Feature of Lake Biwa

Chapter 1 Introduction

Lakes of the World and Lake Biwa

Keywords: Lake Biwa, Lakes of the world, Lake basin management

1. Lakes on the Globe

Accounting for more than 90% of the readily-available fresh water on the surface of our planet, lakes and reservoirs are the key components of global water resource systems.Together with other forms of inland freshwater and saline water bodies such as ponds, marshes, wetlands, lagoons and estuaries, there are numerous landlocked forms of freshwater on the earth, 253 of which are greater than 500 km^2 in area, including 188 lakes and reservoirs. Lake Biwa is the 129th largest of these. Natural lakes may be created by the movement of huge glaciers, volcanic activities, closing of sea estuaries by the movement of coastal sand formations, or by the slow movement of various plates on the earth's surface against each other (tectonic movements). Lake Biwa is a tectonic lake that was created some 4 million years ago. Among the major lakes in the world, the most notable examples are Lake Baikal in Russia (with a water volume of approximately 23,000 km^3, or about 20% of the world's total freshwater volume), the Great Lakes in North America (Superior, Huron, Michigan, Erie, and Ontario, with a total water volume of 24,600 km^3, or about 21% of the world's total freshwater volume), Lake Victoria and Lake Tanganyika in Africa, and Lake Titicaca in South America. The surface areas of relatively large lakes in the world are compared in Fig. 1-1.

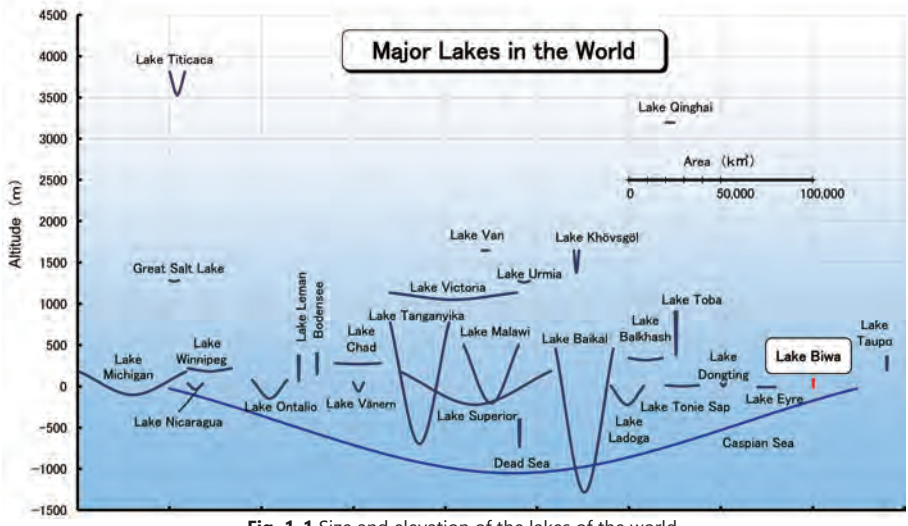

Fig. 1-1 Size and elevation of the lakes of the world

2. Management of Lakes and their Basins

These lakes and reservoirs are managed for various purposes. Lakes used for tapwater supply, for example, are managed to ensure clean, safe water. Fishery lakes are managed to maximize the harvesting of abundant and healthy fish. Scenic lakes are managed for aesthetic reasons for visiting tourists. Polluted lakes are managed to restore their water quality and to rehabilitate their ecosystems. Most lakes, however, are subjected to multiple management objectives intertwined with complex, and sometimes conflicting, needs and approaches, often with barely sufficient management resources. The management of lakes is quite challenging because of the complex cause and effect relationship, as exemplified by the relationships among six major environmental problems (Fig. 1-2). Though often cited internationally as a success story of Lake Basin Management, it took several decades to restore the water quality and ecosystem integrity of Lake Biwa, after having undergone critical states of degradation. Overall, however, the track record of sustainable management of lake basins has not been very impressive globally, particularly in developing countries. As a result, the overall value of their very existence, not only as resources for human use but also intrinsic values such as scenic attraction, religious and cultural affiliation, and diverse aquatic and terrestrial life forms, has been ubiquitously diminishing. Much of this has to do with the lack of management plans and/or the inadequacies in the capacity to implement these plans, but these are not the only major reasons. Lake basin management cannot succeed without a foundation to support such pursuits and the gradual improvement of overall governance of the basin. Taking Lake Biwa as an example, the Shiga Prefectural Government and International Lake Environment Committee Foundation (ILEC) have been spearheading the global effort for sustainable management of lake basins, based, for example, on the concept of Integrated Lake Basin Management (ILBM) (See Chapter 5-2).

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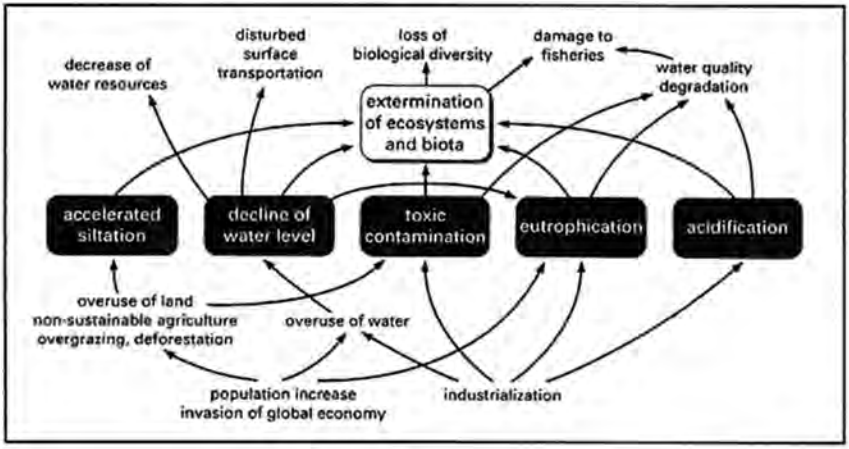

Fig. 1-2 Six major environmental problems in world lakes