3 Challenges

3.1 Major problems

There are many common problems in sustainable utilization of natural resources in Asia, mainly in the following aspects:

3.1.1 Quantity and quality of freshwater resource

Global climate change has a great influence on rain and heat distribution in Asia, causing more severe droughts and floods, soil degradation as well as salt water intrusion and other marine disasters caused by sea-level rising(IPCC, 2007). Because most countries of the Asia distribution of precipitation changed and temperature rose, a substantial decline would occur in agricultural productivity.

West Asia is one of the most stressful areas in water resource utilization.

The natural environment is extremely arid. Rainfall changes dramatically during the quarter and water resource is especially valuable, for drought and little rain. For several decades, poor management of water resource in this area has caused quality degradation in large areas of land and sea. From 1985 to 2005, annual available fresh water per capita of the entire West Asia decreased from 1700 m^3 to 907 m^3, due to population growth in future, which is expected to decrease to 420 m^3 by the year 2050(UNESCWA, 2003). Mashriq countries mainly rely on surface water and a small amount of groundwater, while the Arabian Peninsula relies on ground water and desalinated seawater. The two subregions have made use of treated wastewater increasingly. 60% of the region's surface water comes from outside, therefore, the sharing of water resource has become one of the important factors in West Asia regional stability. However, the first water-sharing countries have not reached a consensus agreement on equality in water sharing and management. As a result of the small total amount of water resource and continuous worsening water quality due to over-exploitation of groundwater, emissions of industrial and agricultural, human health and

ecosystems are seriously affected in West Asia.

Rapid industrialization and urbanization process, as well as limited water and sewage treatment facilities, make the situation of water scarcity in West Asia increasingly serious. There is enormous pressure for Mashriq and Yemen, agriculture-based countries in West Asia, to meet the increasing water demand by limited funds. In the area, urban water rapidly grew, from 7.8 billion m^3 in 1990, to 11 billion m^3 in 2000, by an increase of 40% (UNESCWA, 2003). Although majority of people can make utilization of treated drinking water, low-income areas have poor water services; number of large cities like Sana'a, Amman and Damascus are facing the more serious water shortages. Poor water quality affects health, which has aroused great concern, and the key reason is that large amount of untreated water was used in irrigation, poor sanitation, and poor waste management. In addition, over-exploitation of groundwater has led to a lot of dry springs, damaging the surrounding historical and cultural heritages. Typical example is Palma Oasis in Syria; large number of the historical fountains in the area dried, and had a significant impact on the surrounding historical Kingdom of Zambia.

Inefficient water resource management and utilization resulted in more water scarcity. In the Gulf countries, with an average consumption of 300-750 liters/capita/day they rank among the highest in the world (IUCN & WESCANA, 2007). The reason is in the lack of proper demand management mechanisms and price signals. Government policies focus on the supply side of water production management, with low water fee averaging less than 10% of the cost, not conducting consumers to save water.

Although cities in West Asia have high demand on water resource, the major water consuming sector is agriculture, accounting for more than 80% of water consumption. Over the past few decades, food self-sufficiency and socio-economic development-oriented economic policies have stimulated the prior development of irrigated agriculture. Agricultural water consumption in West Asia (UNESCWA, 2003) increased to 85 billion m^3 in 1998-2002 from 73.5 billion m^3 in 1990, have tremendous pressures on limited water resource of the region. In recent years, many countries in West Asia started to give up the above-mentioned economic policies, but agricultural water was still increasing, allocation conflicts between agricultural water, domestic water and industrial water were getting worse.

Water demand in West Asia is mainly attributed to the rapid expansion of population, which increased to 97.7 million in 1972 from 37.3 million in 2000 (2001 United Nations report on population distribution). Mashriq areas' population growth rate was greater than 3% per year so that water availability fell to 1574 m^3 from 6057 m^3 in 1950 m^3 (Khouri, 2000) (Table 3.1).