	MOH	SPV	
		Other Medical Support Service	Other Services
<b>Other Medical Support Service</b>			
Device for Other Medical Support Service	Procurement expense		※1
	Maintenance and repair expenses (including parts and spare parts expenses)	◎	
Expenses for procurement and maintenance of equipment management system			※2
Oxygen enrichment system	Procurement expense	※3	
	Maintenance and repair expenses	◎	
Expenses for procurement, maintenance and repair of fixtures and equipment	Equipment procured in Other Medical Support Service	◎	
	Equipment procures with fixed investment		※4
Expenses for consumables		◎	
<b>Common</b>			
※In accordance with “Common” of Imaging Service.			

- ※ 1: In Other Medical Support Service, management of devices procured with fixed investment (as listed in Schedule 13 (Equipment)) is included.
- ※ 2 : Carried out by HBYS services.
- ※ 3: Expenses for procurement of medical gas is borne by MOH.
- ※ 4: Expenses related to the maintenance of fixtures and equipment procured with fixed investment are borne by Furniture Service.

※ Source: Survey Team

## (6) 2.1 Building and Ground Service

### 1) Scope of Work

Building and Ground Service carries out a comprehensive service including formulation of facility care plan, care and repair as well as the following items. It also includes procurement of materials required for service provision.

- 1) Repair program
- 2) Exterior repair
- 3) Interior and exterior wall coating/redecoration program
- 4) Interior restoration program
- 5) Drainpipe and rainwater utilization system
- 6) Drainage and wastewater system
- 7) Chimney and lightning rod system

- 8) Water tank distribution and purification system
- 9) Air conditioning and ventilation system
- 10) Boiler, heater and thermal exchange system
- 11) Power generation facility and uninterruptible power supply (UPS) system
- 12) Battery system
- 13) Electric system including OG (medium voltage) and AG (low voltage) system
- 14) Elevator and lift
- 15) Compressor and vacuum system
- 16) Heating and under floor hot water heating system
- 17) Fire prevention alarm and fire control system
- 18) General equipment and special service
- 19) Waste disposal system (waste disposal system for liquid, gas, radioactive substances, etc.)
- 20) Kitchen and food service infrastructure system
- 21) Medical gas system
- 22) Sterilization infrastructure system
- 23) IT infrastructure system not included in HBYS (MOH approval is required)
- 24) Automatic transportation system
- 25) Pneumatic tube system
- 26) Renewable energy system
- 27) Automatic building control system
- 28) Cogeneration and trigeneration system
- 29) Water storage system
- 30) Roof planting system
- 31) Service water system
- 32) Weak current system

## 2) Operation Plan

### a) Operation Plan

The result of the Survey shows that expenses for facility management and maintenance service in Hospital PPP project in Turkey is not borne by MOH and the service contents are almost the same with those generally provided in Japan. Thus, it is possible for Japanese building maintenance companies to directly input their know-how when they participate in this Project.

According to the survey on Turkish local companies providing facility management and maintenance service, the contents of service provided by the local companies to national and private hospitals are similar to those generally provided in Japan. Therefore, smooth service implementation is possible when the Japanese building maintenance companies provide their services in cooperation with the Turkish local companies.

b) Financial Plan (Revenue and Expense)

i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue of this service (payment for service) is defined and paid as follows.

- The revenue of Building and Ground Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

ii. Cost Items

a) As described in the operation plan, SPV provides all the services in principle. Therefore, SPV bears the cost sharing.

(7) 2.2 Extraordinary Maintenance and Repairing Service

1) Scope of Work

Extraordinary Maintenance and Repairing Service provides extraordinary maintenance of building and facility, repair service and the items listed below. The scope of work includes securing of necessary materials, consumables and staff.

- 1) Air conditioning station (procurement and recovery)
- 2) Ventilation unit
- 3) Cooling equipment
- 4) Separate-type air conditioning unit
- 5) Electromotive elevator for passenger and baggage
- 6) Hydraulic elevator for passenger and baggage
- 7) Pressure unit
- 8) Pump
- 9) Hot water and heating distribution pipe in health facilities
- 10) Cooling and heating supply piping system
- 11) Water purification facility
- 12) Air conditioning and vacuum tube
- 13) Remote control panel for unit
- 14) Cold water tank
- 15) Building management system (including central PC and external section)
- 16) Fire alarm for unit
- 17) Rainwater utilization system (wet)

- 18) Rainwater utilization system (dry)
- 19) Closed circuit television (CCTV) equipment
- 20) Security alarm
- 21) Electronic access control
- 22) High- and low-voltage switch panel
- 23) Low voltage output
- 24) Lighting
- 25) Exterior lighting
- 26) Emergency lighting
- 27) Uninterruptible power system
- 28) Lightning rod
- 29) Electric shutter
- 30) Electric slide and door
- 31) Heat recovery system and cogeneration/trigeneration system
- 32) Pressurized air conditioning equipment
- 33) Safety handrail and stairs
- 34) Rainwater gutter
- 35) Modular window
- 36) Interior door and exterior door
- 37) Outside surface
- 38) Interior wall
- 39) Indoor and outdoor guide sign
- 40) Medical equipment
- 41) Exterior coating panel
- 42) Floor coating material
- 43) Roof
- 44) Suspended ceiling
- 45) Furniture, equipment and peripheral device
- 46) Fence
- 47) External structure surface
- 48) Impact resistant coating material
- 49) Interior door lock and stopper
- 50) Handrail for stairs
- 51) Fence and entrance door
- 52) Water cut-off and thermal insulation material
- 53) Telephone and data equipment
- 54) Q-matic (queue management system)
- 55) Smart TV system
- 56) Call and emergency announcing system
- 57) Central clock management system



- 58) Nurse call system
- 59) Fire cylinder filling
- 60) Medical gas system
- 61) Sterilization infrastructure system
- 62) IT infrastructure system not included in HBYS (MOH approval is required)
- 63) Pneumatic tube system (control system using air pressure)
- 64) Service water system
- 65) Rainwater storage system
- 66) Multi-engineering item

## 2) Operation Plan

### a) Operation Plan

Same as described in “2.1 Building and Ground Service.”

### b) Financial Plan (Revenue and Expense)

#### i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue of this service (payment for service) is defined and paid as follows.

- The revenue of Extraordinary Maintenance and Repairing Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

#### ii. Cost Items

Same as described in “2.1 Building and Ground Service.”

## (8) 2.3 Collective Service

### 1) Scope of Work

Collective Service provides management service efficiency of infrastructure facility and system collectively used in the health facilities, resources and cost for 24 hours a day, 7 days a week. It also secures materials, staff etc. necessary for providing service. \*

- 1) Electricity
- 2) Gas
- 3) Fuel

- 4) Water
- 5) Waste water
- 6) Telecommunication system including telephone, internet, call and wireless system
- 7) Rainwater utilization system

Telephone service should be provided both as a software (IP phone/VOIP) and wire and wireless device upon approval of MOH.

\* Charges for energy, gas, fuel, water, waste water, telephone, internet, communication and interconnection systems including call and wireless are not included.

## 2) Operation Plan

### a) Operation Plan

Same as described in “2.1 Building and Ground Service.”

### b) Financial Plan (Revenue and Expense)

#### i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue of this service (payment for service) is defined and paid as follows.

- Revenue of Collective Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

#### ii. Cost Items

Same as described in “2.1 Building and Ground Service.”

## (9) 2.4 Furniture service

### 1) Scope of Work

Furniture Service implements maintenance service plan and repair works for furniture listed at the tender and contract phase (not including such furniture that is used in departments and areas out of the scope of service conducted by private companies including diagnosis section). To secure materials, consumables and staff necessary for providing service is also included in the scope of service.

- 1) Formulate repair plan for interior decorations and implement preventive check in order to avoid failure and defect.

- 2) Exchange and renew of interior decorations
- 3) Response to failure and defect
- 4) Stock management

## 2) Operation Plan

### a) Operation Plan

Same as described in “2.1 Building and Ground Service.”

### b) Financial Plan (Revenue and Expense)

#### i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue of this service (payment for service) is defined and paid as follows.

- Revenue of Furniture Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

#### ii. Cost Items

Same as described in “2.1 Building and Ground Service.”

## (10) 2.5 Ground and Gardening Service

### 1) Scope of Work

Ground and Gardening Service provides horticultural service and ground and gardening care service as listed below in order to manage and regularly maintain garden and green area in health facilities. To secure materials, consumables and staff necessary for providing service is also included in the scope of service.

#### **【Horticulture Service】**

- 1) Shrub pruning
- 2) Maintenance of shrub in a hedge form
- 3) Management/pruning of trees
- 4) Hedge management including reaping and shearing
- 5) Floor bed management
- 6) Weed management
- 7) Planting service of shrub and flower
- 8) Seeding

- 9) Spraying of Horticulture-related chemicals

**【Ground and Gardening】**

- 1) Management of external elements (cleaning, repair of handrail, lighting and guide sign, etc.)
- 2) Emergency response such as reporting the situation of fallen tree, snow, ice, etc.

2) Operation Plan

a) Operation Plan

Same as described in “2.1 Building and Ground Service.”

b) Financial Plan (Revenue and Expense)

i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue (considerations for service) is defined and paid as follows.

- The revenue of Ground and Gardening Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

ii. Cost Items

Same as described in “2.1 Building and Ground Service.”

(11) 2.6 Cleaning Service

1) Scope of Work

Cleaning Service is the following work that shall be comprehensively provided 24 hours a day 7 days a week with the purpose to maintain the healthcare facility clean and provide comfortable environment for the patient, visitors and family relatives of patient and staff.

1. Provide staff (janitor etc.) and skills required for cleaning the building
2. Provide “Cleaning Plan”, “Regular Cleaning”, “Wall Cleaning (Cleaning of wall/boundary between different levels of cleanliness)” according to each level of cleanliness area and “Cleaning as requested (Cleaning after contamination)” according to requests by staff
3. Provide Cleaning Support Service of Patient Room which covers the following work

4. Work related to patient (guidance to patient family, bedside cleaning, bed making etc.)
5. Work related to cleaning (organization of patient room, collection of newsletters etc.)
6. Preservation of healthcare facility (finding and reporting facility failure within patient room, organization of nonmedical consumables etc.)
7. Preparation, storage and management of information stipulated in related laws of building cleaning
8. Provision and maintenance control of supply (cleaning carts, brush etc.) required for building cleaning
9. Provision of sanitary consumables (detergent, toilet paper etc.) used for building cleaning

## 2) Operation Plan

### a) Operation Plan

#### i. Working Time

According to the requirement standard of preceding projects, Cleaning Service is requested to be provided 24 hours a day 7 days a week. However the cleaning frequency and levels of its emergency differs from department, thus working time shall be set for each department which results in reduction of work load. Therefore, Core Service Time Period (08:00~18:00) shall be set like other Services, to avoid excess working time and manpower allocation which leads to efficient service.

#### ii. Scope of Service

The “Support cleaner of patient room” is stipulated to cover a wide scope of work according to the service conditions of “Cleaning Support Service” of preceding projects. Work defined as “Assistant work done by Nurse” is even included in this wide scope of work.

The results of survey show that “Cleaning support service of patient room” is assistant work done by cleaning service staff of ward. Therefore, “Support cleaner of patient room” shall not be separately allocated, and cleaning service staff shall provide this service.

Table-61 Work Allocation of Cleaning Service

Work Allocation	Contents of Work	MOH	SPV	
			Cleaning Service	Other Services
Cleaning	Scheduled cleaning		◎	
	Extraordinary cleaning		◎	
	Regular cleaning		◎	
	Wall cleaning		◎	
Cleaning of medical equipment (dining table of patients, change locker in a hospital room, etc.)			◎	
Pest control	Report of pest damage		◎	
	Pest control			※1
	Cleaning after pest control		◎	
Relevant service	Service related to patients (guide, cleaning and preparation bed when a patient is in and out of hospital, bed making etc.)		◎	
	Service related to cleaning (setting of room, check of room equipment, etc.)		◎	
Procurement and management of relevant fixtures and equipment	Procurement, management and maintenance of cleaning equipment		◎	
Procurement and management of consumables	Procurement and stock management of consumables		◎	
Management	Preparation, management and storage of data		◎	

※ 1: Carried out by Spraying Service.

※ Source: Survey Team

b) Financial Plan (Revenue and Expense)

i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue (considerations for service) is defined and paid as follows.

- The revenue of Cleaning Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

ii. Cost Items

Regarding the cost, in due consideration of terms of payment and scope of work of Hospital PPP Project, the following items marked with ◎ under SPV column is expected.

Table-62 Cost Allocation of Cleaning Service

Cost Items	MOH	SPV	
		Cleaning Service	Other Service
<b>Cleaning Service</b>			
Expenses for procurement, maintenance and repair of fixtures and equipment (cleaning equipment, etc.)	Equipment procured in Cleaning Service	◎	
	Equipment procured with fixed investment		※1,2
Expense for cleaning equipment		◎	
Expense for consumables		◎	
<b>Common</b>			
※In accordance with “Common” of Imaging Service.			

- ※ 1: Expenses for fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment. For fixtures and equipment (office desks, etc.) used by service providers are borne within the scope of Cleaning Service.
- ※ 2: Expenses related to the maintenance of devices procured with fixed investment are borne by Furniture Service.

Source: Survey Team

## (12) 2.8 Security Service

### 1) Scope of Work

Security Service is the following work that shall be comprehensively provided 24 hours a day 7 days a week with the purpose to secure all personnel and assets within the healthcare facility and provide safe and secure environment to the users.

1. Provide staff (security staff etc.) and skills required for security service
2. Prepare security plan within the healthcare facility
3. Provide security by staff (regular check, routine inspection, special security)
4. Provide equipment security (central monitoring of security facility and fire prevention facility etc.)
5. Provide guidance to visitors, traffic control and guided evacuation when disaster occurs etc. inside and outside the healthcare facility
6. Manage lost property and access control of healthcare facility etc.
7. Prepare, store and manage information stipulated in related laws of Security Service
8. Provide and control maintenance of equipment required for Security Service
9. Provide consumables used for Security Service

## 2) Operation Plan

### a) Operation Plan

#### i. Working Time

Security Service shall be provided 24 hours a day 7 days a week with the purpose to secure safety within the hospital facility. Furthermore, working time shall be set in due consideration of increase of patients during holidays, holiday night-hours, New Year season and seasonal epidemics.

#### ii. Scope of Service

For Security Service, the services that are unique to Turkey are included, thus the following work allocation and implementation method of service shall be provided.

##### “Inmate Prisoner and Inmate Prison Ward”

In Turkish National Hospitals, all facilities are equipped with wards especially for inmate prisoners. Security Service for inmates prisoners and inmate prison wards, compared to regular security service has significantly more risks.

Survey results show that security related to inmates prisoners and prison ward inmates is generally implemented under the responsibility of MOH, thus for this project as well, it shall be defined as outside the service scope.

##### “Special Security Staff”

According to the service conditions of preceding projects, several “High Security Risk Area” are set which requires security by Special Security Staff. However, the security conditions (security structure, equipment, skills etc.) are unclear.

Survey results show that Special Security Staff provides security for “High Security Risk Area” however they are not required to have any special skill or equipment thus regular Security staff shall be allocated.



Table-63 Work Allocation of Security Service

Work Allocation	Contents of Work		MOH	SPV	
				Security Service	Other Services
Central monitoring	Disaster prevention system	Procurement, operation, management		◎	
	Monitoring and security system	Procurement, operation, management		◎	
Fix point guard	Prevention and detection of wrongdoer			◎	
	Other associated works (traffic control, guiding service, etc.)			◎	
Patrolling	Prevention and detection of wrongdoer			◎	
	Other associated works (traffic control, guiding service, etc.)			◎	
	Check of damage and locking of facility and equipment			◎	
Guard of wards with convict			◎		
Attending	Guard during cash collection and transportation			◎	
	Guarding for transportation to remote area in the facility when requested			◎	
Access control	Procurement and management of system				※1
	Issuance and collection of security card			◎	
	Access control				※2
	Access control of drug and accounting sections		◎		
Handling of lost property	Record of lost property information			◎	
	Reporting of lost property to relevant section			◎	
	Storage of lost property			◎	
	Liaison with finder and relevant section			◎	
Formulation of security (prevention) plan	Preparation of security (prevention) plan, dissemination of security information			◎	
	Approval of security (prevention) plan		◎		
Response to illegal act	Initial response			◎	
	Capture, disablement and prevention of wrongdoer			◎	
	Preparation of report on illegal act			◎	
	Submission of evidence, etc. to MOH			◎	
Response to disaster and emergency event	Initial response when security system is started			◎	
	Evacuation guidance to patients and staff			◎	
	Liaison with related organization			◎	
Procurement and management of security alarm and other relevant equipment	Procurement, maintenance and management of security alarm and device			◎	※3
Management	Preparation, management and storage of data			◎	

- ※ 1: Carried out by HBYS services.
- ※ 2: Carried out in collaboration with Security Services
- ※ 3: Expenses for fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment.

Source: Survey Team

b) Financial Plan (Revenue and Expense)

i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue (considerations for service) is defined and paid as follows.

- The revenue of Security Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

ii. Cost Items

For cost items, in due consideration of terms of payment and scope of work of Hospital PPP Project, the following items marked with ⊙ under SPV column is expected.

Table-64 Cost Allocation of Security Service

Cost Items		MOH	SPV	
			Security Service	Other Service
<b>Security Service</b>				
Expenses for procurement, maintenance and repair of relevant system	Disaster prevention system		⊙	
	Monitoring and security system		⊙	
	Access control system		⊙	
Expenses for procurement, maintenance and repair of fixture and equipment	Equipment procured in Security Service		⊙	
	Equipment procured with fixed investment			※1,2
Expenses for consumables			⊙	
<b>Common</b>				
※In accordance with “Common” of Imaging Service.				

- ※ 1: Expenses for fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment. For those fixtures and equipment (such as office desks, etc.) used by service providers, their expenses are borne within the scope of Security Service.
- ※ 2 : Expenses related to the maintenance of devices procured with fixed investment are borne by Furniture Service.

※ Source: Survey Team

(13) 2.9 Patient referrals / Secretarial Services

1) Scope of Work

Patient referrals / Secretarial Services includes 3 types of service; Reception Service, Help Desk Service and Transportation Service. Therefore, the scope of work and operation plan shall be set for each type of service.

[Reception Service]

Reception Service is the following work which shall be comprehensively provided with the purpose for the hospital users to gain required information and efficiently use the facility. Reception Service is divided into hospital reception and operator reception. Working hours is 07:00~18:00 for hospital reception and 24 hours a day 7 days a week for operator reception.

1. Provide reception and guidance work of hospital reception and operator reception.
2. Provide escort or guidance to facility user, when requested.
3. Be fully stocked and prepared for emergency and when emergency occurs, respond in accordance to the program already agreed with MOH
4. Procure, manage and provide maintenance to equipment and system related to Reception Service

[Help Desk Service]

Help Desk Service is the following work which shall be comprehensively provided 24 hours a day 7 days a week with the purpose to centrally manage requests etc. regarding service provided by SPV and quickly respond in emergency.

1. Help Desk Service must fulfill the role of receiving all requests related to service provided by SPV and act as a point of communication
2. Act as the first point of contact of all requests related to service provided by SPV
3. Develop communication network, including emergency announcement, within MOH and SPV (including service provider)
4. Record all related matters to Help Desk Service for the purpose of service improvement

[Transportation Service]

Transportation Service is the following work that shall be comprehensively provided 24 hours a day 7 days a week with the purpose to efficiently collect and deliver all material of each hospital department.

1. Provide staff (delivery staff) and skill required for Transportation Service
2. Provide Transportation work within the healthcare facility which includes the following
3. Collection and delivery of materials (samples, medical consultation materials, supplies, medical gas cylinder etc.) within the healthcare facility
4. Transportation of corpse and patients within healthcare facility
5. Prepare, store and manage information stipulated in related laws of Transportation Service
6. Provide and manage maintenance of materials (delivery carts, delivery container etc.) required for Transportation Service
7. Provide consumables used for Transportation Service

## 2) Operation Plan

### a) Operation Plan

#### i. Working Time

##### [Reception Service]

Service shall be provided during working hours 07:00~18:00 for hospital reception and 24 hours a day 7 days a week for operator reception.

##### [Help Desk Service]

Help Desk Service provides service 24 hours a day 7 days a week with the purpose to secure safety within hospital site area.

##### [Transportation Service]

According to requirement standards of preceding projects, Transportation Service is requested to be provided 24 hours a day 7 days a week. However, compared to the busy consultation hours, the night time is expected to require less manpower allocation therefore core service time period (08:00~18:00) shall be set. Planning an economical allocation of manpower which corresponds to the busy time period will reduce workload.

Therefore, core service time period shall be planned and set. An inclined manpower allocation plan shall be applied to maintain service quality, avoid excess manpower allocation which results in provision of high cost-efficient service.

#### ii. Scope of Service

##### [Reception Service]

For Reception Service, the description of service conditions of preceding projects gives unclear scope of work. Therefore, in due consideration of user friendly reception and

guidance, work allocation shall be set as follows.

Table-65 Work Allocation of Reception Service

Work Allocation	Contents of Work		M O H	SPV	
				Reception Service	Other Services
Reception Service	Reception desk	Access control		◎	※1
		Record of patients			※2
		Registration of medical care reservation			※2
		Registration of hospital visit			※3
		Registration of reservation on of medical department			※3
		Registration of examination, treatment, etc.			※3
		Reception of hospitalization		◎	
		Liaison with each section		◎	
		Verbal guidance of facility		◎	
	Operator reception	Response to switchboard		◎	
		Call transfer to each section		◎	
	Guide and attending service for patients	Facility guide to patients and visitors		◎	
		Attending examination with patients in need of support		◎	
		Response to other various inquiries		◎	
Emergency response	Emergency correspondence to departments and person in charge		○	※4	
Communication access service	Procurement and management of communication access service device			◎	※5
	Procurement of telephone circuit in response to the move and change of telephone device			◎	
	Education for MOH personnel on communication access service device			◎	
	Preparation, update and distribution of internal phone guide and users' phone guide			◎	
	Preparation of contact list of medical practitioners and other duty staff			◎	
Other	Dealing with complaints, request for taxi, etc.			◎	
Management of Consumables	Purchase and stock management			◎	
Administrative tasks	Purchase and management of reception related device			◎	
	Making, management and Storage of the data			◎	

※ 1: Carried out in collaboration with Security Service.

※ 2: Carried out by HBYS services.

※ 3: Carried out by secretary allocated to each service.

※ 4: Carried out in collaboration with Help Desk Service.

※ 5: Fixtures and equipment listed in Schedule 13 (Equipment) are procured with fixed investment.

Source: Survey Team

[Help Desk Service]

For Help Desk Service, complaint desk shall be set within the overall work management, failure and claims of work and facility shall be managed by database to avoid relapse.

Moreover, SPV bears the costs for Help Desk Service so that there is no interface risk in the work allocation between MOH and SPV. Thus, this Operation Plan shall not set the work allocation.

[Transportation Service]

For Transportation Service, the description of service conditions of preceding projects gives unclear scope of work. Therefore, in due consideration of smooth transportation of materials within the hospital, clear work allocation shall be set as follows.

Table-66 Work Allocation of Transportation Service

Work Allocation	Contents of Work		MOH	SPV	
				Transportation Service	Other Services
Transportation Service	Transportation plan	Make transportation plan		◎	
		Approve transportation plan	◎		
	Transportation of patients	Transportation from wards to each department		◎	
	Transportation of dead body in the hospital	Registration of dead body storage	◎		
		Transportation of dead body		◎	
	Transportation of specimen containers, testing samples and pathology specimen	Collection and transportation from each department		◎	
	Transportation of medical and sanitary materials	Transportation from central store to each department		◎	
	Transportation of medicines	Transportation from drug storage room to each department	◎		
	Transportation of medical gas	Collection and transportation from each department		◎	
	Transportation of mail matters	Collection and conveyance of mails		◎	
	Transportation of fixtures and furniture	Transportation of small supplies		◎	
		Moves of the departments		◎	
	Collaboration with other services	Collection and transportation of centrally managed equipment		◎	
		Collection and transportation of sterilized items		◎	
		Collection and transportation of linens		◎	
		Collection and transportation of food trolleys			※1
Collection and transportation of wastes				※2	
Other transportation and subordinate transportation services	Collection and distribution of medical records, etc. during HBYS failure			◎	
	Locking and unlocking hospital rooms			◎	
	Emergency support including that in case of fire			◎	
	Treatment during emergency			◎	
Management of equipment	Procurement of equipment and related supplies			◎	



Work Allocation	Contents of Work	MOH	SPV	
			Transportation Service	Other Services
and related supplies				
Management	Preparation, management and Storage of data		◎	

- ※ 1: Carried out by Staff and Patient Service.
- ※ 2: Carried out by Waste Disposal Management Service.

Source: Survey Team

b) Financial Plan (Revenue and Expense)

i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue (considerations for service) is defined and paid as follows.

- The revenue of Patient referrals/Secretarial Services is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

ii. Cost Items

Regarding the cost, in due consideration of terms of payment and scope of work of the Hospital PPP Project, the following items marked with ◎ under SPV column is expected.

**【Reception Service】**

**Table-67 Cost Allocation of Reception Service**

Cost Items		MOH	SPV	
			Reception Service	Other Services
<b>Reception Service</b>				
Expenses for procurement, maintenance and repair of communication device and equipment	Equipment procured in Reception Service		◎	
	Equipment procured with fixed investment			※1,2
Expenses for procurement, maintenance and repair of system	Reception related system (central and local reservation system, etc.)			※3
	System associated with communication devices procured in Communication Access Service		◎	
Expense for consumables			◎	
<b>Common</b>				
※In accordance with “Common” of Imaging Service.				

- ※ 1: Expenses for fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment. For communication device and equipment specified in the special service conditions and fixtures and equipment (office desks, etc.) used by service providers are borne within the scope of Patient Referral Service.
- ※ 2: Expenses related to the maintenance of fixtures and equipment procured with fixed investment is borne by Furniture Service.
- ※ 3: Carried out by HBYS services.

※ Source: Survey Team

**【Heal Desk Service】**

Likewise the work allocation, there is not interface risk of cost items between MOH and SPV. Thus, this Operation Plan shall not set the work allocation.

**【Transportation Service】**

Table-68 Cost Allocation of Transportation Service

Cost Items		MOH	SPV	
			Transportation Service	Other Service
<b>Transportation Service</b>				
Expenses for procurement, maintenance and repair of Fixtures and equipment (hospital trolleys, etc.)	Equipment used within the scope of Transportation Service (store shelves in the central store, hospital trolleys, supplies for the offices, etc.)		◎	
	Equipment procured with fixed investment			※1,2
Expenses for consumables	General consumables		◎	
	Medical materials	◎		※3
	Medicines			※3
<b>Common</b>				
※In accordance with “Common” of Imaging Service.				

- ※ 1: Expenses for fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment. For fixtures and equipment (store shelves in the central store, hospital trolleys, office desks, etc.) used by service providers are borne within the scope of Transportation Service.
- ※ 2: Expenses related to the maintenance of fixtures and equipment procured with fixed investment are borne by Furniture Service.
- ※ 3: As shown in the cost items of each service.

※ Source: Survey Team

#### (14) 2.10 Spraying Service

##### 1) Scope of Work

Spraying Service provides spraying of insecticide, rodenticide, etc. on a regular basis or extraordinarily. SPV shall bear the cost for securing materials, chemicals and staff necessary for providing service.

##### 2) Operation Plan

###### a) Operation Plan

Same as described in “2.1 Building and Ground Service.”

###### b) Financial Plan (Revenue and Expense)

###### i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies

in Turkey, the revenue (considerations for service) is defined and paid as follows.

- The revenue of Spraying Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

ii. Cost Items

Same as described in “2.1 Building and Ground Service.”

(15) 2.11 Parking Service

1) Scope of Work

Parking Service provides improvement and maintenance of parking and traffic control within parking and deals with complaints and other relevant works as needed. Securing materials, staff, etc. necessary for carrying out the work is also included in the scope of service.

2) Operation Plan

a) Operation plan

Same as described in “2.1 Building and Ground Service.”

b) Financial Plan (Revenue and Expense)

i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue (considerations for service) is defined and paid as follows.

- The revenue of Parking Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

ii. Cost Items

Same as described in “2.1 Building and Ground Service.”

(16) 2.12 Waste Disposal Management Service

1) Scope or Work

Waste Disposal Management Service centrally collects and manages various wastes

generated in health facilities, and secures cleanliness in the facilities as well as carries out appropriate waste disposal complying with relevant laws and regulations.

**【Waste Disposal Management】**

- 1) Collection of wastes from designated area
- 2) Transportation and storage of wastes
- 3) Disposal of wastes
- 4) Disposal of unnecessary furniture
- 5) Procurement, sterilization and repair of cases, containers, compressors and vehicle for wastes.

2) Operation Plan

a) Operation Plan

Same as described in “2.1 Building and Ground Service.”

b) Financial Plan (Revenue and Expense)

i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue (considerations for service) is defined and paid as follows.

- The revenue of Waste Disposal Management Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

ii. Cost Items

Same as described in “2.1 Building and Ground Service.”

(17) 2.13 Laundry Service

1) Scope of Work

According to the requirement standards of preceding projects, the following work shall be comprehensively provided 24 hours a day 7 days week with the purpose to centralize the procurement and collection, washing and distribution of daily linen.

1. Provide staff (Cleaning staff etc.) and skills required for Linen Service
2. Collect dirty linen and distribute clean linen

3. Repair and wash dirty linen
4. Store and control stock/quality of clean linen
5. Distribute, tailor, repair, wash and exchange staff uniform
6. Wash curtain, blinds etc.
7. Prepare, store and manage information stipulated in related laws of Laundry Service
8. Provide and control maintenance of required materials (laundry carts etc.) required for Laundry Service
9. Provide consumables (Detergent etc.) used for Laundry Service

## 2) Operation Plan

### a) Operation Plan

#### i. Working Time

According to service conditions, Laundry Service is requested to be provided 24 hours a day 7 days week. However, for similar reasons as Disinfection and Sterilization Service, core service time period shall be set (08:00~17:00).

#### ii. Scope of Service

According to the description of service conditions of preceding projects for Linen Service, the scope of work is unclear. Therefore, in due consideration of appropriate collection and distribution of linen within the hospital facility, clear work allocation shall be set as follows.

Table-69 Work Allocation of Laundry Service

Work Allocation	Contents of Work		MOH	SPV	
				Laundry Service	Other Services
Transportation of linens	Transportation of linens (including clean and used linens)			◎	Transportation of linens
Washing (including infected linens)	Receiving linen washing requests			◎	Washing (including infected linens)
	Washing in the hospital	Sort			Washing in the hospital
		Counting and recording the number of linens			
		Wash and disinfection			
		Dry			
		Finishing (ironing, folding, etc.)			
		Storage management of linens			
	Handling and managing linens to be washed outside the hospital	Requesting outsourcing washing			Handling and managing linens to be washed outside the hospital
		Primary wash (infected linens, etc.)			
		Outsourcing washing			
		Managing delivery date			
		Accepting delivery			
Sewing				◎	
Managing curtains	Periodic replacement			◎	Managing curtains
	Extraordinary replacement			◎	
Managing staff uniforms	Response to the request for uniform (provision, measuring, and receiving uniforms of staff who leave the job, etc.)			◎	Managing staff uniforms
	Replacing and repairing uniforms			◎	
	Disinfection, wash and finishing			◎	
Managing quality of linens	Checking damage and breakage			◎	Managing quality of linens
	Judgment for repairing, renewing, and disposal of damaged/broken linens		◎		
	Repairing damaged/broken linens			◎	
	Applying for renewal of damaged/broken linens			◎	
	Disposal of damaged/ broken linens			◎	
	Renewing damaged/ broken linens				
Management of washing facilities, equipment and	Procuring and managing washing facilities and equipment			◎	Management of washing facilities, equipment and related supplies

Work Allocation	Contents of Work		MOH	SPV	
				Laundry Service	Other Services
related supplies	Procuring and managing linen carts (wash, disinfection etc.)			◎	
	Procuring linens				
	Managing linen stocks			◎	
Management of Consumables	Managing purchases and stocks (quality) of detergent, etc.			◎	Management of Consumables
Administrative tasks	Making, management and Storage of the data			◎	Administrative tasks
Self-service laundry service	Washing	Laundry facility operation	※3	Self-service laundry service	Washing
		Guide and assistance for laundry equipment operation			
	Procuring and managing washing facilities and equipment			◎	
	Managing purchases and stocks (quality) of consumables (detergent, etc.)			◎	

- ※ 1: Carried out by Furniture Service.
- ※ 2: Procured with fixed investment.
- ※ 3: Operated by launderette users (visitors, etc.).

Source: Survey Team

## b) Financial Plan (Revenue and Expense)

### i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue (considerations for service) is defined and paid as follows.

- The revenue of Laundry Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

### ii. Cost Items

Regarding the cost, in due consideration of terms of payment and scope of work of Hospital PPP Projects, the following items marked with ◎ under SPV column is expected.



**Table-70 Cost Allocation of Laundry Service**

Cost Items		MOH	SPV	
			Laundry Service	Other Services
<b>Laundry Service</b>				
Expenses for Installation, maintenance and repair of laundry equipment (washing machine, dryer, etc.)	Equipment procured in Laundry Service		◎	
	Equipment procured with fixed investment			※1,2
Expenses for installation, maintenance and management of system				※3
Expenses for procurement, maintenance and repair of fixtures and equipment	Expenses for procurement and renewal of fixtures and equipment used in Laundry Service		◎	
	Expenses for procurement and renewal of equipment procured with fixed investment (equipment for disaster)	◎		
Expenses for procurement of linen goods		※4		
Expenses for maintenance and repair of linen goods	Repair		◎	
	Renewal			※2
Expenses for consumables			◎	
Expenses for washing outside the hospital			◎	
<b>Common</b>				
※In accordance with "Common" of Imaging Service.				

- ※ 1: Expenses for fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment. For those not listed, their expenses are borne within the scope of Laundry Service.
- ※ 2 : Expenses related to the maintenance of devices procured with fixed investment are borne by Other Medical Support Service while expenses related to the maintenance of fixtures and equipment procured with fixed investment are borne by Furniture Service.
- ※ 3 : Carried out by HBYS services.
- ※ 4: Laundry is procured with fixed investment.

Source: Survey Team

## (18) 2.14 Staff and Patient Food Service

### 1) Scope of Work

According to requirement standards of preceding projects, the following work shall be comprehensively provided 24 hours a day 7 days week with the purpose to provide high quality Meal Service comprised of nutritional food and drinks which reflects the needs and preferred taste of the users and stimulates their appetite.

1. Provide staff (Chef etc.) and skills required for Meal Service

2. Provide Staff and Patient Meal Service which covers the following work
3. Prepare menu, instruct meal number and cook
4. Procure and manage stock/quality of meal ingredients and emergency stocked food
5. Distribute meal and collect dirty dishes and leftover
6. Provide staff meal service at cafeteria etc.
7. Operate restaurant/café for staff and visitors etc.
8. Control hygiene according to related laws of Meal Service
9. Collect waste food and transport it to collection area. Regarding its treatment, it shall be implemented in Waste Management Service
10. Prepare, store and manage information stipulated in related laws of Meal Service
11. Provide required materials (cooking utensils and facility, meal cart etc.) required for Meal Service. Conduct appropriate maintenance inspection according to related laws and safety management.
12. Provide consumables (detergent etc.) used for Meal Service

## 2) Operation Plan

### a) Operation Plan

#### i. Working Time

According to the service condition of preceding projects, Meal Service is required to be provided 24 hours a day 7 days week. However, for similar reasons as Disinfection and Sterilization Service, core service time period shall be set (08:00~17:00).

#### ii. Scope of Service

For Meal Service, the description of service conditions of preceding projects gives unclear scope of work. Therefore in due consideration of various meal provision within the hospital facility, clear work allocation shall be set as follows.

**Table-71 Work Allocation of Staff and Patient Food Service**

Work Allocation	Contents of Work		MOH	SPV		
				Food Service	Other Service	
Safe management of food	Preparation of hygiene management standards		◎			
	Hygiene management standards			◎		
Procurement and maintenance and preparation of ingredients	Procurement of ingredients (from contract to inspection) ※Including ingredients related to milk formula			◎		
	Confirmation, audit, etc. of ingredient inspection		◎			
	Storage of ingredient and stock management			◎		
	Reserved food for emergency			◎		
Creation of menu and order of food	Creation of menu	Establishment of food criteria	◎			
		Preparation and management of menu table	◎			
		Management of dietary slip	◎			
		Implementation and evaluation of food inspection	◎			
	Order of food		◎			
Clinical nutrition work	Supervision of ward and outpatient nutrition		◎			
Waste liquid and waste management	Collection and conveyance of food waste			◎		
	Process of food waste				※1	
Preparation and supply of food	Catering and uncatering of food			◎		
	Cleaning, sterilization and custody of plates			◎		
	Food supply	For patients	General meal		◎	
			Special meal		◎	
		For hospital staff			◎	
		For hospital visitors			◎	
Milk formula		◎				
Supply of food and drink with the financially independent system of SPV	Food and drink supply	Light meal and drink			※2	
		For visitors	Installation and operation of restaurant/cafe		※2	
	Vending machine	Installation, operation and maintenance of vending machine			※2	
		Installation and clean maintenance of garbage bin			※2	
Procurement of equipment related to cooking facility and equipment	Relevant rooms			◎		
	Installation and management of staff and patient food management system				※3	
	Installation and management of cooking equipment, etc.			◎	※4	
	Procurement and management of equipment (catering and uncatering cart, etc.)			◎		
	Procurement of consumables and (stock) management			◎		

Work Allocation	Contents of Work		MOH	SPV	
				Food Service	Other Service
Management	Preparation, management and storage of data	Request for staff and patient food		◎	
		Management of staff and patient food related data		◎	
		Related master maintenance		◎	
		Preparation and storage of work diary, monthly report, etc.		◎	
		Preparation and storage of various documents on related laws and regulations		◎	
		Preparation and storage of other necessary documents		◎	

- ※ 1: Carried out by Waste Disposal Management Service.
- ※ 2: Carried out with the financially independent system of SPV
- ※ 3: Carried out by HBYS services.
- ※ 4: Devices, fixtures and equipment listed in Schedule 13 (Equipment) are procured with fixed investment. procured with fixed investment

Source: Survey Team

#### b) Financial Plan (Revenue and Expense)

##### i. Revenue (payment for service)

According to hearings with the contractors of preceding projects and private companies in Turkey, the revenue (considerations for service) is defined and paid as follows.

- The revenue of Staff and Patient Food Service is paid in accordance with the amount of each year proposed by applicants.
- Payment is made to SPV on a monthly basis after reflecting the monitoring results.

##### ii. Cost Items

**Table-72 Cost Allocation of Staff and Patient Food Service**

Cost Items		MOH	SPV	
			Food Service	Other Services
<b>Food Service</b>				
Expenses for procurement, maintenance and repair of Food related facility (kitchen device, etc.)	Equipment procured in Food Service		◎	
	Equipment procured with fixed investment			※1,2
Expenses for installation, maintenance and management of system				※3
Expenses for procurements, maintenance, repair of fixtures and equipment (catering cart)	Equipment procured in Food Service		◎	
	Equipment procured with fixed investment			※1,2
Expense for procurement of ingredient		◎		
Expenses for consumables			◎	
<b>Common</b>				
※In accordance with “Common” of Imaging Service.				

- ※ 1: Expenses for fixtures and equipment listed in Schedule 13 (Equipment) are borne by fixed investment. For those not listed, their expenses are borne within the scope of Staff and Patient Food Service.
- ※ 2 : Expenses related to the maintenance of devices procured with fixed investment are borne by Other Medical Support Service while expenses related to the maintenance of fixtures and equipment procured with fixed investment are borne by Furniture Service.
- ※ 3 : Carried out by HBYS services.

Source: Survey Team

## **7. Human Resource and Development Plan**

### **7-1. Recruitment Plan**

#### (1) Administrative Staff

##### 1) Type of Jobs and Manpower Plan

This project will be realized after the integration of the existing 2 hospitals, and in principle, the staff who work for the existing hospitals are planned to transfer to the new hospital. Therefore, the staff in Aydın City Hospital is planned as shown on the Table-73 based on the statistical data of the existing 2 hospitals and the numbers on Pre-FS planned by MOH.

The sum total of the beds in the existing 2 hospitals is 770, which is less than 800 beds planned to be prepared in Aydın City Hospital, so the number of staff in the new hospital is not simply calculated according to the existing hospital scale but counted including extra number of staff which is mainly doctors and nurses necessary to operate the new hospital. In addition, the number of administrative staff in the new hospital might be less than the sum total of the one of the existing hospitals because the number of staff in the old hospitals contains personnel for operational services which will be outsourced in the new hospital. On the other hand, in case the number of staff in the new hospital exceeds the demanded level after the integration of the existing 2 hospitals, it will be needed to transfer those extra staff to the other national hospitals, institutes related to MOH.

Table-73 Manpower Plan for Aydın City Hospital

Type of Jobs	Aydın National Hospital	Aydın Atatürk National Hospital	Aydın City Hospital (New Hospital)
Hospital Manager	NA	NA	1
President	1	1	1
Vice President	3	2	3
Director	2	1	3
Assistant Director	2	3	6
Specialists	161	94	250
Generalists	24	26	39
Dentists	-	-	2
Pharmacists	8	5	14
Nurses	344	228	561
Midwives, etc.	54	43	92
Medical Clerk	NA	NA	319
Laboratory Technicians	49	29	76
Radiological Technicians	43	32	72
Anesthesia Technicians	24	17	55
Nutritionists	67(※1)	55(※1)	7
Clinical Psychotherapists	4	2	7
Social Welfare Workers	15	9	5
Other staff related to Social Welfare	41	21	96
Engineers	5	2	6
Technicians	26	40	25
Clerical Staff	15	12	11
Employees	35	44	71
Drivers	6	4	7
Paramedics	NA	NA	31
Other staff	NA	NA	90
Physiotherapists	NA	NA	11
Total	929	670	1,861

(※1) including cooks in the existing hospitals

Source: Survey Team

2) Level of Staff

As already mentioned above, the staff in the new hospital will be transferred from the existing 2 hospitals, so the level of the staff and medicine will be handed to the new hospital. Though the level of the existing 2 hospitals has been already mentioned in the chapter 3-3, those 2 hospitals have been one of the core hospitals which provide high-end medicine and can satisfy local needs in a certain amount of level. While the ration of cancers or cardiovascular diseases in Turkey increases, the new hospital is expected to offer advanced medicine by combining the medical department in which both existing hospitals are excel at.

As an example, a doctor whom the survey team interviewed in the facility planning for Aydın City Hospital seemed to have a certain amount of medical level because he had the same level of knowledge in medicine and way of thinking as Japanese doctors had. The doctor, who used to study in USA, was from Aydın and regularly came to Aydın and diagnosed and treated local patients while he worked for a national hospital in Ankara. The doctor was going to work for Aydın City Hospital in the future and expected to contribute to the improvement of medical quality in the new hospital.

## (2) SPV Staff

### 1) Services and Manpower Plan

In the operation phase, SPV is required to recruit staff and provide 19 operational services and overall management service for those 19 services. The number of the staff is planned according to the contents and specialty of the services and based on the examples of the other hospital PPP projects.

In addition to those services above, there is also staff work in convenience facilities such as restaurants, convenience store, and so on. However, the staff for the facilities is not included to the number of the staff which SPV recruits because those staff is mainly hired by not SPV but out suppliers.

### 2) Level of Service Provider

In the interview implemented to the existing 2 hospitals, the directors of both hospitals answered that they were satisfied with the outsourcing services in their own hospitals. Therefore, SPV can recruit experienced staff in Aydın area.

Regarding operational services in national hospitals in Turkey, same staff generally remains in same hospitals even if operational service providing companies are replaced with new companies, so service providing staff hardly changes in hospitals. For this reason, in Aydın City Hospital, SPV can maintain a certain amount of service level by mainly re-employing experienced staff who now work in the existing 2 hospitals.



## 7-2. Human Resource Development Plan

### (1) Administrative Staff

Planned MOH staff is mainly medical staff, and certified individuals are employed in principle. MOH is in charge of the human resource development plan for those staff, so SPV is not required to determine the plan.

Human resource development for those staff can be considered out of the scope of the hospital PPP projects by interaction between Japan and Turkey in terms of medicine and medical science. However, Aydın City Hospital is planned to be clarified as A-II hospital, which is not supposed to have educational function. Therefore, the human resource development for the MOH staff in Aydın City Hospital needs to be implemented in a plan not only for Aydın City Hospital but also for the other university hospitals and educational institutes. Medical cooperation agreements have already been signed between medical universities in Turkey and Japan (Ankara University in Turkey, Hacettepe University in Turkey, and Tokyo Women's Medical University in Japan; Acibadem University in Turkey and Juntendo University in Japan). In the human resource development plan, medical interaction between Turkey and Japan can be promoted by taking the advantage of these relationships.

### (2) SPV Staff

SPV is in charge of providing “staff that can provide the service” and let the staff actually provide the service. Therefore, the human resource development for the operational service providers is implemented in operational service providing companies, and the companies need to secure that they do not dispatch the service providers until the companies decide that the skills of the service providers are satisfying enough.

For this reason, if the SPV is composed of Japanese companies, technic, experience, and knowhow from the Japan companies will be transferred to the local area in terms of human resource development for the staff by training of construction technic, procurement of medical equipment, operation technic of medical equipment, and so on in the each procedure of design, construction, operation phase, or by offering OJT while the staff provides operational services.

Especially, since operational services are monitored by MOH according to the performance parameters through 25 years operation period, and have possibility to receive less service payment, SPV should maintain its high service level with educating human resources.

## **CHAPTER 5. PROJECT RISK ANALYSIS AND COUNTERMEASURES**

## Chapter 5. Project Risk Analysis and Countermeasures

### 1. Risk Analysis

#### 1-1. General

Prior to the amendment of the Hospital PPP Law in 2013, Project Agreement on the Hospital PPP Project contained unclear aspects in terms of risk allocations. The Hospital PPP Law was then revised and new PPP regulations were stipulated under the revised law. Accordingly, MOH improved the project with the support of external advisors. According to the interviews with financial institutions and local law firms, because of the improvement of Project Agreement, generally the project risks of Hospital PPP Project are kept to a reasonable level and many of them evaluated it as becoming feasible.

Taking into account such circumstances and opinion, and reviewing the laws mentioned above and the project agreement of the preceding project (Adana Health Campus Project), a lot of conditions are described to correspond with risk allocations between the client and the private contractor as shown in Japanese hospital PFI projects. Yet, there are also other conditions on risk allocations that appear to be somewhat different from those of Japanese hospital PFI projects. Also, it seems such opinion does not necessarily consider it important to improve requirement standard (and the possibility of non-functional revision of the project agreement opposite to SPV's assumptions) and thus it is significantly important to continue proposing the improvement of requirement standard not just from the viewpoint of securing the quality in the Hospital PPP Project and ultimately increasing the public interest, but also from the viewpoint of securing reasonable risk allocations.

The following section includes the evaluation of the project risk of the Hospital PPP Project from the field survey above, and the important matters are reported based on the current analysis.

#### 1-2. Common Risks

##### (1) General Remarks

Common risks affecting the entire project term (the construction phase including delivery of land for project site; the management, operation and maintenance phase; and the project completion phase including restitution of the land) appear to be allocated reasonably among the client and contractor. But care must be taken for the following matters.

##### (2) Risks Related to the Procedures for Bidding and Contract Agreement

###### 1) General Remarks

These risks are designed to be born in principle by the contractor.

## 2) Risks Arising from Errors in Bidding Documents

The PPP Law, PPP regulations and Project Agreement contain no particular provision that clearly defines allocations of risks arising from errors in bidding documents (risks of increased cost or other incidents as a result of misleading statements, etc. in bidding documents). According to hearings to consulting lawyers of MOH, project contractors may negotiate with MOH over changes in consideration of project agreements even after the bidding is closed in accordance with Article 61 of the PPP regulations which stipulates changes in contract terms and conditions. However, paragraph 2, Article 61 of the PPP regulations requires accepts the changes in the consideration only when the contractor cannot complete the work under the conditions set forth in the agreement due to any reasons which does not arise from the fault of the contractor. At the same time, any revision to project agreements after the completion of the bidding procedures, which requires changes in economic conditions that are prerequisites for the bidding, could raise suspicions of the fairness of the bidding procedures. Thus, it is not necessarily easy to change consideration of project agreements on the grounds that errors are found in bidding documents after the bidding is closed.

On the other hand, the consulting lawyers of MOH say in the hearings that there were some projects, where bidding and other documents included inaccurate statements and figures, bidders pointed out them before the closure of the bidding period, and the inaccurate statements and figures were corrected. Thus, it will be desirable to correct any errors and inaccuracies in bidding documents as much as possible prior to the closure of the bidding period.

When the cost increases as a result of errors and inaccuracies in bidding documents, it is theoretically possible to request for damages, claiming that errors of bidding conditions or fraud constitute an act of injustice *ex-post facto*<sup>12</sup>. In light of the difficulty of proving the causal relationship between increased costs and such errors, and calculating the increased margin, it will be extremely difficult to seek legal solution.

## 3) Risks of Failure in Reaching Contract Agreement

The administration shall not undertake any obligations against the bidders due to the cancellation of the tender (paragraph 3, Article 44 of the PPP regulations).

Moreover, the consulting lawyers of MOH say in the hearings that there is no particular provision about compensation for failure in signing project agreements due to reasons attributable to the client (with no liability to successful bidders), and that the availability of

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<sup>12</sup> The statement in the main text is based on the definition of acts of injustice in Japan, so it is necessary to interpret these cases in the legal framework in Turkey.

compensations depend on negotiations between the parties concerned or court decisions after breakdown in negotiations. Although risks in case of failure in reaching a contract agreement including cases where the client is liable for the failure (such as expenditures of advance investment made in prospect of the conclusion of project agreements) do exist, risk allocations are not clearly defined.

Here, MOH can cancel or change bidding activities at its discretion, so it will be difficult for contractors to insist illegality of cessation of the bidding procedures and claim for damages.

### (3) Risks Arising from Revisions of Laws and Regulations, Governmental Policies, Systems, etc.

#### 1) General Remarks

These risks (risks of increased cost or other incidents as a result of these revisions) are considered to be reasonably allocated among the client and contractors. But it is still necessary to pay attention to the following matters. In other words, when laws and regulations, governmental policies, etc. are revised, the contract terms and conditions are revised according to the procedures set forth in Article 44 of the Project Agreement and Schedule 22, which are general provisions for revisions to contract terms and conditions. But they place certain limitations as follows on the margin of increases in consideration paid by MOH (i.e., any increased cost exceeding the limitations need to be borne by contractors). In this sense, it can be considered that these risks are well allocated among the client and contractors.

\* Summary of provisions of Article 44 of the Project Agreement and Schedule 22

<Changes in consideration for construction and other works>

(i) “On the condition that the cumulative total cost which is required in order to application of Work Change and which is calculated in line with Schedule 22 is not more than 1% of related Sub Work Items before taxes, the Company shall implement the Work Change without any payment to be gathered from Contracting Entity.”

(ii) “On the condition that the cumulative total cost which is required in order to application of Work Change and which is calculated in line with Schedule 22 is more than 1% of related Sub Work Items before taxes, the Company shall gain the right to get payment regarding the costs which may cause the increase in total cost of the Works. In case the Contracting Entity will not make the payment related to the work change, the Company shall have the right to choose whether to carry out the Work Change or not” (the items of Article 44.2 of the Project Agreement).

(iii) “Within the investment period, the cumulative addition of the increases to be carried out according to article 44.2 shall not exceed 20% of the Total Fixed Investment Amount” (Article 44.4 of the Project Agreement).

<Changes in consideration for services>

(iv) The provisions cited in (i) and (ii) above will be applicable to consideration for services related to management, operation and maintenance.

(v) “The service shall not exceed an increase or decrease of more than 10% in the Service Payment” (Article 44.3 of the Project Agreement).

## 2) Revisions to laws and regulations

When any laws and regulations that may affect projects are revised, the terms and conditions of the Project Agreement may be revised in accordance with Article 44 of the Project Agreement and Schedule 22 (see item (i) above).

## 3) Termination of the Project Agreement according to the will of the client

The PPP Law, PPP regulations and Project Agreement contain no particular provision that clearly defines allocations of risks arising from the termination of the Project Agreement because the project cannot be continued based on a resolution of the Turkish Assembly or any other reasons (risks of incurring losses to contractors).

Here, the consulting lawyers of MOH say in the hearings that if it becomes difficult to continue the project due to a resolution of the Turkish Assembly and the project is terminated, Article 1 of Schedule 23 of the Project Agreement will apply to the case, and compensations including lost profits (profits that the contractors could have gained if the project continued) will be paid to the contractors (Article 1.4 of Schedule 23). If this interpretation is applicable to the termination of the Project Agreement, it can be said that risks faced by the contractors are alleviated to a reasonable extent. In reality, however, there has been no precedent but there are some uncertain factors.

## (4) Risks Related to Solvency of MOH

### 1) General Remark

As for lease payment and payment of compensation for services by MOH, project contractors are highly likely to gain guarantee from the Turkish Treasury. Risks related to solvency of MOH appear to be low.

### 2) Relationship between Budget-Securing by MOH and Budget-Provision by the Treasury

Paragraph 5, Article 5 of the PPP Law and Article 39.1 of the Project Agreement stipulate that “timely and full payment of all the payments to be paid to the Company within this Contract including but not limited with the Rental shall be the liability of Turkish Republic,

Ministry of Health and Turkish Republic Ministry of Health shall ensure that all the required allowances are appropriated both for related circulating capital and for central management budget.”

According to Turkey’s public finance laws and regulations, even if any expenditure is scheduled over multiple fiscal years, no particular special budget is earmarked for a long period. In either case, no resolution is particularly required at the Assembly to earmark the budget of these payments.

### 3) System of the Government Guarantee

A guarantee system is available, whereby the Treasury secures the solvency of MOH. Legally, this is indirectly stipulated by Article 13 of the PPP Law. To gain payments by the Treasury on behalf of MOE in default, five conditions must be satisfied: (i) the investment amount is TRY 500 million or more; (ii) the project agreement concerned is dissolved prior to the end of the project term and facilities concerned are likely to be handed over by the relevant administrative body; (iii) the project is approved as appropriate by the Treasury before the distribution of bidding documents and also before the conclusion of the project agreement; and (iv) the Council of Ministers approves the project based on the proposal of the minister.

## (5) Risks Related to the Scope of Work, Standards Required, etc.

### 1) General Remarks

These risks are also considered to be reasonably allocated among the client and contractors, but it is still necessary to pay attention to the following matter.

### 2) Risks Related to Changes in the Scope of Work and Changes in Standards Required

Article 44 of the Project Agreement and Schedule 22 (see item(3)-(i) above) stipulates allocations of risks that arise when the scope of work or standards required are changed (risks of increased cost, etc. as a result of changes in the scope of work to be undertaken by contractors during the contract term, or standards required). In this sense, it can be considered that, as stated earlier, there are certain limitations on increases in the cost of works, and that these risks are allocated among the client and contractors.

(6) Others

1) Force Majeure Risks

The Project Agreement in the items of Article 6.1 lists incidents that are deemed force majeure, such as legitimate strike, plague and war state. Article 46.2 stipulates that “in case the Company state claims related to Force Majeure, it shall be free from the responsibility for the obligations,” and Article 46.9 stipulates that “in case the Force Majeure emerges at the date of Actual Completion Date or later, the adverse condition emerging from such occurrence shall not be taken into consideration for scoring according to a Performance Monitoring System in case a Service is effected and it shall not be evaluated as low performance.” It is stipulated, however, that if any incident of force majeure occurs after the date when the construction of hospital facilities is actually completed, the contractors may claim for damages within the scope stipulated in Article 51.1 of the Project Agreement and Article 5 of Schedule 23. In other words, the Project Agreement stipulates that no lost profits will be claimed.

**1-3. Risks at the Construction Stage**

(1) General Remarks

These risks are reasonably allocated among the client and contractors, but it is still necessary to pay attention to the following matters.

(2) Risks Related to Measurement and Project Site

1) General Remarks

Risks related to measurement and project site are reasonably allocated among the client and contractors, but it is still necessary to pay attention to the following matters.

2) Measurement and Survey Risks

As for risks arising from errors in measurement and surveys of the project site performed by the client, Article 16.1 of the Project Agreement stipulates that “the Contracting Entity cannot be hold responsible for any damage, loss, expense or responsibility resulting from acceptance, use or application of the Data disclosed to the Company by the Company or the Company Party,” and that the contractors will bear these risks.

3) Project Site Risks

As a prerequisite for a project, the client must possess the ownership of the project site. If



the client fails to own the project (in whole or part), it is possible that the business operator of hospital facilities to be built on the project site will be unable to own these facilities or provide various services at these facilities. In this regard, Article 7.10 (f) of the Project Agreement stipulates “that the Contractor shall be exclusively responsible for demands and results from official establishments and institutions or third persons regarding the land property.” Meanwhile, Article 21.3 refers to soil contamination of the project site which is found after the client delivers the site to the business operator, stipulating that “in case unexpected ground conditions and/or any Contamination occurs beneath the existing buildings and/or in any part of the Land after the Place Delivery Date, if examination or audit of this condition is not possible during the tender process, the mentioned conditions could not be detected by Physical and Geophysical Ground Surveys and thus they are not defined in Annex 8 (Construction Matters) and if the detection of these couldn’t have been possible under objective conditions even if the Physical and Geophysical Ground Researches had been done properly, the Company shall not be held responsible from these events. Within this article 21.3, in conditions where the Company is not responsible for the mentioned ground conditions and/or Contamination, the Contracting Entity shall be responsible.”

### (3) Others

#### 1) Risks Related to Acquisition of Building Permits

As for risks of inability (or delay) of acquiring building permits, Article 22.4 of the Project Agreement stipulates that “in case the Company doesn’t comply with the provisions of this Contract or the building license needed to start the Works cannot be obtained due to approval of the Final Project is delayed due to any failure or negligence of the Company, the Company shall not have the right of demanding supplementary Financial Expense or prolongation of time for the Investment Period in any way.”

On the other hand, Article 22.6 of the Project Agreement stipulates that “in case the building licenses... cannot be obtained within 90 (ninety) working days after the Land Transfer Date, the Company may demand 50% (fifty percent) of daily Financial Expenses occurring in the Company responsibility and reasonable general expense and cost factor within the scope of Finance Agreements for each day from the expiration of 90 (ninety) working days in addition to prolongation of Investigation Period to obtaining of building licenses... from the Contracting Entity. However, under any conditions, the total amount to be paid by the Contracting Entity in accordance with this article 22.6 cannot exceed %2,5 (two and a half percent) of Total Fixed Investment Amount.” In other words, even if the contractor fails to obtain building permissions at the right timing due to any reason attributable to MOH or any other third party, the contractor will still be required to bear risks within a certain limit because of the upper limit of the claimed amount (although the client will in principle bear such risks).

## 2) Risks of Opposition Movements of Local Citizens

The PPP Law, PPP regulations and Project Agreement contain no particular provision that clearly defines allocations of risks of opposition movements or other actions of local citizens or other parties.

Here, the consulting lawyers of MOH say in the hearings that the administrative body bears all the responsibility for local citizens' movements against the use of the project site.

There is a view that risks of local citizens' opposition movements that occur before the delivery of the project site should be borne by the client on the ground that "the Land complies with the construction of Facilities, the environmental regulation and it is totally in possession of the Contracting Entity by signature date, Land Transfer Date, Land Delivery Date and Operation Period start of this Contract"(paragraph1, Article 12 of the Project Agreement), while risks of these movements that occur after the delivery of the project site should be borne by the contractors. But there is no concrete case that supports the view, and it is still uncertain if these risks are handled in accordance with this view.

### 1-4. Risks at the Operation Stage

#### (1) General Remarks

Among risks at the operation stage, those related to fluctuations in demand and prices are reasonably allocated, but care must be taken for risks of failure of the SPV to satisfy operation service standards required.

#### (2) Operation Services Common Risks

##### 1) General remarks

Common risks related to operation services are reasonably allocated, but it is still necessary to pay attention to the following matters.

##### 2) Demand Fluctuation Risks

Risks of fluctuations in compensation for services due to fluctuations in the number of patients are applicable to pay-as-you-go services only. The operation services provided by the SPV are classifiable into fixed and optional services. They are also classifiable in terms of payment: that is, pay-as-you-go services, for which service payments are made according to workloads, and quantitative services, for which service payments are paid at certain fixed rates regardless of workloads. As for compensation for pay-as-you-go services (Imaging Service, Laboratory Service, Disinfection and Sterilization Service, Rehabilitation Service,

Waste Disposal Management Service, Laundry Service, Staff and Patient Food Service), there is a provision that guarantees 70 %% of the compensation at the time of contract agreement regardless of the number of patients or other indicators of workloads. However, it should be noted that, if the hospital operates at 50 %% in a month, 20 %% of the compensation for services will be indemnified, and if it operates at 90 %% in the following month, 20 %% of the compensation that exceeded the minimum guarantee, 70 %%, will be deducted from the indemnification in the said month. On the other hand, if the hospital operates at a rate above the annual scheduled operating rate, a discount rate of a certain unit price will be applied but payments will be made according to the actual performance. In this sense, the system of payments of compensation for services is more or less reasonable. In passing, in a PFI project in Japan, there is no provision to guarantee the minimum payment amount as in the case in Turkey. But it is stipulated that the business operator and outsourcing party may discuss revisions to unit prices set forth in the contract agreement in the case the amount of compensation for services changes by 10 %% or more compared to the scheduled amount at the time of the contract agreement.

**Table-74 List of Services for Hospital PPP Projects in Turkey (Same as Table-47)**

	List of Service	Service Category		Payment Category	
		Mandatory	Option	Non-volume	Volume
1.1	Imaging Service		○		○
1.2	Laboratory Service		○		○
1.3	Disinfection and Sterilization Service		○		○
1.4	Rehabilitation Service		○		○
1.5	Other Medical Support Service	○		○	
2.1	Building and Ground Service	○		○	
2.2	Extraordinary Maintenance and Repairing Service	○		○	
2.3	Collective Service	○		○	
2.4	Furniture Service	○		○	
2.5	Ground and Gardening Service	○		○	
2.6	Cleaning Service		○	○	
2.7	Hospital Information Service		○	○	
2.8	Security Service		○	○	
2.9	Patient referrals / Secretarial Services		○	○	
2.10	Spraying Service		○	○	
2.11	Parking Service		○	○	
2.12	Waste Disposal Management Service		○		○
2.13	Laundry Service		○		○
2.14	Staff and Patient Food Service		○		○

Source: Survey Team

### 3) Operation Cost Risks

#### a) Risks Arising from Revisions to Laws and Regulations

Article 43 of the Project Agreement stipulates that in the case of legislative amendment shall affect the service payment, MOH and SPV shall revise the service payment and in case such legislative amendment shall make more than 1% of decrease of service payment, SPV can request amendment of service to MOH. Accordingly, these risks are reasonably allocated among the parties concerned.

#### b) Risks Arising from Fluctuations in Prices and Exchange Rates

In relation to fluctuations in prices and exchange rates, there is an arrangement, whereby risks for the contractors are alleviated with lease payment and payment of compensation for services made by MOH to the SPV.

As for lease payment, fluctuations in prices for three months of each accounting period are fully taken into account. Lease payment in each accounting period must compensate for any exchange-rate and other losses due to inflation of Turkish lira.

As for compensation for services, price fluctuations are taken into account for compensation for constant rate services and other assisting services, whereas fluctuations in medical service fees are taken into account for compensation for medical assisting services. As in the case of lease payment, this appears to be a reasonable rule of risk allocations.

### **1-5. Risks of Failure in Satisfying Requirement Standards**

Schedule 14 of the Project Agreement sets parameters concerning detailed status of performances (performance parameters) to evaluate the provision of services in detail, and reflect the results of monitoring in the quality of services and compensation for the services.

Some 20 – 30 performance parameters are set for each service, some of which require fairly high service standards. Thus, preparation must be made carefully to satisfy them.

In line with the performance parameters, the SPV will be given “fault points” if it fails to satisfy the predetermined service standards. There is a provision that, if fault points accumulate up to 75% of the limit (which is set according to the total floor area of the hospital; one million points for hospitals with the floor area of 250,000m<sup>2</sup>), the contract between MOH and the SPV will be cancelled.

MOH is currently preparing Schedule 14 of the Project Agreement, where a new indicator, “performance points”, will be introduced as another indicator that may lead to the dissolution of the contract. Specifically, the new provision stipulates that MOH will dissolve the contract with the SPV if the SPV fails to gain performance points below the level set at the time when the contract is concluded. MOH is still considering indicators and evaluation methods in detail, but the scheme could be a considerable risk for the SPV. We will continue discussing with relevant officials of MOH to reduce the risk of contract dissolution.

### **1-6. Procurement Risks**

#### **(1) General Remarks**

These risks are reasonably allocated among the client and contractors, but it is still necessary to pay attention to the following matters.

#### **(2) Risks of Defects among Products Procured**

If there is any defect in products procured that is found during the service period or any mistake of the SPV that may affect the service period, the SPV will in principle bear the risks

involved. As it is necessary to handle the maintenance and repair works on products in the service period within the framework of the operating services, the cost must be appropriately calculated in advance.

MOH sets the service period for each instrument or device and decides whether to continue using each instrument or device beyond the service period. The SPV will assume no responsibility whatsoever for any damage that has occurred as a result of the use of equipment beyond the service period.

### (3) Risks of Transfer and Installation of Medical Equipment and Fixings

In principle, the SPV will bear risks of any damage to medical equipment and fixings in the course of transfer if they are not yet delivered to the client, but the client will bear risks arising from any reason attributable to the client itself. As for the installation, the SPV will assume the responsibility for damages of any kind that have occurred in the course of operations of the SPV itself. In preparation for these incidents, the SPV is required to purchase liability insurance according to Schedule 21 of the Project Agreement.

If there is a delay of more than 30 days in the delivery of products procured, the SPV will be fined some 0.03 % of the total value (value added tax exclusive) at the relevant stage with the upper limit of 10%. On the other hand, the SPV will have the right to claim for damage arising from any delay due to reasons attributable to the client.

### (4) Risks Arising from Changes in Products Procured and Their Quantities

As for risks arising from changes in demand for products procured, technological innovation (product obsolescence) and changes in the quantity, regardless of parties requesting these changes, the SPV will bear the cost incurred if the change in question is within the range of 1 % of the total before-tax value of medical equipment and fixings procured, whereas the client will bear the cost incurred if the change in question exceeds 1 %. If the functions, quantity, etc. of products procured change, market surveys will be conducted to investigate the prices of the products concerned.

## **1-7. Risks Related to Operations of Commercial Facilities**

### (1) General Remarks

Commercial facilities will be basically operated by the SPV on a stand-alone basis, so the SPV will in principle bear risks of business operations. At the time of price proposals in the course of selecting business operators, lease payment was suggested in the light of profits of the commercial facilities. It should be noted, however, that if too much profits are expected in this Aydın Project, where no large commercial facilities are planned, this could cause risks.

It should also be noted that the PPP law stipulates no particular standards required for

operations of commercial facilities, but that there are regulations on performance parameters of commercial facilities that are determined based on whether their operational services satisfy certain standards required. Care must be taken for any impact on the operations of other services.

## (2) Risks of Failure in Satisfying Standards Required

As for the operations of commercial facilities, the Project Agreement stipulates that the SPV will assume all the costs, risks and responsibilities for commercial activities, and engage in the activities at its own discretion in an appropriate manner that complies with all the relevant laws and regulations, and requirements for the development of commercial facilities. On the other hand, the Project Agreement and Schedule 14 on “performance parameters for catering services” set forth parameters related to the operations of commercial facilities. Care must be taken as it is possible that, under the present regulations, compensation for catering services may be reduced in accordance with the operations of commercial facilities on a stand-alone basis.

## 1-8. Risks at the Time of Project Termination

### (1) General Remarks

Article 7 of Schedule 24 stipulates that in case of transferring procedure, taking over work, and / or fulfilling requirement level for facilities, the contractor and the Contracting Entity take the cost burden according to their responsibility, so risks at the time of project completion are considered to be reasonably allocated among the client and contractors. But it is still necessary to pay attention to the following matters.

### (2) Transfer of the Ownership of Facilities and Transfer Prices

Article 50.3 (a) of the Project Agreement stipulates that in case the Contract is terminated, the contractor remains and transfers the facilities to the Contracting Entity by any means, and ownership of the facilities will be transferred to MOH, accordingly.

On the other hand, Article 1.1.1 of Schedule 23 stipulates that “the total value of the part of the Works that have been built by the Company as of the Termination Date as determined based on the Application Project and Financial Model, after deducting the Equity already paid as of that date,” so the transfer prices of the facilities will be determined in accordance with the financial model.

### (3) Termination Payment

#### 1) Termination of the Project Agreement due to reasons attributable to the

contractor

Article 3 of the Project Agreement stipulates that in case the Contract is terminated due to the breach of the Contract (article 47 of the Project Agreement) by the contractor, or in case the contractor terminates the Project Agreement with no legitimate reasons, the Contracting Entity takes the Performance Bond (3% of total fixed investment), which is paid by the contractor in advance. In addition, the article also stipulates that in case the Performance Bond has been already appropriated as the payment to the Contracting Entity and run short in the amount, the contractor must pay the rest of the payment within 10 (ten) working days after the termination date.

Therefore, if the Project Agreement is terminated due to any reason attributable to the contractor, the performance bond set forth in the Project Agreement (3 % of the total fixed investment amount) will be used for terminal payment.

## 2) Termination of the Project Agreement due to Reasons Other than Those Attributable to the Contractor

There is no particular provision as in the provision above for cases where the Project Agreement is terminated due to breach of the agreement by MOH, voluntary dissolution, force majeure or any other reason that is not attributable to the contractor.

In these cases, however, Article 1.4 of the Project Agreement stipulates that the Contracting Entity pays for the lost profit calculated according to the data on the Finance Model (Appendix 19), in addition to the construction fee for the facilities and penalties for the contractors and sub-contractors as the result of the termination of the Contract before maturity.

## 2. Consideration of Application of Insurance to Risks

### 2-1. Basic Approach

To ensure stable business operations of the SPV, the coverage of insurances to purchase will be considered. To this end, the focus will be placed on “reasonable insurances” and “faithful and swift response to parties suffering from accidents”.

In light of the insurances required to be purchased under Schedule 21 of the Project Agreement, and risk allocations in the PPP project, cost-effectiveness of insurances will be examined to determine appropriate and effective insurances and prepare for unpredicted incidents.

The coverage, terms and conditions of insurances to be purchased will be reviewed in detail, added and revised in the course of considering participation in the project in future.



## **2-2. Insurances Required under Schedule 21 of the Project Agreement**

Schedule 21 of the Project Agreement makes it mandatory to purchase the following insurances.

### **(1) Insurances during the Construction and Operation Periods**

#### **1) Third-party Liability Insurance**

The SPV is required to purchase an insurance to compensate for monetary and non-monetary damages that are incurred during the course of business operations and claimed by third parties.

#### **2) Employers Liability Insurance**

The SPV is required to purchase an employers` liability insurance to prepare for risks of legal liability against compensation claims from its employees or employees of subcontractors in case of accidents at the hospital facilities. The insured amount must be at least USD 200,000 in preparation for any legal action by the Social Security Institution of Turkey against the SPV over death from work-related accidents.

### **(2) Insurances during the Construction Period**

#### **1) Construction Insurance**

The construction insurance to be purchased is required to cover all risks.

#### **2) Professional Liability Insurance**

The SPV is required to purchase a professional liability insurance against possible damages arising from professional fault or negligence in relation to the design of the hospital facilities.

### **(3) Insurances during the Operation Period**

#### **1) Hospital Blanket Insurance**

The SPV and subcontractors are required to purchase an all-risks insurance which covers the hospital facilities themselves, independent units, general areas, annex buildings and other units, instruments, machinery, engines, machines, equipment and other fixed assets against all damages including loss, natural disaster, fire, terrorism, strike, lockout, riot, civil commotion, theft and other similar risks.

## **CHAPTER 6. ENVIRONMENTAL AND SOCIAL CONSIDERATION**

## Chapter 6. Environmental and Social Consideration

### 1. Overview of the Project Site and Plan

#### 1-1. Overview of the Project Site

##### (1) Current Use of project Site

As of December 2014, there are no residential buildings within the project site, which is generally grassland. There are no permanent or temporary structures, either, other than fences and a small building on the former soccer field built by Şevketiye Village in the northern end of the site (see photo a below; hereinafter the same). Because it is rarely used for official purposes, it has been unofficially used to keep cattle, sheep, and other livestock animals recently. The west of the field is adjacent to a Eucalyptus plantation. Neighboring livestock farmers have been seen pasturing their flocks in and around the project site during the daytime.

The results of our field observation survey revealed that the households grazing their domestic animals in and around the project site live in its vicinity and have traditionally kept a small number of livestock (less than around 10 cows) on their residential premises. They seem to keep these animals for personal consumption (milk) and as a means of additional family income (as property they can sell when they need cash).

In the project site, the grassland that used to be used as pasture has been left abandoned. Typical vegetation is comprised of low grass vegetation (photo b), Care grassland (photo c), and grassland with Rosaceous bushes sparsely growing (photo d) from south to north. There is a gully (dry canal) that runs from north to south in the center (photo e).

Used tiles and building materials are illegally dumped in the northern part of the site near a residential area, and local residents have seen someone collecting abandoned soil to build mounds around their houses, although neither is significant in scale (photo f).

Some households in the vicinity use tree branches for cooking and heating (photo g). Some people have been seen cutting branches from roadside trees for this purpose. They seem to gather twigs and branches from the project site as well.

Because it is a block of unused land, the project site is used as the venue of a traditional annual event (camel wrestling) and parking space for trailers carrying the camels. The venue will be changed to another site in the suburb of Feeler City by the city government, which should choose a proper venue, when the construction works of the hospital start in the project site, so that the event will not be affected by the implementation of this Project.

The interview survey with the DSI in December 2014 revealed that although the project site had been designated as an irrigation project site to supply water to their irrigation canal, the DSI will not be opposed to (disagree with) the change of the land use plan from irrigation to hospital (civic facilities) development.

Based on the field observation survey results, it is judged that there are no “households relying mainly on the grassland for their livelihood” for the following reasons.

1. The Survey Team saw three groups of livestock animals and their owners in and around the project site during the two-hour field survey. One of them passed through the northern end of the area, while the other two passed without stepping into the area.
2. The interview survey with the Şevketiye village mayor revealed that all local residents had been informed that the project site will be used to build a hospital, that no one keeps livestock animals on the site permanently, and that no households rely solely on the grassland of the project site for their livelihood because the grazing routes and feeding grounds are dotted around the village.
3. The Survey Team also conducted a field survey to study the vegetation of the project site. They found out the following: 1) there were impacts of grazing as the grass on the grassland had been kept low; 2) there seemed to be almost no browsing pressure on part of the project site where the vegetation had changed to shrub and *Carex* vegetation; and 3) there seemed to be no spot with a strong browsing impact indicating the act of having livestock animals staying on the site.

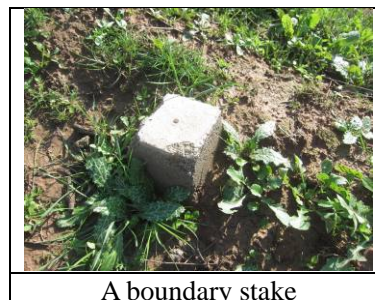


Source: Taken by Survey Team on December 15, 2014

Figure-40 Project Site Condition

(2) Condition around the Project Site

The project site is clearly bordered, surrounded by roads on all sides. It is also defined by boundary stakes, although they are unnoticeable. As of December 2014, there are no fences around the site.



A boundary stake

Table-75 below lists the facilities which are situated in the vicinity of the project site and for which special considerations should be taken during the construction phase. In general, rustic scenery dominates the view from the project site, which is located in the periphery of Efeler City.

The interview survey with the Aydın Provincial Directorate of Environment and Urbanization in December 2014 revealed that there are no natural resources designated for protection in and around the project site. It was pointed out, however, that special attention should be paid so as not to affect the water flow or quality of the Büyük Menderes River about 4.5 km southwest of the project site. At the time of this survey, the river had been polluted by agricultural, domestic, and other wastewater. According to the interview survey with the DSI at around the same time, the agricultural and residential areas in and around the project site had not been flooded by the Büyük Menderes River at least for 10 years.

Utility service providers in the residential areas around the project site are listed below:

Electricity: Aydın Electric Company

Water: Efeler City Government

Gas: Not available (Electricity is mainly used for cooking, heating, and lighting)

Municipal solid waste: Efeler City Government

Table-75 Facilities that Require Considerations during Construction

Location		Facility
North side	a	Primary school and middle school
	b	Livestock barn
	c	Kuyulu village office, bus stops and mosque
East side	d	Şevketiye village office, bus stops and mosque
	e	Public cemetery
	f	Adnan Menderes Veterinary University (approx. 350 meters southeast)
South side	g	2 agricultural canals
	h	High-voltage transmission line and tower (approx. 50 meters in distance)
	i	Büyük Menderes River (approx. 4.7km southwest)
West side	j	Agricultural aqueduct (concrete, installed approx. 1 meter above the ground)
	k	Native species (pine) planted area
	l	Canal

Source: Survey Team in December 15, 2014



a. Örsdemir Balkan Primary and Secondary School



b. livestock barn

d. bus stop in Şevketiye village

e. public cemetery



f. Adnan Menderes Veterinary University

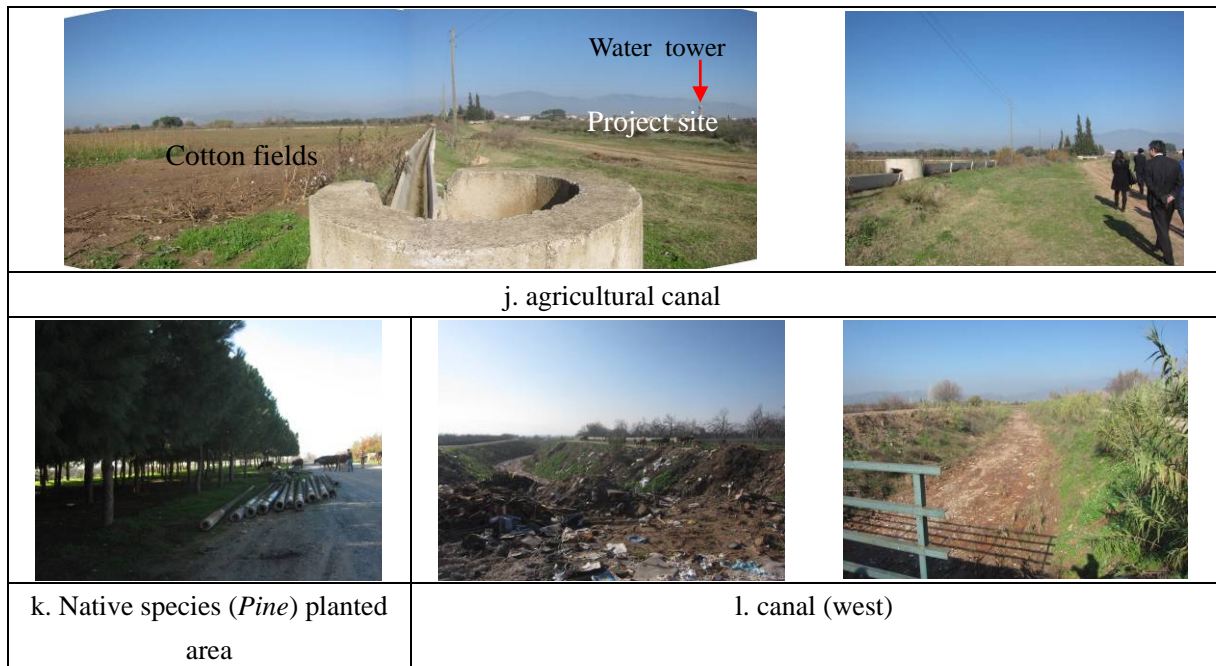
g. agricultural canal (north)

g. agricultural canal (south)  
(facing east)



g. agricultural canal (south)  
(facing west)

h. high-voltage transmission line  
and tower



Source: Taken by Survey Team on December 15, 2014

Figure-41 Facilities that Require Considerations during Construction

### 1-2. Project Items that May Have Environmental and Social Impacts

The project items listed below may have environmental and social impacts.



**Table-76 Project Items that May Have Environmental and Social Impacts**

Stage	Project Item	Scope of Work	Possible Environmental and Social Impact
Const.	Operations of construction machinery	Operating civil engineering and construction machinery	Noise and vibration in the project site, etc.
	Use of vehicles to transport materials		Increase of automobile traffic around the project site, etc.
	Construction works	Installing walls around project site Operating power generation facilities (It is assumed that liquid concrete and asphalt will be procured from the market. If relevant plants are installed in the construction site, an additional environmental impact assessment may be needed.)	Discontinuation of the existing land use, generation of construction waste, etc.
Mgmt.	Operations of facilities	Backup power generators Backup wells and lifting pumps	Greenhouse-gas emissions, pumping up of groundwater, generation of waste, etc.
	Existence of facilities	800 inpatient beds 8 floors above and 2 under the ground 2,400 parking lots (including 1,600 in the underground garages)	
	Automobile traffic growth		Increase of automobile traffic around the project site, etc.
	Pedestrian traffic growth		Increase of pedestrian traffic around the project site, etc.

Source: Survey Team

## 2. Land Acquisition and Resettlement

### 2-1. Scale and Scope of Land

The project site is situated in Şevketiye village, Efeler City, Aydın Province, covering an area of 139,000 m<sup>2</sup>, and is a block of land clearly bordered by a road.

### 2-2. Need for Land Acquisition and Resettlement

The changes in the land ownership and land use right of the project site are described in Table-77 below. Owned by the Ministry of Finance, It had been used as public grassland (pasture) until 2009, when it was decided to use the site to build a hospital based on a request from the local government and residents. In 2010, the land use right was transferred from the Ministry of Finance to the MOH for hospital development. As of 2015, although the Ministry of Finance still has the ownership of the site, it has been registered as a hospital site managed and used by the MOH. Thus, there is no need to acquire land for the implementation of this Project.

The project site is a block of land clearly bordered by roads on all sides and no one has resided there since 2004, up to the present time. Therefore, the Project will not require resettlement.

The local government and residents have been informed that a hospital will be constructed on

the site in the future. The Aydın Provincial Directorate of Environment and Urbanization is responsible for the supervision and control of land acquisition and resident resettlement for public works as well as the review of EIA reports.

**Table-77 Background of Project Site Ownership Right**

Until 2009	The project site is public land in Şevketiye village (owned by the Ministry of Finance) and was used jointly by Şevketiye village and Kuyulu village as grassland (pasture) plot No. 19 covering an area of 167, 852.3 m <sup>2</sup> .
2009	According to the interview survey with the Şevketiye village mayor in December 15, 2014, a proposal to build a hospital in the site was adopted with one dissenting vote at a meeting attended by approx. 300 local residents and government officials, and a written request was submitted to the MOH. Based on this request, the project site was added to the list of Hospital PPP Project candidate sites.
January 11, 2010	The Aydın Provincial Directorate of Food, Agriculture, and Livestock examined the change of the land use of the site (termination of use as grassland) based on the Grassland Law and agreed on the transfer of the right (land use right) of the plot to the MOH and the change of the land use to build a hospital.
April 8, 2010	The right (land use right) of a 169,000.00 m <sup>2</sup> land plot was transferred from the Ministry of Finance to the MOH to build a hospital. (The Ministry of Finance holds the ownership of all public land in Turkey.)
July 17, 2012	The MOH transferred part of the land (21,751.74 m <sup>2</sup> for roads, 4,813.80 m <sup>2</sup> for a park, and 1,716.42 m <sup>2</sup> for parking spaces) to the Real Estate Bureau of Aydın Province.

Source: Aydın Directorate of Health

### 2-3. Consultation with Local Residents

According to the interview survey with the Şevketiye village mayor in December 15, 2014, a proposal to build a hospital in the project site was adopted with one dissenting vote at a meeting attended by approximately 300 local residents and government officials, and a written request was submitted to the MOH. Based on this request, the project site was added to the list of Hospital PPP Project candidate sites. Although the Survey Team tried to obtain more detailed information, such as the date, venue, attendees, and minutes of the meeting, from the Aydın Provincial Directorate of Health, but in vain.

Because the MOH of Turkey is planning to select a contractor for this PPP Project in the latter half of 2015, and because the fact that the Survey Team aims to bid for it should be confidential, the team has yet to have discussions with local residents.

If it is selected as a contractor for this Project, it is to identify the local point of contact and create opportunities to provide information to stakeholders, such as local residents, livestock farmers, neighboring schools, the village office, and the manager of the adjoining cemetery, and interview them for their opinions in order to promote the smooth implementation of the Project.

In Turkey, public hearings are established as a key step in the process of environmental impact assessment, and there are many such examples. According to the interview survey with the Aydın Provincial Directorate of Environment and Urbanization in December 2014, public hearings are usually attended by all stakeholders though they are organized by different organizations depending on the project being discussed. Although there are no specific procedures, it is most effective to announce the holding of a public hearing at a Friday service in the local mosque. It can also be published in gazettes and general newspapers or announced by loudspeaker vans. Possible ways to organize a public hearing and other meetings for information exchange with local residents for this Project, including those mentioned above, will be examined based on suggestions from relevant village mayors and other stakeholders.

### **3. Environmental and Social Considerations**

#### **3-1. Legal Framework and Procedures Concerning Environmental and Social Considerations**

##### **(1) Relevant Turkish Laws and Regulations**

Turkish laws and regulations relevant to the Project are listed in the table below.

**Table-78 Turkish Laws and Regulations Relevant to Environmental and Social Considerations**

Topics	Laws and Regulations
Environmental Law	Environmental Law No. 6831 and relevant regulations; Environmental Law No. 2872, Accepted: 09/08/1983, Published in the Resmi Gazete: Date: 11/08/1983 No: 18132
	Environmental Permit and Licensing Regulations, Resmi Gazete : 10.09.2014 No.: 29115
EIA	Environment Law of August 1983 (amended with the Law dated April 26, 2006; No: 5491)
Conservation of Cultural and Natural Assets	Law on Conservation of Cultural and Natural Assets No. 2863 (as amended with the Law numbered 5226) and relevant regulations;
Labor	Labor Law No. 4857 and relevant regulations;
Air quality	Regulation on the Assessment and Management of Air Quality (OG dated 06.06.2008; No: 26898);
	Industrial Air Pollution Control Regulation, OG dated: 03.07.2009 No: 27277 (and relevant amendment)
Noise	Regulation on the Assessment and Management of Environmental Noise (OG dated 07.03.2008; No: 26809);
Soil pollution	Regulation on Soil Pollution Control and Point Source Polluted Areas (OG dated 08.06.2010; No: 27605);
Water pollution, waste water effluent quality	Water Pollution Control Regulation (OG dated 31.12.2004; No:25687) (amended by the regulation issued in the OG dated 30.03.2010; No: 27537);
	Surface Water Quality Management Regulation, Forestry and Water Affairs Ministry, 30.11.2012, Resmi Gazete, No.28483
Groundwater use	Law No. 167 on Groundwater (OG dated 23.12.1960, No.10688, amended in 2003)
Waste management	Regulation on General Principles of Waste Management (OG dated 05.07.2008; No: 26927);
Construction waste	Regulation on the Control of the Excavation of Soil, Construction and Debris Wastes (OG dated 18.03.2004; No: 25406);
Solid waste	Solid Waste Control Regulation (OG dated 14.03.1991; No: 20814) (amended by the regulation issued in the OG dated 05.04.2005; No: 25777);
Medical waste	Medical Waste Control Regulation (OG dated 22.07.2005; No: 25883) (amended by the regulation issued in the OG dated 03.12.2011; No: 28131);
Hazardous waste	Hazardous Waste Control Regulation (OG dated 14.03.2005; No: 25755) (amended by the regulation issued in the OG dated 30.10.2010; No: 27744);
Waste oil	Waste Oil Control Regulation (OG dated 30.07.2008; No: 26952) (amended by the regulation issued in the OG dated 30.03.2010; No: 27537);
Landfill	Landfill Regulation (OG dated 26.03.2010; No: 27533);
Labor	Labor Law No. 4857 and relevant regulations;
Occupational health and safety	Occupational Health and Safety Law (OG dated 20.06.2012; No: 6331)
Land acquisition and compensation	Expropriation Law No. 4650, Code Number: 294, VARIOUS 2942, Acceptance Date: 11/04/1983, Amendment 4650 (2001)

Source: Survey Team

## (2) Environmental Impact Assessment Scheme in Turkey

A list of projects for which environmental impact assessment (EIA) required to be performed is given in the EIA Directive Annex I and Annex II of the Environment Law (Official Gazette No. 29,186). New hospital construction, construction of underground parking lot, installation of power generation facility and groundwater withdrawal are not subject to the EIA. The law was revised on November 25, 2014, and new hospital construction, which used to be subject to the EIA, was removed from the list. Thus, no EIA procedures are needed to implement the Project.

It was revealed in the interview with the MOEU that the new hospital construction was removed from the list because it determined that planning and opening of a hospital requires arrangements on water and sewerage system and waste with relevant entities and proper arrangements and approval are sufficient to prevent negative impacts.

However, SPV may prepare an impact assessment report voluntarily and the ministry will screen it when it prefers it.

Project application procedures need to be submitted to the Aydın Provincial MOEU for the official provincial decision that no EIA procedures are needed.

As for the preceding Hospital PPP Project assisted by the EBRD, it was planned before the revision of the law and 2 reports have been screened and 1 is under screening.

No EIA report in the Turkish scheme will be produced with the decision of the Provincial MOEU and discussions and approval procedures with relevant agencies required for construction of the hospital and other facilities including power generation facility are planned in accordance with local laws and regulations.

### (3) Environmental Standards

Turkey has various environmental standards which include the following: ambient air quality, noise regulations for industrial facilities, noise standards for schools and other facilities to which considerations should be given, soil pollution standards, standards for effluent quality discharged from industrial facilities to the public water zone, and standards for water quality discharged into the sewerage system, as shown in tables below.

**Table-79 Turkish Ambient Air Quality Standards**

Parameter	Hourly average $\mu$ g/m <sup>3</sup>	Daily average $\mu$ g/m <sup>3</sup>	Annual average $\mu$ g/m <sup>3</sup>
Nitrogen dioxide (NO <sub>2</sub> )	2014 <sup>a</sup> =300 2024=200	-	2014 <sup>a</sup> =60 2024=40
Sulfur dioxide (SO <sub>2</sub> )	2014 <sup>a</sup> =500 2019=350	2014 <sup>a</sup> =250 2019=125	-
Carbon monoxide (CO)	-	2014 <sup>a</sup> =10,000 2014 <sup>a</sup> (8hr)=16,000 2017 (8hr)=10,000	-
PM10	-	2014 <sup>a</sup> =100 2019=50	2014 <sup>a</sup> =60 2024=40

a: The standards are lowered every year evenly until they reach the next standards.

Source: Regulation on the Assessment and Management of Air Quality (OG dated 06.06.2008; No: 26898) Annex 1

**Table-80 Noise Regulation Standards on Construction Sites**

Construction Type	Leq-daytime(dBA) Day (07:00-19:00)
Building construction	70
Road construction	75
Other noise sources	70

Source: Regulation on the Assessment and Management of Environmental Noise (OG dated 07.03.2008; No: 26809) Table-5

**Table-81 Factory Noise Regulation Standards (Reference Value of Noise Control for Hospital Operation)**

Surrounding Environment	Daytime (07:00-19:00)	Evening (19:00-23:00)	Night (23:00-07:00)
Area where <b>educational facilities</b> , cultural facilities (including cemeteries), healthcare facilities, summer houses, camping sites and other facilities where special considerations should be given to noise are located	60	55	50
Area with commercial and residential zones where the latter occupies the majority	65	60	55
Area with commercial and residential zones where business establishments occupy the majority	68	63	58
Industrial zone	70	65	60

Source: Regulation on the Assessment and Management of Environmental Noise (OG dated 07.03.2008; No: 26809) Table-4

**Table-82 Indoor Noise Standards (excerpt)**

Facility		Leq(dBA)	Condition
Healthcare facility	Inpatient ward, pharmacy, consultation room, nursing home, etc.	35	Always
	Lunge, treatment room	25	Always
Educational facility	School classroom	35	During class
	Sports ground, cafeteria	55	While in use
	Kindergarten bedroom	30	During sleep
Public facility	Office	45	While in use
	Laboratory	45	
	Meeting room	35	
	Computer room	45	
Residence	Bedroom (urban area)	40	While in use
	Bedroom (suburb)	35	
	Living room (urban area)	55	Daytime and evening
	Living room (suburb)	40	Evening
	Kitchen, etc.	60	While in use

Source: Regulation on the Assessment and Management of Environmental Noise (OG dated 07.03.2008; No: 26809) Table-8

**Table-83 Soil Pollution Limits**

A) Heavy metal limits

Substance	Limits	Limits
	PH ≤ 6 mg/kg oven dry soil	PH ≥ 6 mg/kg oven dry soil
Lead	50	300
Cadmium	1	3
Chrome	100	100
Copper	50	140
Nickel	30	75
Zinc	150	300
Mercury	1	1.5

Note: When the pH level exceeds 7, MOEU may add 50% of the limit.

Source: OFFICIAL GAZZETTE NO: 24609 DATE: 10.12.2001 Soil Pollution Control Regulation



B) Other soil pollutant limits of other substances

Substance	Limits
Chloride Ion (mg Cl/l)(Total)	25
Sodium (mg Na/l)	125
Cobalt (Co)(mg/kg oven dry soil)	20
Arsenic (As)(mg/kg oven dry soil)	20
Molibden (Mo)(mg/kg oven dry soil)	10
Tin (Sn)(mg/kg oven dry soil)	20
Barium (Ba)(mg/kg oven dry soil)	200
Fluoride(mg/kg oven dry soil)	200
Free cyanide (CN)(mg/kg oven dry soil)	1
Complex cyanide (CN)(mg/kg oven dry soil)	5
Sulphite (S)(mg/kg oven dry soil)	2
Brome (Br)(mg/kg oven dry soil)	20
Benzene (mg/kg oven dry soil)	0.05
Butyl benzene (mg/kg oven dry soil)	0.05
Toluol (mg/kg oven dry soil)	0.05
Xylol (mg/kg oven dry soil)	0.05
Phenol (mg/kg oven dry soil)	0.05
Selenium (Se)(mg/kg oven dry soil)	5
Talium (Tl)(mg/kg oven dry soil)	1
Uranium (U)(mg/kg oven dry soil)	5
Polycyclic aromatic hydrocarbon components (mg/kg oven dry soil)	5
Organo Chlorine compounds (mg/kg oven dry soil)	0.5
- Individual (mg/kg oven dry soil)	0.5
- Total (mg/kg oven dry soil)	2
PCB Polichlorated biphenils(mg/kg oven dry soil)	0.5
Hexachloro benzol (mg/kg oven dry soil)	0.1
Pentachloro benzol (mg/kg oven dry soil)	0.1
Ψ - HCH ( γ -BHC, lindan) (mg/kg oven dry soil)	0.1

Source: OFFICIAL GAZZETTE NO: 24609 DATE: 10.12.2001 Soil Pollution Control Regulation

**Table-84 Water Quality Standards**

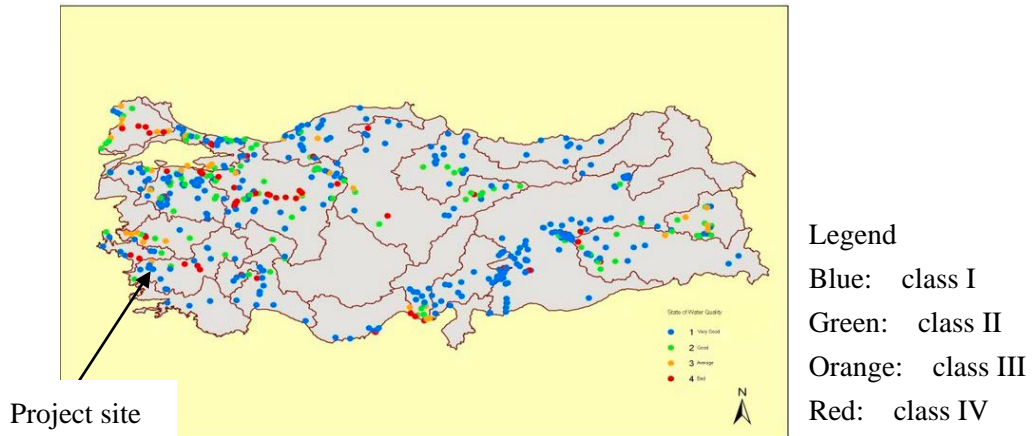
Surface water quality class by use

Item	Classes			
	I	II	III	IV
	Can be used as domestic water	Can be used as domestic water after being treated	Can be used after treatment for some purposes	Highly contaminated water
<i>General Terms</i>				
Temperature (° C)	≤ 25	≤ 25	≤ 30	> 30
pH	6,5-8,5	6,5-8,5	6,0-9,0	Except 6,0-9,0
Electrical conductivity (µS/cm)	< 400	400-1000	1001-3000	> 3000
Chromaticity	RES 436 nm: 1.5 RES 525 nm: 1.2 RES 620 nm: 0.8	RES 436 nm: 3 RES 525 nm: 2.4 RES 620 nm: 1.7	RES 436 nm: 4.3 RES 525 nm: 3.7 RES 620 nm: 2.5	RES 436 nm: 5 RES 525 nm: 4.2 RES 620 nm: 2.8
<i>(A) Oxygenation Parameters</i>				
Dissolved oxygen (mg O <sub>2</sub> /L) <sup>a</sup>	> 8	6-8	3-6	< 3
The oxygen saturation (%) <sup>a</sup>	90	70-90	40-70	< 40
COD (mg/L)	< 25	25-50	50-70	> 70
BOD (mg/L)	< 4	4-8	8-20	> 20
<i>(B) Nutrients (Nutrient) Parameters</i>				
Ammonia Nitrogen (mg NH <sub>4</sub> <sup>+</sup> -N/L)	< 0,2 <sup>b</sup>	0,2-1 <sup>b</sup>	1-2 <sup>b</sup>	> 2
Nitrite Nitrogen (mg NO <sub>2</sub> <sup>-</sup> -N/L)	< 0,002	0,002-0,01	0,01-0,05	> 0,05
Nitrate Nitrogen (mg NO <sub>3</sub> <sup>-</sup> -N/L)	< 5	5-10	10-20	> 20
Total Kjeldahl Nitrogen (mg/L)	0.5	1.5	5	> 5
Total Phosphorus (mg P/L)	< 0.03	0.03-0.16	0.16-0.65	> 0.65
<i>(C) Trace Elements (Metals)</i>				
Mercury (µg Hg/L)	< 0,1	0,1-0,5	0,5-2	> 2
Cadmium (µg Cd/L)	≤ 2	2-5	5-7	> 7
Lead (µg Pb/L)	≤10	10-20	20-50	> 50
Copper (µg Cu/L)	≤20	20-50	50-200	> 200
Nickel (µg Ni/L)	≤20	20-50	50-200	> 200
Zinc (µg Zn/L)	≤200	200-500	500-2,000	> 2,000
<i>(D) Bacteriological Parameters (MPN / 100 ml)</i>				
Fecal coliform (EMS/100 mL)	≤10	10-200	200-2,000	> 2,000
Total coliform (EMS/100 mL)	≤100	100-20,000	20,000-100,000	> 100,000

(a) 1 indicator is enough.

(b) Ammonia (NH<sub>3</sub>) concentration cannot exceed 0.02 mg NH<sub>3</sub>-N / L.

Source: SURFACE WATER QUALITY MANAGEMENT REGULATION, Forestry and Water Affairs Ministry, 30.11. , Resmî Gazete, No.28483, Annex 5, Table-5



Source : Freshwater - State and impacts (Turkey) — European Environment Agency (EEA)  
<http://www.eea.europa.eu/soer/countries/tr/freshwater-state-and-impacts-turkey>[as of 2015/07/08]

**Figure-42 DSI Water Quality Monitoring Points and Distribution of Water Quality Class in 2006**

Table-85 Effluent Quality Standards Discharged to Sewerage System (Assumption of Application in Hospital Operation)

Item	Wastewater treatment plant where water is fully treated	Wastewater treatment (collection) facility that discharges water in deep waters
Temperature (° C)	40	40
pH	6.5-10.0	6.0-10.0
Suspended solids (mg/L)	500	350
Oil and grease (mg/L)	250	50
Tar/Petroleum oil (mg/L)	50	10
COD (mg/L)	4000	600
BOD (mg/L)	-	400
SO <sub>4</sub> (mg/L)	1700	1700
Total sulfur (mg/L)	2	2
Phenol(mg/L)	20	10
Free chlorine (mg/L)	5	5
Total nitrogen (N) (mg/L)	-	40
Total phosphorus(P) (mg/L)	-	10
Arsenic (As) (mg/L)	3	10
Total cyanide (Total CN) (mg/L)	10	10
Lead (Pb) (mg/L)	3	3
Cadmium (Cd) (mg/L)	2	2
Chromium (Cr) (mg/L)	5	5
Mercury (Hg) (mg/L)	0.2	0.2
Copper (Cu) (mg/L)	2	2
Nickel (Ni) (mg/L)	5	5
Zinc (Zn) (mg/L)	10	10
Tin (Sn) (mg/L)	5	5
Silver (Ag) (mg/L)	5	5
Chlorine Ion (Cl <sup>-</sup> ) (mg/L)	10000	-
Methylene Blue Active Substance (MBAS) (mg / L)	According to the level provided by the Turkish Standards Institute.	

Source: Water Pollution Control Regulation (OG dated 13/2/2008; No.26786) Table-25

**Table-86 Effluent Quality Standards Discharged from Plants and Business Establishments to Public Water System (Assumption of Application during Construction)**

(Small to medium-sized manufacturers in industrial parks and other business establishments not included in other tables)

Item	Unit	2-hour Sampling	24-hour Sampling
COD	(mg/L)	400	300
Total suspended solids (TSS)	(mg/L)	200	100
OIL AND GREASE	(mg/L)	20	10
Total Phosphorus	(mg/L)	2	1
Total suspended solids (Cr)	(mg/L)	2	1
Chromate compounds (Cr <sup>+6</sup> )	(mg/L)	0.5	0.5
Lead and other compounds (Pb)	(mg/L)	2	1
Cyanide Ion and Cyanogen Chloride (CN <sup>-</sup> )	(mg/L)	1	0.5
Sulfuric Acid and other compounds (Cd)	(mg/L)	0.1	-
Iron and other compounds (Fe)	(mg/L)	10	-
Fluorine and other compounds (F <sup>-</sup> )	(mg/L)	15	-
Copper and other compounds (Cu)	(mg/L)	3	-
Zinc and other compounds (Zn)	(mg/L)	5	-
Mercury and other compounds (Hg)	(mg/L)	-	0.05
Sulfuric Acid (SO <sub>4</sub> )	(mg/L)	1500	1500
Total Kjeldahl Nitrogen	(mg/L)	20	15
Fish bioassay (ZSF)	-	10	10
pH	-	6-9	6-9
Chromaticity	(Pt-Co)	280	260

Source: Water Pollution Control Regulation (OG dated 13/2/2008; No.26786) Table-19

#### (4) Other Approval and Permit related to the Project

##### 1) Hospital construction

Hospitals with 20 or more beds are required to obtain permit from the Provincial MOEU based on the Environmental Permit and Licensing Regulations Article 6 and Appendix Table-2. 10.9.

##### 2) Construction and Operation of Boilers, Power Generation Facilities and Other Energy Facilities

Construction of such energy facilities as boilers and power generation facilities is required to obtain permit from the Provincial MOEU and monitoring and control of pollutants emitted in the operation process is required based on the Industrial Air Pollution

Control Regulation.

3) Logging of Trees (Eucariptus Plantation) on the Premises

The Aydın Provincial Directorate of Health has obtained logging permit from the Aydın Provincial Directorate of Forestry and Water Resources. However, it is desired that it should give a notice to and have discussions with the directorate before launching the project because time has passed since the permit was issued in 2009/10.

4) Connection with Waterworks and Sewerage System and Collection, Treatment and Disposal of Medical and General Waste

Connection with waterworks and sewerage system and collection, treatment and disposal of medical, harmful, construction and general waste are required to be discussed with the ASKI and the Efeler City Environment Bureau and Aydın Provincial ministry of Environment and Urban Planning, respectively, in the project planning stage.

5) Boring, Ground Water Pumping and Discharge of Effluent into Rivers

When boring of more than 10 meters in depth, pumping of groundwater and discharge of effluent into rivers are planned, discussions with DSI are required and permit needs to be obtained.

6) Discussions with Relevant Agencies on Access Using Bus, Tax and Other Means of Public Transportation

Information on the public transportation network and road development plan in Aydın Province or Aydın Metro was not obtained during the survey. Discussions with the road developer (Aydın Provincial MOEU), bus operator (Aydın Metro) and other relevant agencies are needed at an appropriate time after the decision of the project executing body to promote them to complete road development and improvement of the public transportation network suitable for the hospital scale before its opening in order to improve the convenience of hospital users and ease traffic congestion in the surrounding area during operation.

(5) Socially Vulnerable and Other Groups that Require Special Consideration

Groups that require special consideration in relation to the project are those who meet the conditions listed in the table low.

There is no group categorized as indigenous people who maintain their distinctive culture

relatively independently and are strongly attached to the land. There was no area where ethnic minority groups live together on the project site or in its surrounding area.

**Table-87 Concept of Groups that Require Special Consideration in Turkey**

<b>Perspective</b>	<b>Group that Requires Special Consideration</b>
Ethnic minority	Kurdish origin Greek origin Armenian origin Refugees, etc.
Religion	Non-Muslim (Alevi of Islam, Jew, Christian, etc.)
Gender	Household headed by woman Young woman Widow and unmarried woman with no support from family
Economic conditions	Unemployed Aged household with no support from family Child (orphan) with no support from adult Differently-abled Child laborer Household whose income is below the poverty line
Education	People who cannot read Turkish Adult literacy rate (aged 15 or older, as of 2011) overall: 94.1%, male: 97.9, female: 90.3% Youth literacy rate (aged 15–24, 2011) was 98.6% (male: 99.4%, female: 97.9%)

Source: Senem Aydın-Düzgit and E. Fuat Keyman, EU-Turkey Relations and the Stagnation of Turkish Democracy, Global Turkey in Europe Working Paper 2 United Nations Development Cooperation Strategy Turkey 2011-2015, Government of the Republic of Turkey and the United Nations System TSI, 2010 and 2011 Income and Living Conditions Survey.

The Labor Law regulation, regulation on requirements for female night-shift workers, stipulates women's maximum working hours of 7.5 hours at night. Employers are obliged to have female night-shift workers commute properly and prohibited from assigning pregnant or postpartum women to night duty.

The adult age of Turkey is 18 and employment of minors is restricted.

According to the Income and Living Conditions Survey (2011) of Turkish Statistical Institute, the median income (50%) (relative poverty line) of the Aegean area that is a statistical unit comprising of eight provinces including Aydın Province where the project site is located is 4,714 TL and income of approx. 1.22 million people, or 11.9%, of the population, is below the poverty line. In 2001 survey, 5% of the population is estimated to be in absolute poverty, living on less than 2USD a day.

The minimum wage in Turkey is provided in Article 39 of the Labor Law. It is decided through discussions by labor and management and government in the Minimum Wage Fixing Board under the jurisdiction of the Ministry of Labor and Social Security. The board reviews the minimum wage at least every two years and has reviewed it twice a year in recent years. It is illegal to pay a wage below the minimum wage. The net minimum wage excluding allowances in the second half of 2014 was 890 to 970 TL monthly, varying by job category. The minimum wage is important in the Turkish labor market, because the net minimum wage is most commonly set as the monthly salary (excluding allowances) and it is also used as an indicator in deciding the social security payment and private retirement benefits.

### **3-2. Study of Alternative Plans**

Because the Project is planned based on Turkish plan and the project contractor is selected through public tenders as well as the project scheme and site are secured, it does not require an alternative plan unless some special problem arises. However, an alternative plan is examined in comparison with zero-option of not implementing it in order to confirm the need and relevance of the project.

The comparison results are summarized in the table below.



**Table-88 Comparison with Alternative Plan**

	<b>Plan 0-No Project Implementation</b>	<b>Plan 1 -Project is Implemented</b>
Outline	Existing 2 hospitals continue operation in the current scale and facility. The project site is maintained as unused land under the jurisdiction of MOH.	Existing 2 hospitals are integrated and relocated to the project site and operation is started in new facility in a bigger scale. MOH examines conversion of existing hospital facility.
Pollution	○	△
	No change	Air, noise and water quality impacts are likely to be caused during construction. Air, noise, effluent and waste impacts are likely to be caused during operation. However, it does not significantly exceed the contents or scale of the existing hospitals and their surroundings and there is little change in the wide area.
Natural environment	○	△
	No change	The green area of grassland and shrubs disappear and the area is urbanized. There is no impact on rare or valuable environment.
Social environment	×	◎
	Ageing of hospital facility and laboratory and expansion of the city will cause shortage of services and quality of medical service will deteriorate.	It enables provision of medical service for more citizens in the latest facility. The opening of hospital around the project site situated on the outer edge of city center is expected to trigger urban development, concentration of economic activities and job creation.
Technical relevance	△	◎
	Medical services with older facilities and equipment than those of private hospitals will be provided continuingly at an existing national hospital.	Medical services with the latest facilities and equipment will be provided efficiently and stably at a national hospital where the insurance cover 100% of the medical bills.
Economic relevance	△	◎
	Although no additional cost is incurred to maintain the current condition, the current system and mechanism that can be improved and that can be more efficient will not be improved.	Having the private sector finance the initial investment and making lease payment for the constructed hospital will enable financial burden of the Turkish government off the balance sheet and provide the latest medical services efficiently.
Comparison on evaluative	△	Recommended plan
	Although it does not cause any pollution or impacts on natural environment as it is to maintain the current situation, it will delay the realization of local medical service improvement.	Although it causes pollution and impacts on natural environment, it will contribute to improvement of wide-area medical service and creation of jobs and economic activities in Aydın Province.

Evaluation ◎: best, ○: no significant impact although less good than the best plan, △: not desired

Source: Survey Team

### **3-3. Scoping**

The possibility of negative impacts on pollution and natural and social environments to be caused by the Project and reasons for it are summarized in the table below based on information gathered in sections above.

**Table-89 Scoping**

No.	Items	Rating		Reason of Rating
		Planning & Construction Phase	Operation Phase	
1	Air	B-	B-	During construction: Operation of construction machinery, running vehicles for material transportation and construction work may cause air pollution. During operation: Facility operation and generation of automobile traffic may cause air pollution.
2	Water	B-	C-	During construction: Construction work may cause turbid water. During operation: Although effluent discharge into public water areas around the project site or other activities that affect water quality are not planned, there is a risk of burden being imposed on sewage treatment facility or impacts being caused to water quality of destination of discharged treated sewage if it is not properly treated, because effluent produced in the hospital is planned to be treated on site and discharged in the sewerage system under the condition that its quality meets legal standards.
3	Noise and vibration	B-	B-	During construction: Operation of construction machinery, running vehicles for material transportation and construction work may cause noise and vibration. During operation: Facility operation and generation of automobile traffic may cause noise.
4	Waste	B-	B-	During construction: Construction work and operation of workers' lodgment will generate waste. During operation: Facility operation will generate waste.
5	Soil	C-	B-	During construction: Drilling of underground and soil disposal are likely to occur and there is need to find out whether there are any polluted matters in the soil to be disposed of. During operation: If mercury and chemicals used in the hospital leak and permeate in the soil, it may cause soil pollution.
6	Ground subsidence	D	D	There is no plan of such activities as pumping of substantial amount of groundwater that will cause ground subsidence during construction and operation.
7	Offensive Odor	D	C-	There is no plan of activities that will cause serious offensive odor during construction. There is a risk of causing offensive odor if food waste generated during operation is not properly managed.
8	Bottom Sediment	D	D	There is no plan of activities that will have negative impacts on bottom sediment of neighboring canals and rivers during construction or operation.
9	Protected Areas	D	D	There is no designated protected area on the project site or in its surrounding area and no impact is caused to such area during construction or operation.
10	Ecosystem	D	D	The project site and its surrounding area have been developed and long used as farmland and residential land and the area has already had ordinary man-caused impacts. There is no impact on local ecosystem during construction or operation.
11	Water regime	D	D	There is no plan of pumping a large quantity of groundwater during construction or operation. Installation of well as an emergency water source in case of discontinuation of public water supply is under review.
12	Geology	D	D	The project site is gently sloping flat land toward the south and the project will not cause any substantial change of topography or geological structure of the project site or its surrounding area.
13	Involuntary Resettlement and/or Loss of Properties	D	D	Because the project site is registered as land for hospital and there is no resident or personal property on it, the project implementation causes no involuntary resettlement or property loss.
14	Poor	C-	D	In planning: Because the project site is enclosed prior to survey and construction, the site which people can freely

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No.	Items	Rating		Reason of Rating
		Planning & Construction Phase	Operation Phase	
				enter now cannot be entered and no such activity as grazing and fuel collection can be performed there. However scale and range of effect is not confirmed. During operation: There is no impact that requires special consideration only for the poor.
15	Indigenous or minority groups	D	D	There is no indigenous or minority group around the project site.
16	Local economy such as employment and livelihood	C-	B+	In planning: Because the project site is enclosed prior to survey and construction, the site which people can freely enter now cannot be entered and no such activity as grazing can be performed there. However scale and range of effect is not confirmed. During operation: Urban economic activities and job creation of service sector, etc., is likely to occur around the hospital.
17	Land use, Local resource use, Communal/ Common resource use rights	C-	D	In planning: Because the project site is enclosed prior to survey and construction, the site which people can freely enter now cannot be entered and no such activity as grazing can be performed there. However scale and range of effect is not confirmed. During operation: Although there is change from farmland to urban land use, involuntary change is likely to occur.
18	Water rights / water use	C-	C-	If water is used around the project site, there is a risk of negative impacts on water use being caused by the impact on water quality in the neighboring water area by the project during construction and operation.
19	Traffic/public facilities, infrastructures, social services	B-	B-	During construction: There is a possibility of traffic congestion to be caused by vehicles for material transportation. During operation: There is a possibility of traffic congestion to be caused by an increase in automobile traffic by hospital visitors, etc.
20	Social institutions such as social infrastructure and local decision - making institutions	D	D	Because the project site has been used as public grassland and the hospital development plan is also made public, the project will not cause any impact on social infrastructure.
21	Uneven distribution of benefits and damages	D	D	There are two national hospitals in city center. Once the large hospital is built on the outer edge of the city center and begins operation, the existing 2 hospitals are likely to be closed. The closure will have the following impacts: <ul style="list-style-type: none"> <li>• Customers of service sector business around the existing hospitals will decrease, while the chance of conducting such business near the new hospital will increase.</li> <li>• Inpatients will change hospitals. There visitors have access by public transportation.</li> <li>• The distance to the hospital for outpatients can be longer or shorter than before.</li> <li>• Doctors, staff and contractors' staff can access by public transportation.</li> <li>• The new hospital have more advanced facility and equipment for diagnosis and treatment than the existing ones.</li> </ul> When the entire Aydın Province is subject to the assessment, the project will not cause any uneven distribution of benefits or conflict of interest.
22	Local conflict of interests	D	D	Same as above.
23	Physical splits of communities	D	D	The project site is situated on the outer edge of city center and the project does not cause any split of communities.
24	Historical and cultural resources	C-	C-	Although there are no historical or cultural resources on the project site or in the surrounding area, there is a small possibility of discovery of unknown resources during excavation. Public cemetery is also situated across the road.
25	Landscape	D	D	There is no landscape that requires special considerations on the project site or in the surrounding area. Adnan Menderes University Faculty of Veterinary Medicine is situated 300 meters southeast of the project site and many mid-to-high-rise condominium and office

No.	Items	Rating		Reason of Rating
		Planning & Construction Phase	Operation Phase	
				buildings are located in the Aydın city center and there is no possibility of the project ruining the local landscape.
26	Gender	D	D	The project is unlikely to cause any impact that requires special consideration to gender.
27	Children's rights	D	D	The project is unlikely to cause any impact that requires special consideration to children's rights.
28	Sanitation, Public Health Condition, Infectious diseases such as HIV/AIDS	B-	D	During construction: If the environment around workers' lodgment is not maintained hygienically, it may cause infectious diseases. It may increase the risk of HIV/AIDS infections among construction workers and restaurant workers. During operation: Existence or operation of diagnosis and treatment facility that will become a central hospital in the area is not likely to cause or spread infectious diseases that require considerations.
29	Industrial safety and health, working environment	B-	B-	During construction: Operation of construction machinery, running vehicles for material transportation and construction work may cause industrial accidents. During operation: Accidents attributable to drugs and food service may occur during hospital operation.
30	Accidents, crime	B-	B-	During construction: Running vehicles for material transportation may cause traffic accidents. During operation: Traffic accidents may be caused due to an increase of automobile traffic of hospital visitors, etc.
31	Climate change, transboundary impacts	D	D	Although the project promotes urbanization of the area and energy use and impervious area increase, it will not cause substantial impacts on climate change or beyond the watershed or national border.

A+/-: Significant positive/negative impact is expected.

B+/-: Positive/negative impact is expected to some extent.

C+/-: Extent of positive/negative impact is unknown. (A further examination is needed, and the impact could be clarified as the study progresses)

D: No impact is expected.

Source: Survey Team

### 3-4. Environmental and Social Considerations Survey Plan

A survey plan on items that are likely to be affected or unknown whether to be affected or not in scoping is formulated as shown below.

**Table-90 Environmental and Social Considerations Survey Plan**

No.	Items	Rating		Survey Method	Survey Item
		Planning & Construction Phase	Operation Phase		
1	Air	B-	B-	Field survey	<ul style="list-style-type: none"> <li>• Visit to similar construction work</li> <li>• Visit to existing hospitals</li> <li>• Checking surrounding area of the project site (facility that requires special consideration, etc.)</li> </ul>
				Interview survey	<ul style="list-style-type: none"> <li>• Whether there is any occurrence of air pollution problem caused by construction work</li> </ul>
				Literature study	<ul style="list-style-type: none"> <li>• Existing air data collection</li> <li>• Environmental standards collection</li> </ul>
				Others	<ul style="list-style-type: none"> <li>• Confirmation of project requirements</li> </ul>
2 18	Water Water rights / water use	B- C-	C- C-	Field survey	<ul style="list-style-type: none"> <li>• Visit to similar construction work</li> <li>• Checking surrounding areas where effluent is discharged as well as sewerage system development and water use</li> </ul>
				Interview survey	<ul style="list-style-type: none"> <li>• Whether there is any occurrence of water pollution problem caused by construction work</li> <li>• Checking of sewerage facility development</li> </ul>
				Literature study	<ul style="list-style-type: none"> <li>• Existing water data collection</li> <li>• Environmental standards collection</li> <li>• Checking of sewerage facility development</li> </ul>
				Others	<ul style="list-style-type: none"> <li>• Confirmation of project requirements (water use plan, effluent treatment plan, etc.)</li> </ul>
3	Noise and vibration	B-	B-	Field survey	<ul style="list-style-type: none"> <li>• Visit to similar construction work</li> <li>• Visit to existing hospitals</li> <li>• Checking surrounding area of the project site (facility that requires special consideration, etc.)</li> </ul>
				Interview survey	<ul style="list-style-type: none"> <li>• Whether there is any occurrence of noise and vibration problem caused by construction work</li> </ul>
				Literature study	<ul style="list-style-type: none"> <li>• Existing noise data collection</li> <li>• Environmental standards collection</li> </ul>
				Others	<ul style="list-style-type: none"> <li>• Confirmation of project requirements</li> </ul>
4	Waste	B-	B-	Field survey	<ul style="list-style-type: none"> <li>• Visit to existing hospitals</li> <li>• Visit to study waste collection and disposal</li> </ul>
				Interview survey	<ul style="list-style-type: none"> <li>• Waste disposal condition and disposal method</li> <li>• Whether there is any occurrence of waste problem caused by construction work and hospital operation</li> </ul>
				Literature study	<ul style="list-style-type: none"> <li>• Waste collection condition and disposal service</li> <li>• Relevant laws and regulations and legal framework</li> </ul>
				Others	<ul style="list-style-type: none"> <li>• Confirmation of project requirements</li> </ul>
5	Soil	C-	B-	Field survey	<ul style="list-style-type: none"> <li>• Confirmation of occurrence of offensive odor on the project site</li> </ul>

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No.	Items	Rating		Survey Method	Survey Item
		Planning & Construction Phase	Operation Phase		
					<ul style="list-style-type: none"> <li>• Checking management and disposal of mercury and chemicals at existing hospitals</li> </ul>
				Interview survey	<ul style="list-style-type: none"> <li>• Soil history of project site (factory, possible pesticide pumping, etc.)</li> </ul>
				Literature study	-
				Others	<ul style="list-style-type: none"> <li>• Confirmation of project requirements</li> </ul>
7	Offensive Odor	D	C-	Field survey	<ul style="list-style-type: none"> <li>• Confirmation of occurrence of offensive odor at existing hospitals</li> </ul>
				Interview survey	-
				Literature study	-
				Others	<ul style="list-style-type: none"> <li>• Confirmation of plan requirement</li> </ul>
14	Poor	C-	D		<ul style="list-style-type: none"> <li>• Visual observation of current use of the project site</li> </ul>
16	Local economy such as employment and livelihood	C-	B+	Field survey	<ul style="list-style-type: none"> <li>• Survey and visual observation of grazing and fuel collection near the project site</li> </ul>
17	Land use, Local resource use	C-	D	Interview survey	-
				Literature study	-
				Others	-
19	Social institutions such as social infrastructure and local decision - making institutions	B-	B-	Field survey	<ul style="list-style-type: none"> <li>• Current condition survey of access road to the project site (visual)</li> <li>• Current condition survey of traffic around existing hospital (visual)</li> </ul>
				Interview survey	-
				Literature study	<ul style="list-style-type: none"> <li>• Road development and public transportation development plan around the project site, etc.</li> </ul>
				Others	<ul style="list-style-type: none"> <li>• Confirmation of project requirement</li> </ul>
24	Historical and cultural resources	C-	C-	Field survey	<ul style="list-style-type: none"> <li>• Visual confirmation of current situation of the project site, adjacent cemetery and their locational relations</li> </ul>
				Interview survey	<ul style="list-style-type: none"> <li>• Interview with Aydın Province</li> </ul>
				Literature study	<ul style="list-style-type: none"> <li>• Information gathering using literature and Internet</li> </ul>
				Others	<ul style="list-style-type: none"> <li>• Confirmation of project requirement (excavation depth, etc.)</li> </ul>
28	Sanitation, Public Health Condition, Infectious diseases such as HIV/AIDS	B-	D	Field survey	<ul style="list-style-type: none"> <li>• Visit to similar construction (workers' lodgment, temporary toilets, etc.)</li> </ul>
				Interview survey	-
				Literature study	<ul style="list-style-type: none"> <li>• Availability of facility and management guidelines of workers' lodgment, etc.</li> </ul>
				Others	<ul style="list-style-type: none"> <li>• Confirmation of project requirement</li> </ul>
29	Industrial safety and health, working environment	B-	B-	Field survey	<ul style="list-style-type: none"> <li>• Visit to similar construction (environmental consideration, industrial safety)</li> <li>• Visit to existing hospitals (environmental consideration, industrial safety)</li> </ul>
				Interview survey	-
				Literature study	<ul style="list-style-type: none"> <li>• Availability of industrial safety guidelines (construction and hospital operation)</li> </ul>
				Others	<ul style="list-style-type: none"> <li>• Confirmation of project requirement</li> </ul>

No.	Items	Rating		Survey Method	Survey Item
		Planning & Construction Phase	Operation Phase		
30	Accidents, crime	B-	B-	Field survey	<ul style="list-style-type: none"> <li>• Visit to similar construction (traffic safety)</li> <li>• Visit to existing hospitals (traffic safety)</li> </ul>
				Interview survey	-
				Literature study	-
				Others	<ul style="list-style-type: none"> <li>• Confirmation of project requirement</li> </ul>

A+/-: Significant positive/negative impact is expected.

B+/-: Positive/negative impact is expected to some extent.

C+/-: Extent of positive/negative impact is unknown. (A further examination is needed, and the impact could be clarified as the study progresses)

D: No impact is expected.

Source: Survey Team

### 3-5. Environmental and Social Considerations Survey Results and Impact Predictions

#### (1) Air

##### 1) Field Survey

##### a) Observation of Similar Construction Projects

The Survey Team observed the construction sites of facilities related to Aydın Provincial Directorate of Health in Efeler (former Aydın City) on April 29, 2015 and it did not find any occurrences of special exhaust gases or dust from the machinery or plants on the premises or transportation vehicles.

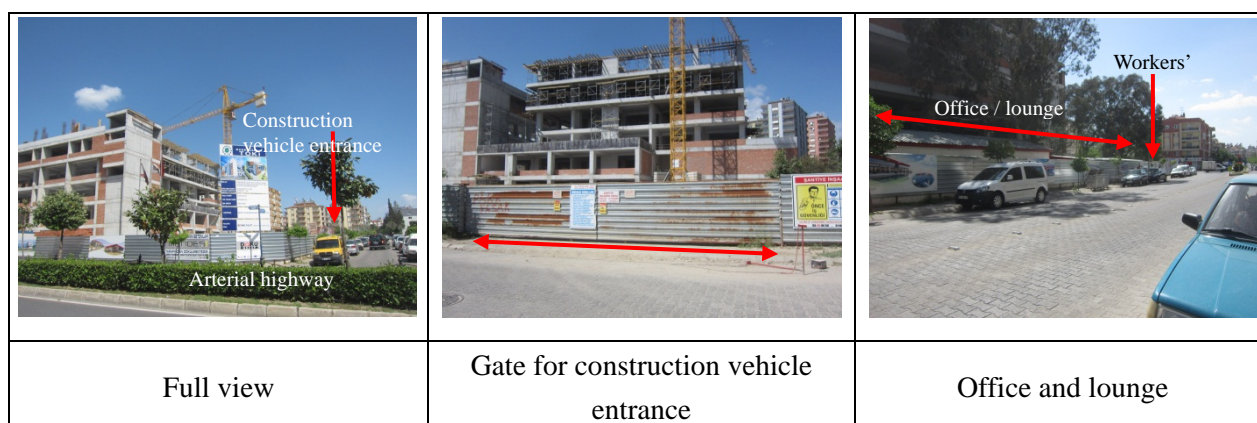


Figure-43 Similar Construction Work

##### b) Observation of Existing Hospitals

The Survey Team visited energy facilities and parking, etc., of three existing hospitals and stores and other hospital-related service providers in their neighborhood in Efeler



(former Aydın City) and it did not find any occurrences of special air pollution.

c) Confirmation of Area around the Project Site

The area around the project site is farmland and residential area with much greenery and there are few sources of air pollution.

Fugitive dust may occur in dry summer on the farmland around the project site.

2) Interview Survey

a) Occurrence of Air Pollution Problems Caused by Building Construction

According to the interview with the Aydın Provincial MOEU on April 28, 2015, which is responsible for receiving complaints on air pollution and dust related to building construction in Efeler city center has not received any special complaint.

3) Literature Survey

a) Collection of Existing Air Quality Data

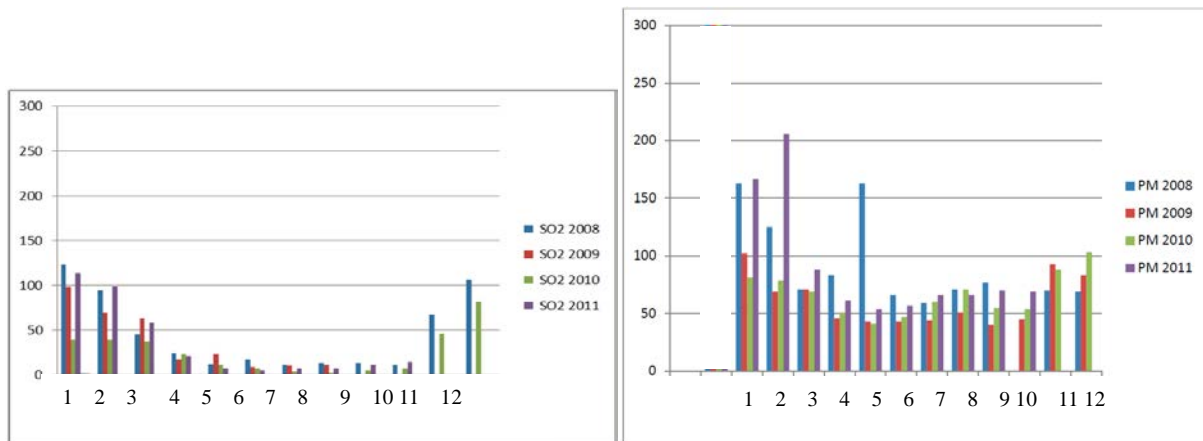
Aydın Province monitors the air quality in Efeler according to the Aydın provincial environmental white paper 201213.

Although sulfur dioxide concentration and PM 10 concentration is high in winter and low in summer, sulfur dioxide is below the environmental standards while PM 10 slightly exceeds them throughout the year. The concentration rise in winter is caused by the use of low-quality fuel for heating.

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y Hospital Agency.

<sup>13</sup> Half amount was paid by the local government bonds immediately after finance, so



Source: Aydın provincial environmental white paper

**Figure-44 Daily Average of SO2 and PM10 Concentration at Aydın Merkez Measurement Bureau**

#### 4) Others

##### a) Confirmation of Project Conditions

The project causes automobile traffic for carrying in construction materials and carrying out waste during construction. Traffic of workers' vehicles for commuting is also caused. The construction work involves topsoil removal and underground excavation. The external wall is built prior to the beginning of construction in order to secure safety and ease such impacts as air pollution and noise.

The concrete and asphalt necessary for construction are procured from the market and no plant for the materials is constructed on the project site.

The hospital is assumed to have 8,000 outpatients daily and they will take bus, taxi and other means of public transportation or driving their car. Traffic of vehicles that deliver medicine and other consumables and that transport waste will be also generated.

#### 5) Impact Prediction

Transportation of construction materials and building construction may cause slight air pollution and dust.

Generation (increase) of automobile traffic during hospital operation will increase sources of air pollution around the project site.

## (2) Water Quality and Water Use

### 1) Field Survey

#### a) Observation of Similar Construction Projects

The Survey Team observed the construction sites of facilities related to Aydın Provincial Directorate of Health in Efeler (former Aydın City) on April 29, 2015, and it did not find any flow of turbid water caused by washing transportation vehicles or effluent from workers' dormitory outside the premises.

#### b) Water Use around the Project Site






Waterworks of communities around the project site are not connected to the waterworks network of the city center. Groundwater is pumped up from a well 150 meters southeast of the project site and supplied to each household from the water supply tower on the premises of Şevketiye Village Hall.

Agricultural water is supplied from the agricultural canal built by DSI and water from the small river on the west of the project site is not used.

#### c) Confirmation of Water Zone around the Project Site Where Water Is Discharged

The area around the project site is farmland and residential area with much greenery and there are few sources of water pollution.






There was no water flow in the small river on the west of the project site in December 2014. However, there was a small width of flow with a depth of 5cm in April 2015. The water had no taste or odor and no algal growth was observed. Although no fish was found in the 10-minute observation, a large number of tadpoles were observed.

December 15, 2014		
		
South of bridge near the northern end of the project site (facing the downstream)	Looking at the north (upstream) from the bridge near the northern end of the project site	
May 1, 2015		
		
Looking at the north (upstream) from the bridge near the southern end of the project site	South of bridge near the southern end of the project site (facing the downstream)	Tadpoles in water

Source: Taken by Survey Team

Figure-45 Small River on the West of the Project Site

The water flow was interrupted in the agricultural canal on the south of the project site in December 2014. However, it was full in April 2015 and starting of cultivation of farmland on the south side was being prepared.

December 15, 2014		
		
East of bridge from the southwestern end of the project site (facing the upstream)	West of bridge from the southwestern end of the project site (facing the downstream)	
May 1, 2015		
		
East of bridge from the southwestern end of the project site (facing the upstream)	West of bridge from the southwestern end of the project site (facing the downstream)	Irrigation of farmland

Source: Taken by Survey Team

Figure-46 Agricultural Canal on the South of the Project Site

2) Interview Survey

a) Occurrence of Water Pollution Problems Caused by Construction

Although Efeler City is responsible for supervising and monitoring water pollution, the Survey Team could not interview them in the survey.

b) Procedures for Effluent Treatment during Operation

According to the interview with the Aydın Provincial MOEU, a project application needs to be filed with it for an SPV to perform sewage treatment on the premises or connect with the existing sewer pipe network with its own responsibility. The facility development needs to be completed within five years when the hospital operation is scheduled to start in order to be connected with the sewage developed by ASKI, etc., and

thus discussions with them need to be started promptly.

The Aydın Provincial Directorate of Health submitted a letter to Efeler City and ASKI, etc., to request the development of compatible sewage because of the construction plan of hospital with 800 beds and had interviews with them several times to promote the project as of May 2015.

### 3) Literature Survey

#### a) Collection of Existing Water Quality Data

The Aydın provincial environmental white paper says that water pollution sources include industrial effluent (particularly leather and textile factories in Denizli and Uşak, human sewage and effluent from olive oil manufacturing and geothermal power generation.

Many of the public water zones in which industrial effluent flows are river sections with the water quality classes of III and IV which indicate more pollution.

The human sewage is treated by 23 local municipalities including Efeler in 54 municipalities in the province.

Other pollution sources include illegal dumping and application of agricultural chemicals and fertilizers, stockbreeding-derived organic matters and waste.

### 4) Others

#### a) Confirmation of Project Conditions

Because concrete is planned to be procured from the market during construction, water is mainly used for washing machinery and vehicles and domestic water for the workers' dormitory.

The water to be used for these purposes is assumed to be purchased from the water tanker.

Based on the assumption that there are 200 workers daily and they each consume 45 liters of water during construction, daily water usage is estimated to be 9m<sup>3</sup>.

A portable water treatment plant with the capacity to treat the amount of water to be used or more will be installed on the project site during construction and washed water and human sewage will be collected and treated into the quality that meets the environmental standards before being discharged (into the river on the west of the project site).

Temporary toilets will be rented and sewage will be collected by such a service operator periodically and its proper treatment will be monitored.

Temporary drainage will be installed around the project site so rainwater and surface water on the premises will flow into the treatment plant to prevent its flow outside the premises.

Water necessary for the operation will be supplied from the waterworks. General effluent generated on the premises will be treated at the treatment facility to be built there to the quality that meets the wastewater standards and then discharged into the sewage. Liquid waste that is prohibited from being discharged into the sewage will be sorted out and stored by type in accordance with regulations and its waste transportation and treatment will be outsourced to such a service provider.

### 5) Impact Prediction

Turbid water is generated during construction and washing construction vehicles and heavy machinery as well as from the civil engineering work site when it rains. The workers' dormitory is established on the project site and effluent is generated from the toilets, shower rooms and kitchen. The effluent can be treated properly with widely available techniques and their impact is avoidable. However, without proper management and treatment, there is a risk of it causing negative impacts on water quality in the surrounding water zone. As surface water is not used in areas around the project site, it will not have any negative impact on the water use.

Effluent during operation is treated to the quality that meets the standards on the premises before being discharged into the sewage. However, there is a risk of problems being caused without proper management and treatment. As water is planned to be supplied from the waterworks at the time of the opening of the hospital, it will not have any impact on the existing water wells for waterworks in Şevketiye Village.

### (3) Noise and Vibration

#### 1) Field Survey

##### a) Observation of similar construction projects

The Survey Team visited a construction site of facilities related to Aydın Provincial Directorate of Health in the city center on April 29, 2015. Although it noticed intermittent hit sound and other noise caused by building construction, it did not confirm any sustainable noise that will prevent living and business operation in the surrounding area. During an hour-long observation during daytime, it did not notice any transportation vehicles of materials entering or leaving the site.

##### b) Observation of Existing Hospital

The Survey Team observed energy facilities and parking of an existing hospital and commercial service facilities in the surrounding area and it did not notice any special noise or vibration.

c) Confirmation of Area around the Project Site

The area around the project site is farmland and residential area with much greenery and no source of special noise or vibration was confirmed.

2) Interview Survey

a) Occurrence of noise and vibration problems caused by building construction

According to the interview with the Aydın Provincial MOEU, it is in charge of receiving complaints on noise. It said that most construction projects are completed within one year (short term) (projects not subject to Turkish regulations) and impacts are temporary, although it receives complaints about noise related to building construction in Efeler city center.

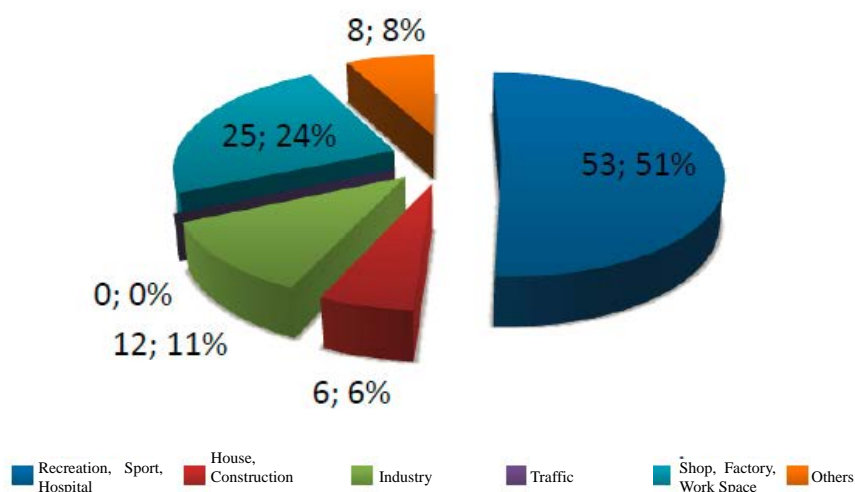
There is no designation of low-pollution-type construction machinery in Turkey.

3) Literature Survey

a) Collection of Existing Noise Data

The Aydın provincial environmental white paper 2012 reveals that a total of 104 complaints about noise were filed in the year. As for the causes, 53 complaints (51%) are about recreation, sports and entertainment, which include parties that last late after midnight with acoustic facilities, as shown in the pie chart below. It is followed by 24 to 25 cases (24%) related to noise from shops, studios and workshop, 12 (11%) complaints about factory noise, 8 miscellaneous causes (8%), 6 cases (6%) about noise from residence and building construction work, and zero case about traffic noise. Many of the complaints about the building construction noise are about work performed particularly near residential zone with many families opening their windows in summer.





Source: Aydın provincial environmental yearbook 2012

Figure-47 Complaints about Noise in Aydın Province in 2012 by Cause

#### 4) Others

##### a) Confirmation of Project Conditions

The project construction is assumed to be for three years in total.

Prior to the beginning of construction work, the external wall will be built to secure safety and ease air and noise impacts.

The concrete and asphalt necessary for construction are procured from the market and no plant for the materials is constructed on the project site.

Main noise sources of construction machinery that are installed or operated on the project site include cranes, power generators, air compressors, piling machines, and building material transportation vehicles. Various work performed by workers also generates noise intermittently.

Facilities and activities listed below are installed or conducted on the project site during hospital operation.

- Distributing pumps and other machinery and facilities
- Private power generator as an auxiliary power source in case of power outage
- Traffic of private cars of hospital visitors and workers, public transportation and ambulance, etc.

#### 5) Impact Prediction

Noise and vibration are caused intermittently by transportation of construction materials

and building construction work during construction.

More noise is generated that now due to generation of automobile traffic during operation.

#### (4) Waste

##### 1) Field Survey

###### a) Observation of Existing Hospitals

The Survey Team checked the management of waste at various locations of existing hospitals and they saw waste is properly disposed of and managed as it saw clear signs of litter boxes and they are not fully packed in individual rooms or hallways and other communal space.

###### b) Observation of Waste Collection and Disposal

The Survey team visited an existing final general waste disposal center and a medical waste disposal center installed on the site operated by Aydın Metro on April 28, 2015.

The steam sterilization process is the bottleneck of the current facility and thus it is operated until 11pm. The sterilization facility is planned to be added in the near future to enable shortening of working hours and receiving waste from outside the province.

<p>Waste compressing facility on the periphery of city center</p>	<p>A truck that transports compressed waste to a disposal center</p>	<p>Entrance of provincial final disposal center/ medical waste disposal center</p>
<p>Medical waste sterilization facility building</p>	<p>Sterilized medical waste cutting and compressing facility</p>	<p>Final general waste disposal center in the furthest back of the dam (landfill site III in the front)</p>

Source: Taken by Survey Team

Figure-48 Existing Waste Treatment and Disposal Center

## 2) Interview Survey

### a) Waste Collection and Disposal

The Survey Team obtained the information below in the interview with the Aydın Provincial MOEU.

General waste is collected by Efeler City and landfilled at the disposal site built by the province. General waste is collected in areas around the project site.

As construction waste, which includes waste soil, concrete, steel and oil, is transported to disposal sites of their own, it is disposed of in accordance with instructions from the MOEU. A list of treatment and transportation service providers can be obtained on the MOEU website. A disposal site is planned to be built at a place separately from general waste and approval from the Ministry of Minerals is yet to be obtained as of May 2015. It is planned to be built immediately after the approval is obtained. It is on the north of the

existing final disposal center, situated on the northern side of the mountain ridge.

Medical waste from existing hospitals is stored in special containers at a designated place in the hospital and special service provider designated by the provincial government collects and sterilizes it and disposes of it at a disposal site it operates. The information on medical waste disposal and transportation service operators can be also obtained on the MOEU website. However there is only one of such registered service provider because the province operates the disposal service in Aydın.

Radioactive waste from the existing hospitals is stored at a designated place and collected and disposed of by a special disposal service operator designated by the province at a disposal site operated by it.

As a license is required to operate waste disposal business in Turkey, a license is also required for disposal even when the waste is disposed of on the hospital premises. The MOEU is responsible for consultation and permit application on waste.

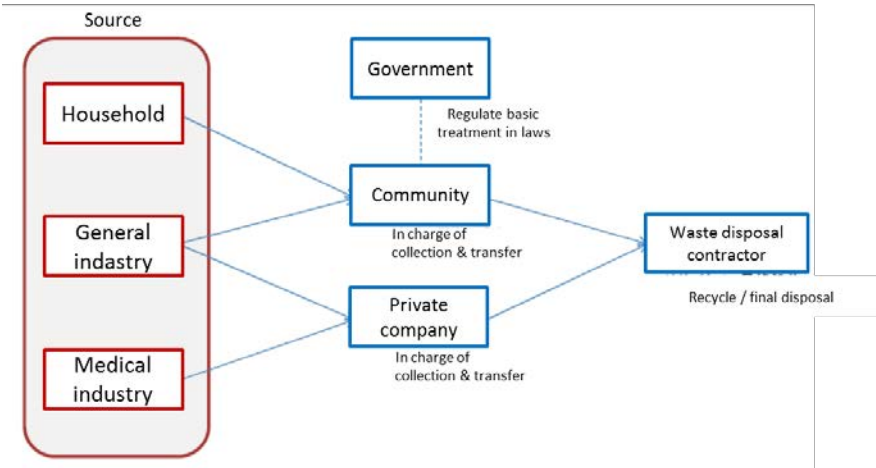
#### b) Occurrences of Waste Problems Related to Construction Work and Hospital Operation

According to the interview with the Aydın Provincial MOEU, it is in charge of supervising waste generation and licensed private collection service providers for construction waste collect such waste and a business entity operated by Aydın Metro collects medical waste. They treat and dispose of such waste under instructions from the province and no special problem has occurred.

### 3) Literature Survey

#### a) Waste Collection and Disposal Business

Waste collection and disposal is generally performed by local governments and private companies in Turkey as shown in the figure below.



Source: FY2011 Survey on Measures against Global Warming: Survey Report on Trend of Overseas Environmental Pollution, Regulations and Industry, March 2012

**Figure-49 Types of Waste and Entities related to Treatment and Disposal in Turkey**

The Aydın provincial environmental white paper 2012 reveals that general waste has increased in line with the population increase in the province and the service needs to be expanded urgently. Industrial waste measures are also promoted in line with the development of industrial production centers. The yearly fluctuation (increase) of the amount of general waste collection in Efeler is provided in the table below.

**Table-91 Daily Average Amount of General Waste Collection in Efeler (Former Aydın City)**

year	Daily Average Amount of General Waste Collection
2007	154,684 t/day
2008	160,919 t/day
2009	171,242 t/day
2010	169,760 t/day
2011 (Jan. – Apr.)	181,047 t/day

Source: Aydın provincial environmental white paper 2012

It should be noted that more general waste is collected in winter than in summer in Efeler as the population rises in the season, as shown in the table below. In some other cities in the province, the population increases in summer and the population is likely to fluctuate due to such features of tourism. Organic matters and paper account for the majority of general waste and more recycling will enable a significant reduction of the amount of disposal.

**Table-92 General Waste in Efeler (Former Aydın City)**

Population (1,000)		Collected amount (1,000 t)		Daily average recycled amount (t/day)		Waste generation per capita (kg/day)		Waste composition (annual average %)					
Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Organic matters	Paper	Glass	Metals	Plastic	Ash
182	195	195	210	3	5	1.07	1.07	75	10	0.5	0.7	8	1

Source: Aydın provincial environmental white paper

As shown in the table below, general and medical waste generated in Efeler is carried in and disposal of at the final landfill operated jointly by Aydın Province and following 11 cities: Aydın (Efeler), Aydın, İncirliova, Germencik, Koçarlı, Çine Çeştepe, Tepecik, Ovaeymir, Umurlu, Dalama ve Acarlar Belediye Başkanlıkları.

**Table-93 Waste Collection, Transportation, Treatment and Disposal in Efeler (Former Aydın City)**

Type of Collected Waste and Collection Service Provider			Compression and crushing facility	Waste Management Body			Final Disposal		Planned volume
General	Medical	Others		Collection	Transportation	Disposal	Year of opening	Method	
private sector	City	n/a	1	private sector	private sector	private sector	2007	landfill	500,000t

Source: Aydın provincial environmental white paper

As for construction waste, information is gathered and collection is supervised by Efeler based on the Excavation, Construction and Demolition Waste Control Regulation (O.G., March 18, 2004, No. 25406).

Handling of radioactive waste, which includes its carrying in and out, transportation, generation and production, and sales, requires a license under the Radiation Safety Regulation No. 85/9727 and its related regulations.

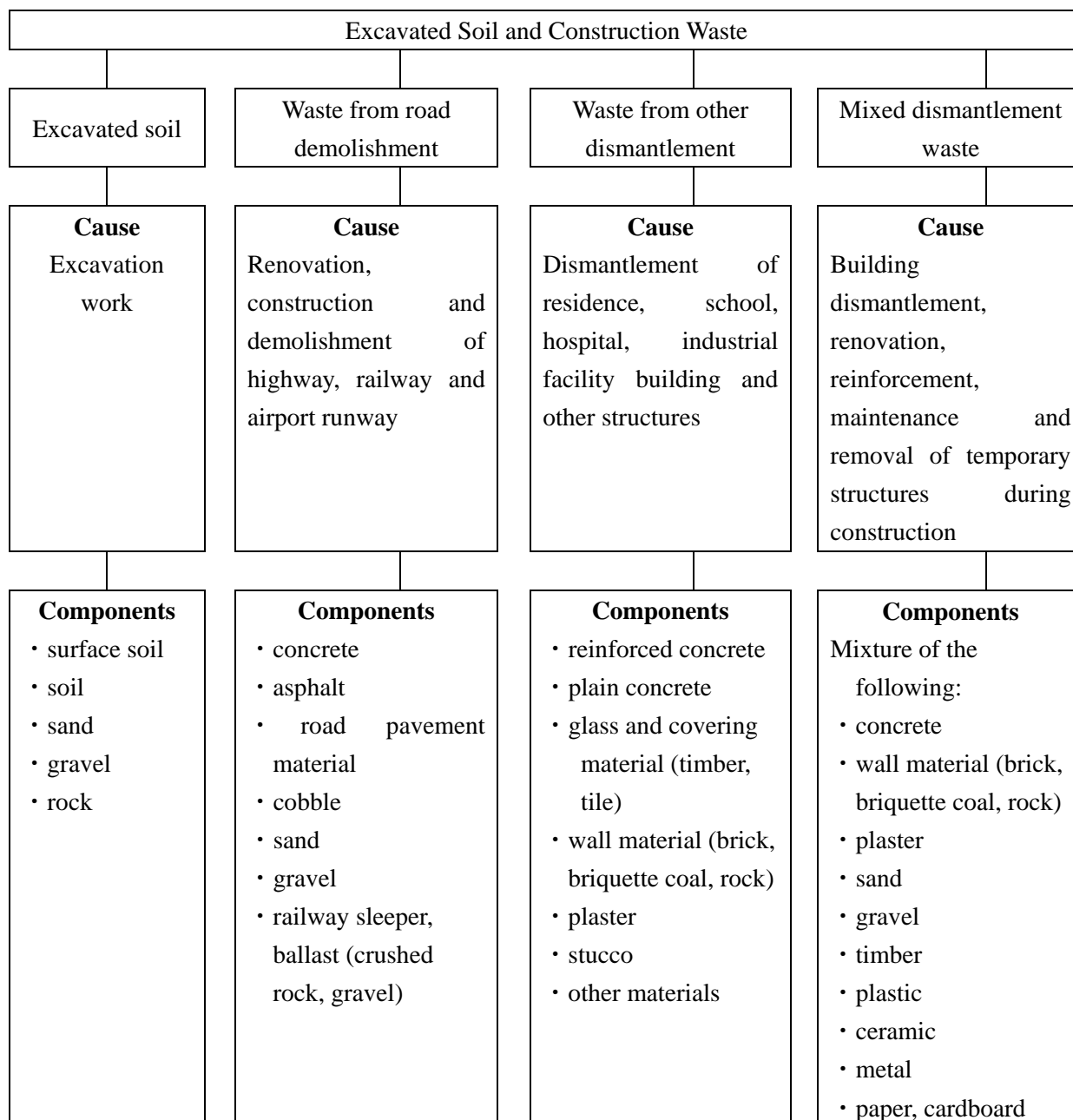
839 types of harmful waste are managed in accordance with the Regulation on Waste Management General Principles" (O.G., July 5, 2008, No. 26927).

Medical waste is supervised by Aydın Province and it submits a report annually to the Directorate of Health under the Medical Control Regulations (O.G., July 22, 2005, No. 25883). Operation of medical waste disposal facility, sterilization facility and vehicles for

the transportation are outsourced to private companies as a provincial program.

b) Construction Waste Classification

Construction waste is classified as below based on the Excavated Soil and Construction Waste Control Regulations (March 18, 2004, public notice No. 406). Construction waste on the project site needs to be classified in accordance with it and discharged properly.



Source: Excavated Soil and Construction Waste Control Regulations (March 18, 2004, public notice No. 406): Appendix 1

Figure-50 Medical Waste Classification Rule

#### 4) Others

##### a) Confirmation of Project Conditions

A workers' dormitory is constructed on the project site during construction. The daily general waste generation totals 100kg based on the assumption that each of approx. 200 workers generates 0.5kg per day on average.

No waste from concrete removal, etc., is generated as there is no existing structure on the project site and construction waste is mainly limited to construction waste soil generated during construction of 2 basement floors and underground facilities. Other waste during construction is lubricants for construction machinery (50kg per month), containers for paint (can) and chemical containers (100kg per month). It is sorted out and stored on the project site in accordance with regulations and its collection and transportation to the disposal site is outsourced to a licensed private service provider.

Kitchen, restaurant and bathroom are constructed for hospital employees and inpatients. Restaurant, cafeteria and shops are built for outpatients and general waste is generated.

Infectious waste, chemical waste, radioactive waste and medical waste which includes medical gas containers are generated once medical service begins to be provided.

#### 5) Impact Prediction

General waste generated from the workers' dormitory during construction and kitchen, restaurant and bathrooms during operation is collected and disposed of by the local government and licensed business operator as it is now at the existing hospitals. However, problems may be caused if it is not properly managed on the project site or treated or disposed of properly after it is transported outside the site.

Construction waste generated during construction is planned to be sorted out and stored on the project site in accordance with regulations and its collection and transportation to the disposal site is planned to be outsourced to a licensed private service provider. However, problems may be caused if it is not properly managed on the project site or treated or disposed of properly after it is transported outside the site.

Medical waste generated during operation is stored out at a designated place and its collection, sterilization and disposal at the disposal site operated by the province is planned to be outsourced to a special service provider designated by it, as it is now at existing hospitals. However, problems may be caused if it is not properly managed on the project site or treated or disposed of properly after it is transported outside the site.



(5) Soil

1) Field Survey

a) Confirmation of Occurrences of Offensive Odor on the Project Site

The Survey Team explored the entire project site on December 15, 2014, and found no trace of clear backfilling or area where waste is buried in the soil or offensive odor is sensed.

In the survey in April and May in 2015, it found some points where cattle feces and other waste from livestock barns are dumped in the northern part of the project site. Continuation of such act may deteriorate the living conditions in the neighboring area.

The Survey Team also saw the act of transporting and abandoning waste on a wheelbarrow and those who abandoned the waste from livestock barns are likely to be local residents.

2) Interview Survey

a) History of Project Site (Possibility of Industrial Establishment and Abandonment of Agricultural Chemicals, etc.)

According to the interview with the Aydın Provincial MOEU, the history of the project site becomes clear when referred to relevant agencies when the need for assessment procedures is examined. Thus, it will be difficult to obtain information on the possibility of illegal dumping which does not appear in the officially recorded land history.

Meanwhile, according to the interview with local residents who use the project site for grazing, it has been used for pastureland and no building or factory has been located or no irrigated farmland has been developed.

3) Literature Survey

a) History of project site (possibility of factory or abandonment of agricultural chemicals)

The Survey Team confirmed an aerial photo of 2004 of the Google Earth and it shows grassland as it is now.

b) Literature Survey

The Aydın provincial environmental white paper reveals that the Provincial Ministry of Food, Agriculture and Livestock Animals has no information on specific soil pollution in the province.

4) Others

a) Confirmation of Project Conditions

The project includes development of 2 basement floors (parking space, etc.) and quake-absorbing structure and the total area of the first basement floor is assumed to be 44,730m<sup>2</sup>, which will generate waste soil.

During operation, items of monitoring and required standards that include employee training, health and safety management, and environmental management are set in detail on all the scheduled project items by MOH as shown in Chapter 7.1-2 Project Contents and Facility Plan (1) Project Contents. It is likely that the SPV will be required to report the achievement to the ministry every month. The monitoring items are likely to include handling of mercury and other chemicals.

5) Impact Prediction

Waste soil is generated for construction of the underground structure. Although serious and a large volume of soil pollutants are unlikely to be found as the project site has been grassland, soil sampling and analysis is performed in the following stage of the survey (after the decision of project executing body) to confirm no impact.

Proper management and treatment of harmful substances that include mercury and other chemicals used during operation is planned in the project plan and staff education is also planned. However, problems may occur unless they are properly managed and treated.

(6) Offensive Odor

1) Field Survey

a) Confirmation of Occurrences of Offensive Odor at Existing Hospitals

The survey Team observed three existing hospitals in Efeler (former Aydın City) and confirmed no occurrences of any specific offensive odor.

b) Observation of Similar Construction Projects (Workers' Dormitory, Temporary Toilets, etc.)

The Survey Team observed the construction site of Aydın Provincial MOH facility in central Efeler on April 29, 2015.

The construction area was encircled by the fence and the inside could not be observed in detail. However, it did not notice any such problems as offensive odor or bad drainage that will have negative impacts on workers' health and sanitation in the one-hour-long observation.

It did not sense any offensive odor near places that are likely to be the plant and rest

area (toilets).

## 2) Others

### a) Confirmation of Project Conditions

A workers' dormitory is built on the project site during construction. The daily general waste generation totals 100kg based on the assumption that each of approx. 200 workers generates 0.5kg per day on average.

No waste from concrete removal, etc., is generated as there is no existing structure on the project site and construction waste is mainly limited to construction waste soil generated during construction of 2 basement floors and underground facilities. Other waste during construction is lubricants for construction machinery (50kg per month), containers for paint (can) and chemical containers (100kg per month). It is sorted out and stored on the project site in accordance with regulations and its collection and transportation to the disposal site is outsourced to a licensed private service provider.

Kitchen, restaurant and bathroom are constructed for hospital employees and inpatients. Restaurant, cafeteria and shops are built for outpatients and general waste is generated.

Infectious waste, chemical waste, radioactive waste and medical waste which includes medical gas containers are generated once medical service begins to be provided.

## 3) Impact Prediction

General waste generated from the workers' dormitory during construction and kitchen, restaurant and bathrooms during operation is collected and disposed of by the local government as it is now at the existing hospitals. However, offensive odor may be caused if it is not properly managed on the project site or treated or disposed of properly after it is transported outside the site.

Construction waste generated during construction is planned to be sorted out and stored on the project site in accordance with regulations and its collection and transportation to the disposal site is planned to be outsourced to a licensed private service provider. However, offensive odor may be caused if it is not properly managed on the project site or treated or disposed of properly after it is transported outside the site.

Medical waste generated during operation is stored out at a designated place and its collection, sterilization and disposal at the disposal site operated by the province is planned to be outsourced to a special service provider designated by it, as it is now at existing hospitals. However, offensive odor may be caused if it is properly managed on the project site or treated and disposed of after it is transported outside the site.

(7) Poor, Local Economy and Use of Local Resources

1) Field Survey

a) Visual Observation of Current Land Use, Grazing and Fuel Collection on the Project Site

Grazing: The Survey Team explored around the project site for two hours each for a total of four days in April and May 2015 to observe the grazing situation. The result is summarized below.

- It saw grazing every day and at least five livestock animal owners.
- The interview reveals that those who use the project site are residents of Kuyulu Village and Şevketiye Village. The former has a population of 2,000 and the latter has about 300. Şevketiye Village residents of the former are likely to own more livestock animals and thus the stakeholders' meeting needs to include at least those two villages as the subject.
- Although villagers said that the pastureland south of agricultural water on the south of the project site is that of another village and thus they cannot use it. However, in reality, the Survey Team confirmed villagers entering the project site following cattle from the south and going south of the water from the project site.
- Each owner grazed about five to 20 heads of cattle and goats.
- The Survey Team saw around 25 goats on the area which used to be used as the soccer field in the northern part of the project site. However, it did not see them or their owner on the following day.
- The Survey Team saw dairy cattle barn for more than 20 heads in Kuyulu Village. It also saw many households with piled-up feed at the height seeable over the wall from outside the premises. This indicates that a large percentage of households keep livestock animals regardless of whether they graze them or not. According to the interview, they keep livestock animals mainly to get milk and they consume it as yogurt for themselves and they sell surplus to business operators who visit them to purchase it.
- They give feed at the animal barn as grass withers in summer. They graze them from autumn to spring not all year round.

The Survey Team conducted interview about the project with the presence of Aydın Provincial Directorate of Health employees and interviewees expressed opinions below.

- They all knew the hospital project. As it is good that a hospital is constructed, they have to accept the situation in which they will not be able to keep cattle as they do now because of the odor and decrease in pastureland if the housing construction and

urbanization in the surrounding area are triggered by the hospital construction.

- They are glad that a hospital is constructed in the area because infrastructure development there is lagged behind.
- Although there was an idea of law school being built on the pastureland on the south of the canal on the south of the project site and the village mayor gathered signatures for approval, it vanished. They feel cheated as the pastureland is encircled by the fence and they can no longer graze their livestock animals.

		
A grazing scene on the project site	A grazing scene on the project site (formerly used as soccer field in the northern part)	Interview by Ministry of Health employee
		
Moving cattle to the south of agricultural canal	Feed being transported	Grazing at the roadside near the Menderes River
		
Relatively large animal barn in Kuyulu Village	Larger animal barn near the Menderes River	Larger animal barn near the Menderes River

Source: Taken by Survey Team

Figure-51 Grazing and Livestock Farming

Fuel: The Survey Team observed many households near the project site that were drying dead branches and piling up firewood at the height seeable over the fence from outside their premises or at the side of the entrance. They are likely to use shrubs and bushes on the project site as well as tree branches on their premises and street tree branches as firewood and the degree of dependence on the project site is unknown. (They use it for heating for about three months in winter.)

Although natural gas is supplied through a pipeline in the city center, electricity is only available in the area surrounding the project site and thus ordinary households use electricity for lighting, cooking and heating. Households that cannot afford to pay the electricity bill continue to use firewood. The gas charge is higher than electricity charge.



Source: Taken by Survey Team

Figure-52 Firewood Use

## 2) Impact Prediction

Because the fence is built around the project site after the land survey starts in the planning stage and the circumference of the project site is decided, the firewood as fuel cannot be collected there.

However, as local residents are informed of the hospital construction on the site and it is not the only place where they gather firewood, the project will not cause serious impacts on their living and livelihood. It is possible that pruned branches of the planted trees on the project site are provided as fuel if requested from the local communities.

Employment of workers in construction and service sectors will be created on the project site and its surrounding area during construction and operation.

## (8) Traffic Infrastructure

### 1) Field Survey







#### a) Observation of Access Road Condition (Visual Observation)

The road on the east side of the project site is part of the local bus route of Aydın Metro. There are three bus routes from Şevketiye Village Hall to city center a bus is operated in every 12 minutes when the three routes are combined. One of the three routes goes to the veterinary university.

The road of the bus route is barely wide enough for two cars to go by each other and residences are closely built along the road. Thus, it is not so suitable for large construction vehicles to run there during the day.

The route to the southern end of the project site from the city center via the Işıklı Boulevard and Kültür Boulevard runs the outer edge of the existing city center where there are few facilities and residences that require considerations of noise and other impacts to be caused by the traffic of large vehicles and the road is wide excluding the section in Işıklı village.

The riverside road on the west of the project site is for river management and advance license is required to be obtained from DSI for construction vehicles to use it. Because the intersection with the arterial highway is not developed as a road and there is a height difference, by walk-like section needs to be taken to access the road.

		
Bus on the road on the east of the project site	Bus stop in front of Şevketiye Village Hall	Route to the southern end of the project site (1)
		
Route to the southern end of the project site (2) Intersection of motorways	Route to the southern end of the project site (3) Section in Işıklı Village	River management road on the west of the project site

Source: Taken by Survey Team

**Figure-53 Roads around the Project Site**

b) Traffic Survey around the Existing Hospital (Visual Observation)

Visitors to the existing hospital are believed to drive their own car or take bus or taxi. However, neither bus nor taxi was allowed to park on the premises due to the shortage of parking space for private cars there.

There are bus stops at least to two directions (e.g.: front of the east, south and north sides of the premises) around the existing hospital.

Local bus that runs the city center and local bus that begins and terminates in Işıklı village and other nearby rural communities stop at the bus stops. All local buses are operated by Aydın Metro (Belediye or special municipality).

The Survey Team observed the flow of the existing hospital and noticed that citizens with the physical condition equivalent to the locomotive syndrome with which they walk very slowly or require support cross the road frequently to go to the bus stop and pharmacy and cars are parked on the road because of shortage of parking space on the premises, which has caused a risk of traffic congestion and traffic accidents.



Source: Taken by Survey Team

**Figure-54 Traffic around the Existing Hospital**

2) Literature Survey

a) Road and public transportation development plans around the project site

Although the Survey Team worked on the collection of existing literature, there was no description in the master plan of urban development in AYDIN-MUĞLA-DENİZLİ<sup>14</sup> and it could not find any other relevant literature.

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<sup>14</sup> AYDIN-MUĞLA-DENİZLİ PLANLAMA BÖLGESİ (2012)  
[http://www.csb.gov.tr/db/mpgm/editordosya/file/CDP\\_100000/amd/AMD\\_PLAN\\_HUKUM\\_LERI.pdf](http://www.csb.gov.tr/db/mpgm/editordosya/file/CDP_100000/amd/AMD_PLAN_HUKUM_LERI.pdf)



3) Others

a) Confirmation of Project Conditions

The project generates automobile traffic during construction for bringing in construction materials and taking out waste. There is also traffic of commuting cars of workers.

During hospital operation, about 8,000 outpatients are expected to visit it daily using bus, taxi and other means of public transportation and driving their car. There is also traffic of vehicles delivering medicine and other consumables and taking out waste.

4) Impact Prediction

Transportation of construction materials and automobile traffic may cause traffic congestion on the surrounding roads during construction.

Automobile traffic may also cause traffic congestion on the surrounding roads during operation.




(9) Cultural Heritage

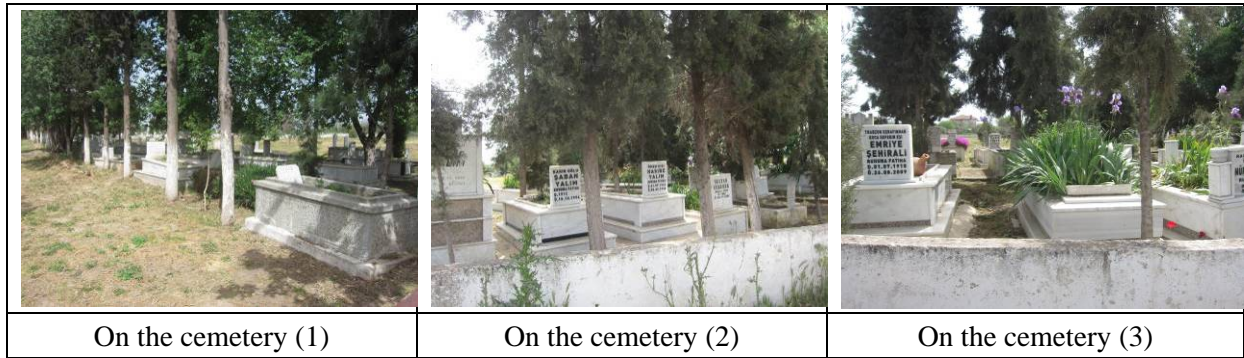
1) Field Survey

a) Visual Observation of Current Project Site and Adjacent Cemetery Conditions and Locational Relationship with the Project site

According to the interview with the Aydın Provincial MOEU, there is no already-known cultural heritage on the project site.

The Survey Team visited the cemetery adjacent to the project site on the east side across a road four times in April and May 2015 and the entrance was closed at each time, which led to the assumption that rituals are not offered or it is not cleaned so frequently.

		
<p>Entrance to the cemetery viewed from veterinary university side</p>	<p>Locked gate</p>	<p>Porter's lodge installed by Aydın Metro (unmanned)</p>



Source: Taken by Survey Team

Figure-55 Condition of Adjacent Cemetery

b) Confirmation of Local Ruins

The Survey Team visited the Aydın Museum to confirm the location and contents of major ruins in the surrounding area. It learned that there are ruins confirmed in the surrounding area of the project site are situated on the slope at 150 meters above the sea level similarly to the Tralles as shown in Figure-56 and there are no ruins situated at around 40 meters above the sea level where the project site is located.



Source: Aydın Museum

Figure-56 Distribution of Ruins in Aydın Province

2) Impact Prediction

There are no historic or cultural resources on or around the project site and there is little

possibility of the project affecting cultural heritage.

However, the two points below need to be added to the environmental management plan based on the circumstances unique to Turkey and ordinary responsibility for social considerations.

**【Circumstances unique to Turkey due to its history】** In case of a discovery of a matter that is likely to be historic or cultural assets during construction, it will be properly notified based on the Turkish laws.

**【Social considerations】** Considerations will be given to the premises and environment of the public cemetery east of the circumference of the project site during construction and operation in order to avoid and minimize negative impacts and information which will be shared with relevant entities and individuals.

#### (10) Public Health and Infectious Diseases

##### 1) Field Survey

##### a) Observation of Similar Construction Projects (Workers' Dormitory and Temporary Toilets, etc.)

The Survey Team observed the construction site of facilities related to the Aydın Provincial Directorate of Health in the city center of Efeler on April 29, 2015.

As the construction zone was encircled by the fence and details of the inside were not observed closely. However, it did not find any such problem as offensive odor or bad drainage that may cause negative impacts to workers' health and sanitation in the one-hour-long observation of the circumference.

It did not notice any offensive odor near locations that are likely to be the plant or rest area (toilet).



Source: Taken by Survey Team

**Figure-57 Public Health in Similar Construction Projects (Workers' Dormitory and Temporary Toilets, etc.)**

b) Observation of Sanitation in the Surrounding Area

The area around the project site is farmland and residential area with much greenery and there was no sign of serious sanitary problems, although there are multiple livestock animal barns.

2) Literature Survey

a) Main Infectious Diseases in Turkey

According to the Quarantine Station of Japanese Ministry of Health, Labor and Welfare, main infectious diseases in Turkey and the Aegean region are those shown in the below list. Although the outbreak of malaria (mainly vivax malaria) is observed from May to October in some areas of Turkey, there is no risk of being infected at major tourist destinations in the western and southwestern regions.

Table-94 Main Infectious Diseases in Turkey

Main Infectious Disease	Cause	Timing of Outbreak
Food poisoning	Typhoid, paratyphoid, amebic dysentery, salmonella	May to September
West Nile fever	Mosquito	Summer to autumn
Cutaneous leishmaniasis Visceral leishmaniasis	Psychodidae	-
Abortus fever	Raw milk and dairy products infected with brucella (homemade cheese, etc.)	-
Rabies	Dog	-

Source: By country information: Turkey climate and diseases that require attention  
<https://www.forth.go.jp/destinations/country/turkey.html>

b) Number of HIV Carriers in Turkey

There were 6,800 HIV carriers in Turkey in 2013 and it is on the rise.<sup>15</sup>

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Substantially half amount was procured by private finance.

<sup>15</sup> It is not included in the scope, but outsourced to the member company o

### 3) Others

#### a) Confirmation of Project Conditions

A workers' dormitory is constructed on the project site during construction. Water to be used there is assumed to be purchased from the water tanker.

Based on the assumption that there are 200 workers daily and they each consume 45 liters of water during construction, daily water usage is estimated to be 9m<sup>3</sup>.

A portable water treatment plant with the capacity to treat the amount of water to be used or more will be installed during construction and washed water and domestic water will be collected and treated into the quality that meets the environmental standards and then discharged (into the river on the west of the project site).

Temporary toilets will be rented and sewage will be collected by such a service provider periodically and its proper treatment will be monitored.

Temporary drainage will be installed around the project site so rainwater and surface water on the premises will flow into the treatment plant to prevent its flow outside the premises.

It is planned not to have stagnant water on the premises during operation and pest control is properly operated.

### 4) Impact Prediction

If the environment around the workers' dormitory is not maintained in a sanitary manner during construction, it may cause an outbreak of infectious diseases via water and insects.

If workers purchase prostitution without proper protective measures, it may raise the risk of causing sexually transmitted diseases including HIV/AIDS infections among workers and prostitutes in the neighborhood.

Because the access to the regional base hospital improves during operation, handling of an outbreak of general infectious diseases is likely to improve around the project site. On the other hand, there is little possibility of an outbreak of such diseases caused by clinical examination and treatment facilities.

## (11) Occupational Safety

### 1) Field Survey










#### a) Observation of similar construction projects (environmental considerations and occupational safety)

The Survey Team observed the construction site of facilities related to the Aydın Provincial Directorate of Health in the city center of Efeler on April 29, 2015.

The construction area was encircled by the fence and the inside could not be observed in detail. However, it did not notice any such problem as offensive odor or bad drainage

that will cause negative impacts on workers' health and sanitation in the one-hour-long observation.

There was a sign of cautions to ensure occupational safety at the side of the entrance of workers (for humans) and construction vehicles. Although all workers wore the same vest, some workers engaged in high-place work were not wearing a safety rope. As far as it was seeable over the fence, stored materials were put up neatly and no offensive odor was sensed near the plant and rest area (toilet).

		
Sign of construction summary	Construction	High-place work
		
Sign on occupational safety instructions and insurance subscription	Sign of construction company	Observed international standards, etc., on the sign on the left
		
Bricks, etc., are neatly piled up at the left bottom.	Drug storage or plant is installed at the left bottom.	Temporary buildings assumed to be rest area and toilets

Source: Taken by Survey Team

Figure-58 Occupational Safety and Environment of Similar Construction Project

b) Observation of Existing Building (Environmental Considerations and Occupational Safety)

Although hazardous materials are stored and used at a hospital in operation, they are used, managed and disposed of by trained hospital staff or professional service providers.

2) Literature Survey

a) Occupational Safety Regulations, etc. (Construction Work and Hospital Operation)

An accident prevention plan is required to be produced and submitted for construction work and hospital operation under Turkish laws.

According to the interview with the Aydın Provincial MOEU, the Ministry of Labor and Social Security (CSGB) or Social Security Institution (SGK) is in charge of occupational safety. Labor safety supervisors (experts) need to be assigned during construction and operation

### 3) Others

#### a) Confirmation of Project Conditions

A maximum of 200 workers are likely to work on the project site during construction.

Although the number of employees during operation is unknown, that of exiting Aydın National Hospital and Aydın Ataturk National Hospital totals around 800 and thus it is likely that the number of workers is similar to it or slightly more.

### 4) Impact Prediction

There is a possibility of industrial accidents occurring from transporting construction materials and construction work.

There is also a possibility of such accidents occurring from hazardous substances (antiseptic solution, etc.) to be stored and used in the hospital during operation.

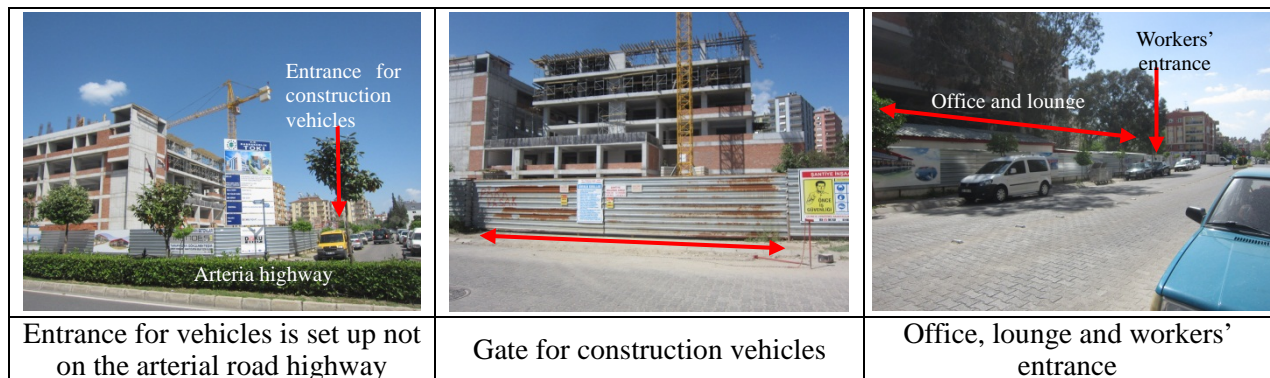
## (12) Accidents

### 1) Field Survey

#### a) Observation of Similar Construction Projects (Traffic Accidents)

The Survey Team observed the construing site of the Aydın Provincial MOH facility in city center of Efeler on April 29, 2015. The construction site was encircled by the fence and no entry was allowed without permission. The entrance of construction vehicles was limited to one set up on the alley side rather than the arterial highway. There was a separate entrance for workers.





Source: Taken by Survey Team

Figure-59 Traffic Safety in Similar Construction Works

b) Confirmation of Location and Contents of Facilities that Require Special Considerations in Areas around the Project Site (Visual Survey)

Facilities that require special considerations in areas around the project site include primary and secondary schools on the north of the project site. There is also an agricultural canal that uses a concrete gutter on the west of the project site and attention needs to be paid not to destroy it with construction vehicles or machinery. There are mosque, village hall and cemetery on the east and attention needs to be paid not to affect events on holidays.



Source: Taken by Survey Team

**Figure-60 Facilities that Require Special Considerations in Areas around the Project Site**

c) Observation of Existing Hospitals (Traffic Safety)

The Survey Team observed the premises and circumference of three existing hospitals in Efeler (former Aydın City) on April 29 and 30, 2015, and confirmed traffic safety measures and challenges listed below.

**【Safety measures on the premises】**

A. The entrance and exit of vehicles are separated.

B. An opening-closing bar is installed at the basement parking entrance near the entrance and exit on the premises to stop vehicles and reduce their speed.






C. A guard box is set up at a place where the entrance, exit and entrance to the basement parking can be monitored.

D. Because no public transportation center is set up on the premises of the existing hospital in Aydın, the entrance and exit for pedestrians is set up at the exterior wall to connect the hospital premises and bus stop outside them in the shortest distance.

**【Challenges on the premises】**

E. There is small space for private cars to access near the hospital building and thus it is difficult for multiple cars to stop at a time. Many of hospital visitors are elderly people who have difficulties walking and they are often accompanied by two or more family members who take care of them and drive the car. There is not enough space to secure sufficient flow line.

F. Most of the parking space on the premises is occupied by hospital staff and there are not enough parking spaces for visitors there.

			
A	B, C	D	
			
E	F		

Note: The alphabet corresponds to the main text.

Source: Taken by Survey Team

**Figure-61 Traffic Safety Measures and Challenges on Existing Hospital Premises**

**【Safety measures outside the premises】**






A. Crossings are set up at the pedestrian entrance and exit of the premises and near the bus stops.

**【Insufficiencies outside the premises】**

B. There are many private cars parked on the road outside the hospital because of insufficient parking capacity for visitors on the premises and it is blocking traffic at some points.

C. There is small space for private cars to access near hospital building and thus it is difficult for multiple cars to park at a time and taxis cannot enter the premises. As a result, those who have difficulties walking and their caregiver often get on and off the car on the narrow sidewalk and motorway and they fight with cars that park on the road as described above and thus safety is not secured.

D. Because medicine is prescribed outside the hospital, visitors go to a pharmacy in flocks on the other side of the road and thus many pedestrians cross the road outside crossings. It is particularly dangerous for those who have difficulties walking and it also causes traffic congestion. Meanwhile, a part of the premises is set back to build a bank ATM at some locations.

		
A	B	C
		
D. Pharmacy on the opposite side of the road	D. Bank ATM)	

Note: The alphabet corresponds to the main text.

Source: Taken by Survey Team

**Figure-62 Safety Measures and Challenges outside the Existing Hospital Premises**

2) Others

a) Confirmation of Project Conditions

Automobile traffic is generated in the project for bringing in construction materials and taking out waste, etc., during construction. Workers' traffic is also generated for commuting.

During hospital operation, about 8,000 outpatients are expected to visit it daily using bus, taxi and other means of public transportation and driving their car. There is also traffic of employees for commuting and vehicles delivering medicine and other consumables and taking out waste.

3) Impact Prediction

There is an increased risk of traffic accidents because of generation of automobile traffic transporting construction materials, etc., during construction.

There is also an increased risk of traffic accidents because of generation of automobile traffic during operation.

### **3-6. Impact Assessment**

The table below provides an overview of possible negative impacts of the project on pollution and natural and social environments. It is unlikely to cause any serious negative impact (A-).

**Table-95 Environmental Impact Assessment**

No.	Items	Impact Assessment in Scoping		Impact Assessment based on Survey Results		Reason of Rating
		Planning & Construction Phase	Operation Phase	Planning & Construction Phase	Operation Phase	
1	Air	B-	B-	B-	B-	<ul style="list-style-type: none"> <li>Slight air pollution is caused by transportation of construction materials and construction during construction work.</li> <li>Dust may be caused by transportation of construction materials and construction work during construction.</li> <li>Slight air pollution is caused by automobile traffic during operation.</li> </ul>
2	Water	C-	C-	B-	B-	<ul style="list-style-type: none"> <li>Washing construction vehicles and heavy machinery generates turbid water during construction. It will be also caused on the site of civil engineering work in rain. Workers' lodgment is built on the site and effluent is generated from the toilet, shower and kitchen, etc. Although impacts on the surrounding area can be avoided if the effluent is properly treated with popular techniques, it has a risk of affecting the water quality in the surrounding watershed if it is not properly managed or treated.</li> <li>During operation, the effluent is planned to be discharged in the sewerage system after it is treated on the premises in the quality that meets the standards. However, there is a risk of causing a problem if not managed and treated properly.</li> </ul>
3	Noise and vibration	B-	B-	B-	B-	<ul style="list-style-type: none"> <li>Noise and vibration are caused by transportation of construction materials and construction work during construction.</li> <li>Noise is caused by automobile traffic during operation.</li> </ul>
4	Waste	B-	B-	B-	B-	<ul style="list-style-type: none"> <li>Workers' lodgment is built on the project site during construction. Kitchen, cafeteria, and bathroom, etc., for hospital staff and inpatients are developed during operation.</li> <li>General waste generated there are collected and disposed of by the city and provincial governments in the same way as the existing hospitals. However, there is a risk of problems being caused if it is not managed and disposed of properly.</li> <li>Medical waste is generated during operation. It is kept at a designated place. Its collection, sterilization and disposal in the landfill operated also by the provincial government is planned to be outsourced to a professional business operator designated also by the provincial government in the same way as existing hospitals. However, there is a possibility of problems being</li> </ul>

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No.	Items	Impact Assessment in Scoping		Impact Assessment based on Survey Results		Reason of Rating
		Planning & Construction Phase	Operation Phase	Planning & Construction Phase	Operation Phase	
						<p>caused if it is not managed and disposed of properly.</p> <ul style="list-style-type: none"> <li>Radioactive waste is generated during operation. It is kept at a designated place. Its collection and disposal in the landfill operated also by the provincial government is planned to be outsourced to a professional business operator designated also by the provincial government in the same way as existing hospitals. However, there is a possibility of problems being caused if it is not managed and disposed of properly.</li> </ul>
5	Soil	C-	B-	C-	B-	<ul style="list-style-type: none"> <li>Unnecessary soil is generated for construction of the basement section during construction. Although there is little possibility of serious soil pollutants in a large quantity because the project site has been grassland, it is necessary to collect and analyze the soil in the following stage of the survey (after the decision of project contractor) to confirm there is no impact.)</li> <li>Proper management and treatment of mercury, chemicals and other harmful substances that are used during operation is planned in the project plan and staff education is also planned to be provided. However, there is a possibility of problems being caused if it is not managed and treated properly.</li> </ul>
6	Ground subsidence	D	D	D	D	There is no plan of such activities as pumping of substantial amount of groundwater that will cause ground subsidence during construction or operation.
7	Offensive Odor	D	D	D	D	There is no plan of activities that will cause serious offensive odor during construction or operation.
8	Bottom Sediment	D	D	D	D	There is no plan of activities that will have negative impacts on the bottom sediments of neighboring canals or rivers during construction or operation.
9	Protected Areas	D	D	D	D	There is no designated protected area on the project site or in its surrounding area and no impact is caused to such area during construction or operation.
10	Ecosystem	D	D	D	D	The project site and its surrounding area have been developed and long used as farmland and residential land and the area has already had ordinary man-caused impacts. There is no impact on local ecosystem during construction or operation.
11	Water regime	D	D	D	D	There is no plan of pumping a large quantity of groundwater during construction or operation. Installation of well as an emergency water source in case of discontinuation of public water supply is under review.
12	Geology	D	D	D	D	The project site is gently sloping flat

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No.	Items	Impact Assessment in Scoping		Impact Assessment based on Survey Results		Reason of Rating
		Planning & Construction Phase	Operation Phase	Planning & Construction Phase	Operation Phase	
						land toward the south and the construction or operation of the project does not cause any substantial change of topography or geological structure of the project site or its surrounding area.
13	Involuntary Resettlement and/or Loss of Properties	D	D	D	D	Because the project site is registered as land for hospital and there is no resident or personal property on it, the project implementation does not cause any involuntary resettlement or property loss.
14	Poor	C-	D	C-/B+	B+	<ul style="list-style-type: none"> <li>• People can no longer use the project site for grazing or fuel collection after the starting of topographical survey in the planning stage.</li> <li>• However, local residents are informed of the construction of a hospital on the site and there are many places that can be used for grazing, which include riverbed, vacant lot along the road, deserted arable land, and undeveloped land for development and thus there is expected to be no serious impact on the livelihood of local residents. Therefore evaluation is C- before and during construction.</li> <li>• The level of impact is investigated concretely at the next stage of the Survey (after the project executing body is decided) and its mitigation measures is examined with local residents, if necessary.</li> <li>• No minus effect is expected especially for the poor during operation period.</li> <li>• Jobs for laborers and in the service sector are expected to be created on the project site and its surrounding area during construction and operation.</li> </ul>
15	Indigenous or minority groups	D	D	D	D	There is no indigenous group around the project site.
16	Local economy such as employment and livelihood	C-/B+	B+	C-/B+	B+	<ul style="list-style-type: none"> <li>• People can no longer use the project site for grazing or fuel collection after the starting of survey in the planning stage.</li> <li>• However, local residents are informed of the construction of a hospital on the site and there are many places that can be used for grazing, which include riverbed, vacant lot along the road, deserted arable land, and undeveloped land for development and thus there is expected to be no serious impact on the livelihood of local residents. Therefore evaluation is C- before and during construction.</li> <li>• The level of impact is investigated concretely at the next stage of the Survey (after the project executing body is decided) and its mitigation measures is examined with local residents, if necessary.</li> </ul>



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No.	Items	Impact Assessment in Scoping		Impact Assessment based on Survey Results		Reason of Rating
		Planning & Construction Phase	Operation Phase	Planning & Construction Phase	Operation Phase	
						<ul style="list-style-type: none"> <li>Jobs for laborers and in the service sector are expected to be created on the project site and its surrounding area during construction and operation.</li> </ul>
17	Land use, Local resource use	C-/	D	C-/B+	D	<ul style="list-style-type: none"> <li>People can no longer use the project site for grazing or fuel collection after the starting of survey in the planning stage.</li> <li>However, local residents are informed of the construction of a hospital on the site and there are many places that can be used for grazing, which include riverbed, vacant lot along the road, deserted arable land, and undeveloped land for development and thus there is expected to be no serious impact on the livelihood of local residents. Therefore evaluation is C- before and during construction.</li> <li>The level of impact is investigated concretely at the next stage of the Survey (after the project executing body is decided) and its mitigation measures is examined with local residents, if necessary.</li> <li>No minus effect is expected especially for the Land use, Local resource use during operation period.</li> </ul>
18	Water rights / water use	C-	C-	D	D	<p>Surface water is not utilized around the project area so that there is no negative impact on neighboring water rights or use during construction or operation.</p> <p>As water is planned to be supplied from public water system during operation, there is no negative impact on neighboring water sources or well.</p>
19	Traffic/public facilities, infrastructures, social services	B-	B-	B-	B-	<p>Transportation of construction materials during construction and automobile traffic caused during operation may cause traffic congestion to neighboring roads. Automobile traffic during operation may cause traffic congestion to neighboring roads.</p>
20	Social institutions such as social infrastructure and local decision - making institutions	D	D	D	D	<p>The project site has been used as public grassland, and the hospital development plan is also made public. The project does not cause any impact on social infrastructure during construction or operation.</p>
21	Uneven distribution of benefits and damages	D	D	D	D	<p>There are 2 national hospitals in city center. Once the large hospital is built on the outer edge of the city center and begins operation, the existing 2 hospitals are likely to be closed. The closure will have the following impacts:</p>
22	Local conflict of interests	D	D	D	D	<ul style="list-style-type: none"> <li>Customers of service sector business around the existing hospitals will decrease, while the chance of</li> </ul>

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No.	Items	Impact Assessment in Scoping		Impact Assessment based on Survey Results		Reason of Rating
		Planning & Construction Phase	Operation Phase	Planning & Construction Phase	Operation Phase	
						<p>conducting such business near the new hospital will increase.</p> <ul style="list-style-type: none"> <li>• Inpatients will change hospitals. There visitors have access by public transportation.</li> <li>• The distance to the hospital for outpatients can be longer or shorter than before.</li> <li>• Doctors, staff and contractors' staff can access by public transportation.</li> <li>• The new hospital have more advanced facility and equipment for diagnosis and treatment than the existing ones.</li> </ul> <p>When the entire Aydın Province is subject to the assessment, the project will not cause any uneven distribution of benefits or conflict of interest.</p>
23	Physical splits of communities	D	D	D	D	The project site is situated on the outer edge of city center and the project does not cause any split of communities.
24	Historical and cultural resources	C-	C-	C-	C-	<ul style="list-style-type: none"> <li>• There is no historical or cultural resources on the project site or in the surrounding area.</li> <li>• However, the two issues below need to be added to the environmental management plan based on circumstances specific to Turkey and ordinary responsibility for social considerations.</li> </ul> <p>[Special circumstances based on Turkish history] In case of a discovery of objects that are likely to be historical or cultural resources during construction, it will be notified properly in accordance with Turkish laws.</p> <p>[Social considerations] Considerations will be given and information will be sufficiently shared with concerned organizations and individuals to avoid or minimize negative impacts on the premises of public cemetery and its environment on the east of the project site during construction and operation.</p>
25	Landscape	D	D	D	D	No impact on landscape that requires special consideration is likely to be caused.
26	Gender	D	D	D	D	No impact on gender that requires special considerations is likely to be caused.
27	Children's rights	D	D	D	D	No impact on children's rights that requires special considerations is likely to be caused.
28	Sanitation, Public Health Condition, Infectious diseases such as HIV/AIDS	B-	D	B-	D	<ul style="list-style-type: none"> <li>• If the environment around workers' lodgment is not maintained hygienically, it may cause infectious diseases during construction. It may increase the risk of HIV/AIDS infections among construction workers and restaurant workers.</li> <li>• Existence or operation of diagnosis and treatment facility that will</li> </ul>

No.	Items	Impact Assessment in Scoping		Impact Assessment based on Survey Results		Reason of Rating
		Planning & Construction Phase	Operation Phase	Planning & Construction Phase	Operation Phase	
						become a central hospital in the area is not likely to cause or spread infectious diseases that require considerations during operation.
29	Industrial safety and health, working environment	B-	B-	B-	B-	<ul style="list-style-type: none"> <li>• Transportation of construction materials and construction work may cause industrial accidents during construction.</li> <li>• Industrial accidents attributable to hazardous substances (antiseptic solution, etc.) kept and used in the hospital may occur during operation.</li> </ul>
30	Accidents, crime	B-	B-	B-	B-	<ul style="list-style-type: none"> <li>• Automobile traffic for construction material transportation increases the risk of occurrence of traffic accidents during construction.</li> <li>• Automobile traffic increases the risk of occurrence of traffic accidents during operation.</li> </ul>
31	Climate change, transboundary impacts	D	D	D	D	Although the project causes energy use during construction and urbanization of the area and increase in energy use and impervious area during operation, it will not cause substantial impacts on climate change or beyond the watershed or national border.

Source: Survey Team

### 3-7. Environmental Management Plan

#### (1) Impact Mitigation Measures and Cost

Possible environmental impacts during construction and operation are unlikely to differ significantly in terms of the type and scale from that caused in ordinary hospital construction or operation and thus it is planned to secure a sufficient amount of budget to take mitigation measures and implement them.

In addition, cost for implementing impact mitigation measures will be confirmed after deciding SPV with the support of local construction company or consultant, etc.

**Table-96 Impact Mitigation Measures before and during Construction**

No.	Environmental Item	Impact Mitigation Measure	Implementing body	Responsible Entity
1	Air	<ul style="list-style-type: none"> <li>• Select advanced construction methods and machinery to curve emissions of air pollutants and fossil fuel consumption.</li> <li>• Formulate and implement a vehicle dispatch plan to prevent congestion of construction vehicles around the project site.</li> <li>• Install an external wall to secure safety and ease impacts of air pollution and noise, etc., prior to the launch of construction.</li> <li>• Wash vehicles and spray water on the external road properly to prevent dust to be caused by vehicles entering and leaving the project site.</li> <li>• Provide vehicle drivers and machine operators with training to prevent unnecessary idling and revving.</li> <li>• Inform local residents of the complaint contact point and establish a system to formulate and implement measures to handle them promptly in anticipation of problems.</li> </ul>	Construction company	SPV
2	Water	<ul style="list-style-type: none"> <li>• Have sufficient discussions and coordination prior to construction with Efeler and DSI about treatment and discharge of effluent and turbid water generated during construction.</li> <li>• Install a water treatment plant on the project site to treat water for washing construction vehicles and heavy machinery, turbid water from civil engineering works on rainy days, and effluent from shower rooms and kitchen of workers' dormitory during construction to a quality that meets the environmental standards before discharging it into designated water channel or sewer pipe.</li> <li>• Rent temporary toilets on the construction site, outsource the regular collection of sewage to a service provider and monitor its proper treatment.</li> <li>• Install a temporary drainage around the project site so rainwater and surface water on the premises will flow into the treatment plant in order to prevent its flow outside the premises.</li> </ul>	Construction company	SPV
3	Noise and vibration	<ul style="list-style-type: none"> <li>• Select advanced construction methods and machinery to curve noise and vibration.</li> <li>• Formulate and implement a vehicle dispatch plan to prevent congestion of construction vehicles around the project site.</li> <li>• Provide vehicle drivers and machine operators with training to prevent unnecessary idling and revving.</li> <li>• Install an external wall to secure safety and ease impacts of air pollution and noise, etc., prior to the launch of construction.</li> <li>• Inform local residents of the complaint contact point and establish a system to formulate and implement measures to handle them promptly in anticipation of problems.</li> </ul>	Construction company	SPV
4	Waste	<ul style="list-style-type: none"> <li>• Sort out and store construction waste generated on the project site in accordance with regulations and outsource its collection and transportation to the disposal site to a licensed private service provider. Monitor it so it is properly managed on the project site and properly treated and disposed of after it is transported outside.</li> <li>• Sort out and store general waste generated from workers' dormitory in accordance with regulations and outsource its collection and transportation to the disposal site to the city and a licensed private service provider. Monitor it so it is properly managed on the project site and properly treated and disposed of after transported outside.</li> </ul>	Construction company	SPV
5	Soil	<ul style="list-style-type: none"> <li>• Collect soil and analyze it and confirm that it does not exceed emission standards before construction starts in the following stage of the survey (after the decision of the project executing body). Properly treat and dispose of them based on MOEU instructions in case of discovery of soil pollutants exceeding the standards. It is also necessary to confirm that it does not have any impact.</li> <li>• Store fuel, lubricants, paint and other chemicals that can cause soil pollution in roofed storage with cement floor to minimize the leakage to the surrounding soil and environment during construction.</li> <li>• Develop a patrolling system by guards, etc., and establish, train and carry out reporting and handling procedures in case of discovery of abnormalities in order to minimize the impact in case of leakage.</li> </ul>	Planning Phase: SPV & Construction Phase: Construction company	SPV

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No.	Environmental Item	Impact Mitigation Measure	Implementing body	Responsible Entity
14	Poor	<ul style="list-style-type: none"> <li>Identify the households and population that use the project site for grazing and fuel collection and estimate and evaluate the degree of impact of the project on them before construction starts in the following stage of the survey (after the decision of the project executing body).</li> <li>Inform the households and population of the time when they will be no longer able to use the project site, study alternative grazing site and take other measures, and discuss measures and executing body with the stakeholders that include municipalities and project site users who can be identified in the survey above in order to avoid and mitigate serious impacts on them.</li> <li>Promote municipalities to set up a consultation desk in anticipation of the occurrence of serious problems.</li> </ul>	SPV	SPV
16	Local economy such as employment and livelihood		Construction company participates in the consultation after the company is decided	
17	Land use, Local resource use			
19	Traffic/public facilities, infrastructures, social services	<ul style="list-style-type: none"> <li>Formulate and implement a vehicle dispatch plan to prevent congestion of construction vehicles around the project site.</li> <li>Inform local residents of the complaint contact point and establish a system to formulate and implement measures to handle them promptly in anticipation of problems.</li> </ul>	Construction company	SPV
24	Historical and cultural resources	<ul style="list-style-type: none"> <li>Properly notify a discovery of a matter that is likely to be historic or cultural assets during construction based on the Turkish laws, if any.</li> <li>Give considerations to avoid or minimize negative impacts on the premises and environment of public cemetery on the east of the project site and share information with relevant organizations and individuals.</li> <li>Inform local residents of the complaint contact point and establish a system to formulate and implement measures to handle them promptly in anticipation of problems.</li> </ul>	Construction company	SPV
28	Sanitation, Public Health Condition, Infectious diseases such as HIV/AIDS	<ul style="list-style-type: none"> <li>Maintain the environment around the workers' dormitory in a sanitary manner to avoid an outbreak of infectious diseases via water and insects.</li> <li>Establish, train and implement security guard patrolling and reporting and handling procedures of abnormalities.</li> <li>Provide workers with education on prevention of sexually transmitted diseases to avoid their infection and its spread to the local communities.</li> </ul>	Construction company	SPV
29	Industrial safety and health, working environment	<ul style="list-style-type: none"> <li>Observe laws and regulations on construction work and occupational safety to avoid and minimize occurrence of labor accidents on the construction site and have external consultants regularly patrol and monitor the situation and make improvement as needed.</li> </ul>	Construction company	SPV
30	Accidents, crime	<ul style="list-style-type: none"> <li>Formulate and implement a vehicle dispatch plan to prevent congestion of construction vehicles around the project site.</li> <li>Build an external wall to secure safety and ease impacts of air pollution and noise, etc., around the project site prior to the launch of construction.</li> <li>Understand the location of schools and other facilities that require special considerations and the time zone that requires them and provide vehicle driver education so they will always give priority to safe driving.</li> <li>Install curved mirrors, street lights and other traffic safety facilities around the project site as needed.</li> <li>Inform local residents of the complaint contact point and establish a system to formulate and implement measures to handle them promptly in anticipation of problems.</li> </ul>	Construction company	SPV

Source: Survey Team

**Table-97 Impact Mitigation Measures during Operation**

No.	Environmental Item	Impact Mitigation Measure	Implementing body	Responsible Entity
1	Air	<ul style="list-style-type: none"> <li>Formulate and implement a traffic flow plan to prevent the congestion around the hospital entrance and exit and properly allocate traffic controllers.</li> <li>Inform local residents of the complaint contact point and establish a system to formulate and implement measures to handle them promptly in anticipation of problems.</li> </ul>	SPV	SPV
2	Water	<ul style="list-style-type: none"> <li>Treat general effluent generated during operation at the treatment facility to be installed on the premises to quality that meets the standards before discharged into the sewage.</li> <li>Monitor it around the clock so the effluent standards are met.</li> </ul>	SPV	SPV
3	Noise and vibration	<ul style="list-style-type: none"> <li>Formulate and implement a traffic flow plan to prevent the congestion around the hospital entrance and exit and properly allocate traffic controllers.</li> <li>Inform local residents of the complaint contact point and establish a system to formulate and implement measures to handle them promptly in anticipation of problems.</li> </ul>	SPV	SPV
4	Waste	<ul style="list-style-type: none"> <li>Outsource collection and disposal of general waste generated from kitchen and restaurant for hospital staff and inpatients and from cafeteria and shops for outpatients to the local government and licensed business operator as it is now at the existing hospital. Provide staff education and monitor it to ensure its proper management on the project site and its proper treatment and disposal after it is taken out of the site.</li> <li>Store medical waste at a designated place and outsource collection, sterilization and disposal to a disposal site operated by the province to a professional service provider designated by it. Provide staff education and monitor it to ensure its proper management on the project site and its proper treatment and disposal after it is taken out of the site.</li> <li>Store radioactive waste at a designated place and outsource collection and disposal to a disposal site operated by the province to a professional service provider designated by it. Provide staff education and monitor it to ensure its proper management on the project site and its proper treatment and disposal after it is taken out of the site.</li> </ul>	SPV	SPV
5	Soil	<ul style="list-style-type: none"> <li>Plan proper management and treatment of mercury, chemicals and other harmful substances used during operation in the business plan, provide staff education, avoid their leakage, and minimize impacts in case of leakage.</li> </ul>	SPV	SPV
7	Offensive Odor	<ul style="list-style-type: none"> <li>Outsource collection and disposal of general waste generated from kitchen and restaurant for hospital staff and inpatients and from cafeteria and shops for outpatients to the local government and licensed business operator as it is now at the existing hospital. Provide staff education and monitor it to ensure its proper management on the project site and its proper treatment and disposal after it is taken out of the site.</li> <li>Store medical waste at a designated place and outsource collection, sterilization and disposal to a disposal site operated by the province to a professional service provider designated by it. Provide staff education and monitor it to ensure its proper management on the project site and its proper treatment and disposal after it is taken out of the site.</li> </ul>	SPV	SPV
19	Traffic/public facilities, infrastructures, social services	<ul style="list-style-type: none"> <li>Formulate and implement a traffic flow plan to prevent the congestion around the project site and properly allocate traffic controllers.</li> <li>Inform local residents of the complaint contact point and establish a system to formulate and implement measures to handle them promptly in anticipation of problems.</li> </ul>	SPV	SPV
24	Historical and cultural resources	<ul style="list-style-type: none"> <li>Properly notify a discovery of a matter that is likely to be historic or cultural assets during construction based on the Turkish laws, if any.</li> <li>Give considerations to avoid or minimize negative impacts on the premises and environment of public cemetery on the east of the project site during construction and operation and share information with relevant organizations and individuals.</li> <li>Inform local residents of the complaint contact point and establish a system to formulate and implement measures to handle them promptly in anticipation of problems.</li> </ul>	SPV	SPV
29	Industrial safety and health, working environment	<ul style="list-style-type: none"> <li>Observe laws and regulations on storage and use of hazardous substances (antiseptic solution, etc.) and general hospital operation and patrol and</li> </ul>	SPV	SPV

No.	Environmental Item	Impact Mitigation Measure	Implementing body	Responsible Entity
		monitor the situation periodically and make improvement as needed in order to avoid and minimize occurrence of industrial accidents during operation.		
30	Accidents, crime	<ul style="list-style-type: none"> <li>• Formulate and implement a traffic flow plan to prevent the congestion around the project site and properly allocate traffic controllers.</li> <li>• Educate hospital staff and dispatched workers from SPV who commute by private cars so that they will understand the location of facilities that require special considerations and the time zone that requires them and prioritize safe driving.</li> <li>• Install curved mirrors, street lights and other traffic safety facilities around the project site as needed.</li> <li>• Inform local residents of the complaint contact point and establish a system to formulate and implement measures to handle them promptly in anticipation of problems.</li> </ul>	SPV	SPV

Source: Survey Team

## (2) Monitoring Plan and Cost

As the monitoring during construction and operation is unlikely to differ from that of ordinary hospital construction and operation in terms of its type and scale, its fund is planned to be secured sufficiently to carry it out.

Monitoring is performed for two years from the launch of the construction to two years after the beginning of operation in accordance with the monitoring plan. It will be reported to JICA office quarterly during construction and annually after the beginning of the operation. If case of a discovery of an impact that is not expected to occur during construction or operation, necessary measures and monitoring will be added upon discussions with the JICA office. In case of a discovery of an impact that exceeds the allowable limit during operation, additional measures will be studied and implemented and the monitoring period will be extended until their effect emerges as one of additional environmental conservation measures upon discussions with the JICA office.

The cost of monitoring will be decided with cooperation from local consultants after the decision of the project executing body.

**Table-98 Plan of Monitoring before and during Construction (Draft)**

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency	Implementing body	Responsible Entity
1	Air	Temperature, humidity, wind speed, PM10, NO2, SO2	Actual measurement	2	North side (school side) East side (residence side)	Once a month	Construction company	SPV
2	Water	Items of standards in Water Quality Classification of Surface Stream Water	Actual measurement	1	Water treatment facility outlet	Once a month	Construction company	SPV
3	Noise and vibration	Temperature, humidity, wind speed, noise Leq(dBA)	Actual measurement	2	North side (school side) East side (residence side)	Once a month	Construction company	SPV
4	Waste	General waste Construction waste Harmful waste	Finding emissions volume	-	At collection, Compiled monthly	At collection, Compiled monthly	Construction company	SPV
			Sorting and storage conditions	Sorting and storage place	Once a month	Construction company	SPV	
5	Soil	Paint, fuel, lubricant, machinery oil	Visual observation (leakage)		Vehicle route, garage, equipment storage, repair shop, fuel tank, paint storage, etc.	Once a month	Construction company	SPV
14	Poor	<ul style="list-style-type: none"> <li>Survey, forecast and evaluation result of the degree of impact of the project on the poor and local economy and resource use</li> <li>Result of examination of measures to avoid and mitigate impacts</li> <li>Discussion results with stakeholders on measures to avoid and mitigate impacts</li> </ul>			At least Şevketiye Village and Kuyulu Village	Once a month, compiled as a monthly report	Planning Phase: SPV & Construction Phase: Construction company	SPV
16	Local economy such as employment and livelihood							
17	Land use, Local resource use							
19	Traffic/public facilities, infrastructures, social services	Traffic safety	Visual observation		Peripheral road of project site (construction vehicle route)	Daily is patrol record is compiled once a month as a monthly report.	Construction company	SPV
24	Historical and cultural resources	<ul style="list-style-type: none"> <li>Confirmation of cultural assets on the premises and their handling</li> <li>Discussions on considerations to cemetery and mosque, etc., and their handling</li> </ul>		-	-	-	Construction company	SPV
28	Sanitation, Public Health Condition, Infectious diseases such as HIV/AIDS	Sanitation of project site	Visual observation		Around workers' dormitory, toilets, water tank and puddles on project site	Daily is patrol record is compiled once a month as a monthly report.	Construction company	SPV
		Education on sanitation and sexually transmitted diseases	Training record and participants' list	-	-	Once a month	Construction company	SPV
29	Industrial safety and health, working	Industrial accident	Accident record		Construction vehicle route on project site	Daily record is	Daily record is compiled	SPV



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No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency	Implementing body	Responsible Entity
	environment					compiled once a month as a monthly report.	once a month as a monthly report.	
30	Accidents, crime	Traffic accident	Accident record		Peripheral road of project site (construction vehicle route)	Daily record is compiled once a month as a monthly report.	Daily record is compiled once a month as a monthly report.	SPV

Source: Survey Team

**Table-99 Plan of Monitoring during Operation (Draft)**

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency	Implementing body	Responsible Entity
1	Air	Temperature, humidity, wind speed, PM10, NO2, SO2	Actual measurement		Around power generation facility and boiler on project site	Once every 3 months	Local environmental measurement service provider hired by SPV	SPV
2	Water	Items provided in hospital effluent standards	Actual measurement (automatic measurement)		Outlet of effluent treatment facility Final manhole on project site	Once every 3 months	Same as above	SPV
3	Noise and vibration	Temperature, humidity, wind speed, noise Leq(dBA)	Actual measurement		Around power generation facility and boiler on project site	Once every 3 months	Same as above	SPV
4	Waste	General waste	Sorting and storage conditions		Photograph record of sorting and storage conditions Forms and other record from collection service provider	Once every 3 months	Local waste management company hired by SPV	SPV
		Harmful waste	Finding emissions volume					
		Medical waste	Confirmation of proper treatment					
5	Soil	Drugs, fuel, lubricant, machine oil	Visual observation (leakage)		Vehicle route, garage, equipment storage, repair shop, fuel tank, drug storage, etc.	Once every 3 months	Local environmental measurement service provider hired by SPV	SPV
7	Offensive Odor	Offensive odor of waste and drugs	Actual measurement		Waste storage, drug storage, etc.	Once every 3 months	Same as above	SPV
19	Social institutions such as social infrastructure and local decision - making institutions	Traffic safety	Visual observation		Road on and outside the premises	Daily record is compiled once a month as a monthly report.	Local parking management company or security company hired by SPV	SPV
24	Historical and cultural resources	Discussions on considerations to cemetery and mosque events, etc., and their handling		-	-	Monthly record is compiled once every three months.	SPV	SPV
29	Industrial safety and health, working environment	Industrial accident	Accident record		In the building, on the premises, and hospital staff commuting route	Monthly record is compiled once every three months.	SPV	SPV
		Accident of medical radiation dose	Accident record		Radiation control zone			
		Drug accident	Accident record		Hazardous substance storage and use zone			
30	Accidents, crime	Traffic accident	Accident record		Road on and outside the premises	Monthly record is compiled once every three months.	Local parking management company or security company hired by SPV	SPV
		Maintenance of security	Accident record		In the building and on the premises			

Source: Survey Team

#### 4. Miscellaneous

##### 4-1. Monitoring Form

The Survey Team prepared a draft of the monitoring form based on the monitoring plan (draft).

##### (1) Monitoring Form (Draft) before and during Construction

Table-100 Monitoring Form (Draft) before and during Construction

No.	Environmental Item	Item to be Monitored	Monitoring Contents during Report Period (MM/YY to MM/YY)
0	Acquisition of permit, etc., required for project implementation	Hospital construction permit Boiler, power generation facility and other energy facility construction and operation permit Tree logging permit on the premises (eucariptus plantation) Discussions and approval on connection to waterworks and sewage Discussions and approval on collection, treatment and disposal of medical and general waste Discussions and approval on boring, pumping of groundwater and discharge of effluent into the river Discussions on access by bus, taxi and other means of public transportation with relevant entities	

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
1	Air	Temperature, humidity, wind speed, PM10, NO2, SO2	Actual measurement	2	North side (school side) East side (residence side)	Once a month

Place of actual measurement	MM/DD/YY	Starting time	Finishing time	temperature °C	Humidity %	Wind speed	Wind direction m	PM10 mg/m3	NO2 ppm	SO2 ppm
Comparison value										
Site standard value										
Conformity										

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result			
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No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
2	Water	Items of standards in Water Quality Classification of Surface Stream Water	Actual measurement	1	Water treatment facility outlet	Once a month

MM/DD/YY					Comparison value	Site standard value	Conformity result
Starting time							
Finishing time							
General item	Water temperature (°C)						
	pH						
	Electrical conductivity (µS/cm)						
	Chromaticity						
(A) Oxygenation Parameters	Dissolved Oxyge(mg O <sub>2</sub> /L) <sup>a</sup>						
	Oxygen Saturation (%) <sup>a</sup>						
	COD (mg/L)						
	BOD (mg/L)						
B) Nutrient parameters	Ammonia Nitrogen (mg NH <sub>4</sub> <sup>+</sup> -N/L)						
	Nitrite Nitrogen (mg NO <sub>2</sub> <sup>-</sup> -N/L)						
	Nitrate Nitrogen (mg NO <sub>3</sub> <sup>-</sup> -N/L)						
	Kjeldahl Nitrogen (mg/L)						
	Total Phosphorus (mg P/L)						
C) Trace Elements (Metals)	Mercury (µg Hg/L)						
	Cadmium (µg Cd/L)						
	Lead (µg Pb/L)						
	Copper (µg Cu/L)						
	Nickel (µg Ni/L)						
D) Bacteriologic al Parameters	Fecal Coliform(EMS/100 mL)						
	Total Coliform (EMS/100 mL)						

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
3	Noise and vibration	Temperature, humidity, wind speed, PM10, NO2, SO2	Actual measurement	2	North side (school side) East side (residence side)	Once a month

Measurement place	MM/DD/YY	Starting time	Finishing time	temperature	Humidity	Wind speed	Wind direction	Measurement value	Site standard value	Conformity result
		Daytime	(07:00 - 19:00)	°C	%			Leq(dBA)	dB(A)	
		Evening	(19:00							

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			- 23:00)						
		Night	(23:00 - 07:00)						
		Daytime	(07:00 - 19:00)						
		Evening	(19:00 - 23:00)						
		Night	(23:00 - 07:00)						

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
4	Waste	General waste Construction waste Harmful waste	Finding emissions volume Sorting and storage conditions	-	-	At collection, Compiled monthly Once a month
				Sorting and storage place		

Emission date (MM/DD/YY)	Emitted waste volume (ton or kg)			Main source	Main contents	Collection service provider	Form number
	General waste	Construction waste	Harmful waste				
Total monthly emission volume							

Date of photography (MM/DD/YY)	Photographs of sorting and emissions		
	General waste	Construction waste	Harmful waste
Place of photography			
Comments			

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
5	Soil	Paint, fuel, lubricant, machinery oil	Visual observation (leakage)	Vehicle route, garage, equipment storage, repair shop, fuel tank, paint storage, etc.		Once a month

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Date of photography			
Place of photography			
Comment			
Comment			

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
14	Poor	<ul style="list-style-type: none"> <li>Survey, forecast and evaluation result of the degree of impact of the project on the poor and local economy and resource use</li> <li>Result of examination of measures to avoid and mitigate impacts</li> <li>Discussion results with stakeholders on measures to avoid and mitigate impacts</li> </ul>		-	At least Şevketiye Village and Kuyulu Village	Once a month, compiled as a monthly report
16	Local economy such as employment and livelihood					
17	Land use, Local resource use					

Item to be Monitored	Monitoring contents during report period (MM/YY to MM/YY)
<ul style="list-style-type: none"> <li>Survey, forecast and evaluation result of the degree of impact of the project on the poor and local economy and resource use</li> <li>Result of examination of measures to avoid and mitigate impacts</li> <li>Discussion results with stakeholders on measures to avoid and mitigate impacts</li> </ul>	

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
19	Traffic/public facilities, infrastructures, social services	Traffic safety	Visual observation	Peripheral road of project site (construction vehicle route)		Around workers' dormitory, toilets, water tank and puddles on project site

Item to be Monitored	Monitoring contents during report period (MM/YY to MM/YY)	Location of reported incident
Traffic safety		

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No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
24	Historical and cultural resources	<ul style="list-style-type: none"> <li>Confirmation of cultural assets on the premises and their handling</li> <li>Discussions on considerations to cemetery and mosque, etc., and their handling</li> </ul>		-	-	Once a month, compiled as a monthly report

Item to be Monitored	Monitoring contents during report period (MM/YY to MM/YY)	Location of reported incident
<ul style="list-style-type: none"> <li>Confirmation of cultural assets on the premises and their handling</li> <li>Discussions on considerations to cemetery and mosque, etc., and their handling</li> </ul>		

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
28	Sanitation, Public Health Condition, Infectious diseases such as HIV/AIDS	Sanitation of project site	Visual observation	Around workers' dormitory, toilets, water tank and puddles on project site		Daily is patrol record is compiled once a month as a monthly report.
		Education on sanitation and sexually transmitted diseases	Training record and participants' list	-	-	Once a month

Sanitation of project site			
撮影年月日			
撮影地点			
Comment			

Item to be Monitored	Monitoring contents during report period (MM/YY to MM/YY)	Photo of implementation status
Education on sanitation and sexually transmitted diseases		

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
29	Industrial safety and health,	Industrial accident	Accident record	Construction vehicle route on project site		Daily record is compiled once a

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No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
	working environment					month as a monthly report.

Item to be Monitored	Record of accident and response to it during report period (MM/YY to MM/YY)	Location of reported incident, etc.
Industrial accident		
Photograph record		

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
30	Accidents, crime	Traffic accident	Accident record	Peripheral road of project site (construction vehicle route)		Daily record is compiled once a month as a monthly report.

Item to be Monitored				Record of accident and response to it during report period (MM/YY to MM/YY)	Location of reported incident, etc.
Accidents, crime	Traffic accident	Accident record	Peripheral road of project site (construction vehicle route)	Daily record is compiled once a month as a monthly report.	
Photograph record					

Source: Survey Team

(2) Monitoring form During Operation (Draft)

Table-101 Monitoring Form during Operation (Draft)



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No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
1	Air	Temperature, humidity, wind speed, PM10, NO2, SO2	Actual measurement	Around power generation facility and boiler on project site		Once every 3 months

Actual measurement location	MM/DD/YY	Beginning time of measurement	Finishing time of measurement	Temperature °C	Humidity %	Wind speed m	Wind direction m	PM10 mg/m3	NO2 ppm	SO2 ppm
Site standard value										
Conformity result										

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
2	Water	Items of standards in Water Quality Classification of Surface Stream Water	Actual measurement	Water treatment facility outlet		Once every 3 months

(Indicates items of effluent quality standards discharged into sewage)

Item	Measurement value	Site standard value	Conformity result
MM/DD/YY			
Beginning time of measurement			
Finishing time of measurement			
Water temperature (° C)			
pH			
Suspended solids (mg/L)			
Oil and grease (mg/L)			
Tar/Petroleum oil (mg/L)			
COD (mg/L)			
BOD (mg/L)			
SO <sub>4</sub> (mg/L)			
Total sulfur (mg/L)			
Phenol (mg/L)			
Free chlorine (mg/L)			
Total nitrogen (N) (mg/L)			
Total phosphorus (P) (mg/L)			
Arsenic (As) (mg/L)			
Total cyanide (Total CN) (mg/L)			
Lead (Pb) (mg/L)			
Cadmium (Cd) (mg/L)			
Chromium (Cr) (mg/L)			
Mercury (Hg) (mg/L)			
Copper (Cu) (mg/L)			
Nickel (Ni) (mg/L)			
Zinc (Zn) (mg/L)			
Tin (Sn) (mg/L)			
Silver (Ag) (mg/L)			
Chlorine Ion (Cl <sup>-</sup> ) (mg/L)			
Methylene Blue Active Substance (MBAS) (mg / L)			

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No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
3	Noise and vibration	Temperature, humidity, wind speed, noise Leq(dBA)	Actual measurement	Around power generation facility and boiler on project site		Once every 3 months

Actual measurement location	MM/DD/YY	Beginning time of measurement	Finishing time of measurement	Temperature	Humidity	Wind speed	Wind direction	Measurement value	Site standard value	Conformity result
				°C	%	m	m	Leq(dBA)	dBA	
		Daytime	(07:00-19:00)							
		Evening	(19:00-23:00)							
		Night	(23:00-07:00)							
		Daytime	(07:00-19:00)							
		Evening	(19:00-23:00)							
		Night	(23:00-07:00)							

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
4	Waste	General waste Harmful waste Medical waste	General waste Construction waste Harmful waste	Photograph record of sorting and storage conditions Forms and other record from collection service provider		Once every 3 months

Emission date (MM/DD/YY)	Emitted waste volume (ton or kg)			Main source	Main contents	Collection service provider	Form number General waste
	General waste	Construction waste	Harmful waste				
Total monthly emission volume							

Date of photography (MM/DD/YY)	Photographs of sorting and emissions		
	General waste		General waste
Place of photography	Place of photography		
Comments	Comments		

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No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
5	Soil	Paint, fuel, lubricant, machinery oil	Visual observation (leakage)	Vehicle route, garage, equipment storage, repair shop, fuel tank, paint storage, etc.		Once every 3 months

Date of photography (MM/DD/YY)					
Place of photography					
Comment					
Comment					

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
7	Offensive Odor	Offensive odor of waste and drugs	Actual measurement	Waste storage, drug storage, etc.		Once every 3 months

Item to be Monitored	Survey Results (MM/YY)	Location of reported incident
Offensive odor of waste and drugs		

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
19	Traffic/public facilities, infrastructures, social services	Traffic safety	Visual	Peripheral road of project site (construction vehicle route)		Daily record is compiled once a month as a monthly report.

Item to be Monitored	Monitoring contents during report period (MM/YY to MM/YY)	Location of reported incident
Traffic safety		

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Item to be Monitored	Monitoring contents during report period (MM/YY to MM/YY)	Location of reported incident

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
24	Historical and cultural resources	Discussions on considerations to cemetery and mosque, etc., and their handling		-	-	Daily record is compiled once a month as a monthly report.

Item to be Monitored	Monitoring contents during report period (MM/YY to MM/YY)	Location of reported incident
Discussions on considerations to cemetery and mosque, etc., and their handling		

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
29	Industrial safety and health, working environment	Industrial accident	Accident record	In the building, on the premises. and hospital staff commuting route	Daily record is compiled once a month as a monthly report.	
		Accident of medical radiation dose	Accident record			Radiation control zone
		Drug accident	Accident record	Hazardous substance storage and use zone		

Item to be Monitored	Record of accident and response to it during report period (MM/YY to MM/YY)	Location of reported incident, etc.
Industrial accident Accident of medical radiation dose Drug accident		In the building, on the premises. and hospital staff commuting route Radiation control zone Hazardous substance storage and use zone
Photograph record		

No.	Environmental Item	Item to be Monitored	Method	Number of Points	Location	Frequency
30	Accidents, crime	Traffic accident	Accident record	Road on and outside the premises		Daily record is compiled once a month as a monthly report.
		Maintenance of security	Accident record	In the building and on the premises		

Item to be Monitored	Record of accident and response to it during report period (MM/YY to MM/YY)	Location of reported incident, etc.
Traffic accident		
Photograph record		

Item to be Monitored	Record of accident and response to it during report period (MM/YY to MM/YY)	Location of reported incident, etc.
Maintenance of security		
Photograph record		

Source: Survey Team

#### 4-2. Environmental and Social Considerations Planned to be Taken after Winning the Bid

Due to such limitations in the survey that was conducted prior to the bid as no changes in things on the project site or no direct interview with local residents, the Survey Team could not complement the data that was not obtained in existing literature in the field survey.

Thus, it plans to perform the environmental and social considerations listed in the table below from before the beginning of construction to during it and operation after the bid.

**Table-102 Environmental and Social Considerations Scheduled after the Bid**

Item	Environmental Item	Contents
<ul style="list-style-type: none"> <li>Additional survey on environmental and pollution issues</li> </ul>	Air	<ul style="list-style-type: none"> <li>Measure current values (before construction) to be used as the reference values of evaluation of monitoring results.</li> </ul>
	Water	<ul style="list-style-type: none"> <li>Measure current values (before construction) to be used as the reference values of monitoring results</li> </ul>
	Noise and vibration	<ul style="list-style-type: none"> <li>Measure current values (before construction) to be used as the reference values of monitoring results.</li> </ul>
	Soil	<ul style="list-style-type: none"> <li>Predict soil pollutants in soil collection and analysis survey on the premises and plan countermeasures.</li> </ul>
<ul style="list-style-type: none"> <li>Impact mitigation measures and monitoring plan</li> </ul>		<ul style="list-style-type: none"> <li>Review impact mitigation measures and monitoring plan based on the above additional survey results and revise them as needed.</li> <li>Study the cost necessary for the impact mitigation measures and monitoring and secure the budget.</li> </ul>
<ul style="list-style-type: none"> <li>Additional socioeconomic survey</li> <li>Discussions with local residents and stakeholders and information disclosure</li> </ul>	Poor, local economy, local resource use	<ul style="list-style-type: none"> <li>Collect reference information (scope of stakeholders, notification method, and main comments, etc.) on the stakeholders' meeting in 2009 in the possible scope prior to the discussion plan after the bid.</li> <li>Identify households and population that use the project site for grazing and fuel collection (door-to-door interview in the 2 neighboring villages or other survey method from which similar results can be expected) and predict and evaluate the degree of impacts of the project on them.</li> <li>Have discussions and conclude agreement with stakeholders (mainly users of the project site that are identified in the above survey) on feasible measures to avoid and mitigate impacts (prior notice of the period when they cannot use it or study of alternative pastureland, etc.).</li> </ul>
<ul style="list-style-type: none"> <li>Continuous dialogue with residents and stakeholders during construction and operation</li> </ul>	Social infrastructure, historical and cultural resources, accidents, crime	<ul style="list-style-type: none"> <li>Have dialogues with those involved in the neighboring schools, public cemetery and mosque, etc., (facility manager and users and PTA, etc.) continuingly and periodically to avoid and minimize negative impacts of the project.</li> </ul>

Source: Survey Team

## **CHAPTER 7. PROJECT EVALUATION**

## Chapter 7. Project Evaluation

### 1. Feasibility Evaluation

The feasibility of this Project is evaluated against the five evaluation criteria specified in the New JICA Guidelines for Project Evaluation (published in June 2010): relevance; effectiveness; efficiency; impact; and sustainability. For the perspectives of these five evaluation criteria, the Report on “Articulation of Evaluation Perspectives and Evaluation Judgments Based on the Five DAC Criteria” (published in March 2012) is also referred to in this evaluation.

#### 1-1. Relevance

##### (1) Necessity

This Project aims to build a new hospital to integrate the functions of two antiquated hospitals that need to be rebuilt. According to the standards specified by the MOH, these two hospitals are too small to be further developed, and they need to be rebuilt as soon as possible. In the project target area, where population is growing as fast as it is nationwide, there is a huge need to build a large, state-of-the-art hospital that will integrate the functions of the existing two hospitals in order to meet the increasing demand for healthcare services. Therefore, it is considered relevant to implement this Project.

##### (2) Priority

As one of the numerous Hospital PPP Projects undertaken by the Government of Turkey, this Project is in line with its national policy, which actively seeks foreign investment in this type of projects. The Project is also aligned with the policy of the Government of Japan, which is promoting globalization of its medical services. Thus, it is relevant to implement this Project.

In light of the scale of the Project, the public safety and development potential of the project target area, and the fact that the Project is being prepared with the approval of the Government of Turkey, it is safely presumed that this Project is given a higher priority than most other Hospital PPP Projects.

##### (3) Appropriateness as a Means

In light of the economic situation in Turkey, the hospital PPP scheme is useful in the sense that it can meet the demand for healthcare services as soon as possible by using the funds, know-how, and experience of the private sector. This scheme is considered as one of the most appropriate approaches to healthcare delivery in newly emerging countries like Turkey. Since there are some other Hospital PPP Projects following this Aydın City Hospital Project, if it is



carried out properly in partnership with a Japanese private company, its results can be applied to other projects of this type. Moreover, as a country with scarce underground resources and frequent earthquakes, like Japan, Turkey has substantial needs for energy conservation and anti-seismic techniques, in which Japan excels; therefore it is highly relevant for Japan to engage itself in the Turkish market. In light of these perspectives, the involvement of Japanese SPVs in Hospital PPP Projects is an appropriate approach that can meet the wishes of both countries.

#### (4) Demarcation with Other Donors

Other donors engaged in Hospital PPP Projects include the EBRD and IFC, which provide financial and technical assistance. These international financial institutions may be also involved in the Aydın City Hospital Project in financial and other aspects, depending on the results of the tender to be issued later. There is seemingly no overlapping with other donors' activities.

### **1-2. Effectiveness**

Because the implementing partner of this Project is selected by tender, the feasibility depends on the tender offer; however, as described above, if the Project is implemented as intended by the Government of Turkey after a Japanese corporation's tender offer is accepted, the project purposes of providing advanced healthcare services to the project target area and establishing an emergency medical care system can be realized. Moreover, this Project is expected to benefit various private corporations, both Japanese and foreign affiliated, since it is a Hospital PPP Project where the construction and manage of the hospital will involve many companies.

Thus, at present, in the planning phase, this Project is considered feasible since it is potentially effective.

### **1-3. Efficiency**

At present, before the launch of the Project, it is difficult to evaluate its efficiency. However, compared to conventional public sector-driven hospital development projects, it should be efficient because it is a Hospital PPP Project to construct and manage a hospital by leveraging the experience and know-how of the private sector. In particular, Japanese companies have accumulated know-how through various hospital PFI projects. Their experience can make it possible to develop an efficient implementation plan.

Thus, at present, in the planning phase, this Project is considered feasible as it is potentially efficient.

#### **1-4. Impact**

This Project is expected to contribute to the following overall goals: improving the overall healthcare environment in Turkey; activating the Japanese economy; and promoting friendly and cooperative relationships between the two countries. As described above, this Hospital PPP Project is to be implemented in accordance with the needs of Turkey by utilizing the funds and know-how of Japan. If the regional hub hospital to be developed in this Project is completed and managed properly, it can improve the healthcare environment in the area as well as bolster the Japanese economy. Moreover, cooperation for Hospital PPP Projects is in line with the agreement of cooperation between the two countries (the Letter of Intent signed on January 7, 2014 by the Ministry of Health, Labor and Welfare of Japan and the MOH of Turkey). Because no Japanese company has won a tender for a Hospital PPP Project, if the contract on the Aydın City Hospital Project is awarded to a Japanese SVR, it will be a model case of cooperation between the two countries.

The Japanese company engaged in this Project is expected to make various suggestions based on its experience in Japan, which will enable the transfer of technology and know-how to Turkey. If this Project is successfully implemented, some of the suggestions for improvements may be adopted for other preceding projects that are facing difficulties and may even cause ripple effects on other Hospital PPP Projects nationwide. Thus, the participation of a Japanese SPV which can steadily carry out this Project is considered to have large impacts, and therefore, the Project is assessed to be highly significant.

#### **1-5. Sustainability**

##### **(1) Sustainability of Project Effects**

This Project is assumed to be funded by the PSIF of JICA and be managed by a SPV for 25 years. Therefore, the healthcare environment developed by Japan is expected to remain effective for a long time. Moreover, although staff of MOH will be replaced during this period, the project implementation organization itself will be continuously benefited by managing the hospital in a public-private partnership. In institutional and policy terms, this Project is expected to establish a model for new Hospital PPP Projects to be undertaken after the termination of this Project by accumulating improvements during the 25 years.

##### **(2) Environmental and Social Sustainability**

This Project is evaluated as follows in terms of environmental and social considerations.

###### **1) Social and Cultural Sustainability**

Because a public cemetery is situated across the road in the east side of the Project site,

there will be a need to take precautions to prevent or minimize the effects of construction and closely exchange information with relevant organizations and stakeholders.

Moreover, sustainability is to be ensured by taking measures for the special circumstances of Turkey and general social considerations as follows.

[Special historical circumstances of Turkey] If the project site is found to contain anything of historical or cultural value during the construction phase, notification will be made in accordance with Turkish laws and regulations.

[Social considerations] Precautions will be taken to prevent or minimize adverse effects on the environment in the vicinity of and the public cemetery in the east of the project site during the construction and management phases. Moreover, efforts will be made to ensure effective information exchange with relevant organizations and stakeholders.

It is considered that the above mentioned measures can mitigate the negative impacts of this Project on social and cultural aspects so as to achieve the sustainability of project activities.

## 2) Sustainability for the Socially Disadvantaged

Although grazing and fuel collection cannot be continued in the project site once the Project is launched, the resulting negative impact can be minimized enough to achieve the sustainability of project activities by seeking the opinions of local residents and livestock farmers on how to mitigate the impacts of the discontinuation of grazing and fuel collection on their lives and incomes through discussions after the tender is completed and developing practical mitigation measures as necessary in the detailed planning and implementation phases.

The plan of building a new hospital in the project site was communicated to local residents by the Mayor of Şevketiye Village in 2009. During the field survey, the Study Team received positive feedback from the residents using the project site for grazing, such as “I am glad that a hospital will be built in the neighborhood” and “I would like to know as soon as possible when the construction will start.”

## 3) Environmental Sustainability

The possible adverse impacts of this Project on the natural environment in the construction and management phases will not be too significant in terms of scale or type, compared to general hospital projects. Moreover, the project site is not located in or around areas containing sensitive resources or risks. Thus, conventional technical and managerial measures can prevent or minimize the negative impacts of the Project so as to achieve the sustainability of project activities.

#### **1-6. Overall Evaluation**

In light of the above, it is judged that there is no problem with the execution of this Project because it is in line with the policies of the Governments of Turkey and Japan as well as the needs of the project implementation organization, because there are no special concerns about effectiveness or efficiency in the implementation stage, and because there are no risks in terms of impact and sustainability in the implementation and post-implementation stages.

