

THE INTEGRATED LAKE BASIN MANAGEMENT PLANNING:
A STUDY ON THE BEYŞEHİR LAKE BASIN

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ABSTRACT

THE INTEGRATED LAKE BASIN MANAGEMENT PLANNING: A STUDY ON THE BEYŞEHİR LAKE BASIN

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This study aims at elaborating the Integrated Lake Basin Management Planning (ILBM) approach, which is considered as a sustainable management model for lake basins, and evaluating the applicability of this approach in Turkey. ILBM considers both biophysical features and managerial requirements of lake basin systems. It pays attention to inherent dynamics between humans and nature. ILBM has been developed on the basis of Integrated Water Resources Management (IWRM), which seeks the wise use of water; i.e. using water resources with reference to the conservation principles and thresholds. The study elaborates the ILBM planning and focuses on a case study, namely the Beyşehir Lake Basin. Beyşehir Lake is the third largest lake and biggest freshwater lake of Turkey. Its basin is important with the distinctive natural features it accommodates in two national parks, a special bird site, a special plant site and a natural protected site. However, improper use of the Lake's resources has threatened its natural and ecological qualities, despite the simultaneous conservation efforts. This study, having analyzed the past planning efforts on the Basin with regard to the ILBM principles and criteria, points to the insufficiencies in institutional structure and participation. Meanwhile, the study --depending on the findings of a questionnaire conducted with the stakeholders of the Basin-- also

underlines that most of the stakeholders are unaware of the changes that the Lake faced, and they do not know about the existing plans of the Basin. This proves the need for stronger interinstitutional relationships and cooperation so as to take coherent actions. This is important for the management and planning in lake basins, but particularly in the ones which lie on more than one settlement's administrative boundaries like the Beyşehir Lake. For the efficient and effective implementation of the ILBM in Turkey's lake basins, the related legislation should be revised accordingly.

Key Words: Lake Basin, Integrated Lake Basin Management Planning, Sustainability, Participation, Beyşehir Lake Basin

ÖZ

BÜTÜNLEŞİK GÖL HAVZASI YÖNETİM PLANLAMASI: BEYŞEHİR GÖL HAVZASI ÇALIŞMASI

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Yüksek Lisans, Şehir ve Bölge Planlama Bölümü, Bölge Planlama

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Bu çalışma, göl havzalarında sürdürülebilir bir yönetim modeli olarak ortaya çıkan Bütünleşik Göl Havzası Yönetimi (BGHY) kavramının detaylı bir şekilde araştırılmasını ve Türkiye’de bu yönetim modelinin uygulanabilirliğini değerlendirmeyi amaçlamaktadır. BGHY durgun su özelliğine sahip göl havzalarının hem biyofiziksel özelliklerini hem de yönetsel gereksinimlerini göz önünde bulundurur. BGHY insan ve doğa arasındaki içsel dinamikleri dikkate alır. BGHY, suyun akıllıca kullanılmasını amaçlayan yani su kaynaklarını koruma prensiplerine ve eşiklerine referansla kullanan BSKY’nin temellerinde geliştirilmiştir. Bu çalışma BGHY Planlamasını incelemekte ve Beyşehir Göl Havzası örneğine odaklanmaktadır. Beyşehir Gölü Türkiye’nin üçüncü büyük gölü ve en büyük tatlı su gölüdür. Beyşehir Gölü karakteristik doğal özellikleriyle önemlidir, içinde iki milli park, özel kuş alanı, özel bitki alanı ve doğal sit alanı barındırır. Ancak Göl kaynaklarının yanlış kullanımları, eş zamanlı koruma çabalarına rağmen Göl’ün doğal ve ekolojik özelliklerini tehdit etmektedir. Bu çalışma, Havzadaki geçmiş planlama çalışmalarını BGHY prensipleri ve kriterlerine analiz etmekte ve kurumsal yapı ve katılımcılıktaki eksiklikleri belirtmektedir. Aynı zamanda, bu çalışma-Havzadaki paydaşlarla yapılan anket sonuçlarına göre- paydaşların çoğunluğunun

Göl'ün karşılaştığı değişimlerin farkında olmadığını ve Havza'nın mevcut planlarını bilmediklerini vurgulamaktadır. Bu sonuçlar, uyumlu eylemler alabilmek için güçlü kurumlar arası ilişkiler ve işbirliğinin gereğini ortaya koymaktadır. Güçlü kurumlar arası ilişkiler ve işbirliği özellikle Beyşehir Gölü gibi birden fazla yerleşimin idari sınırları içinde kalan göl havzalarında yönetim ve planlama için önemlidir. Türkiye'deki göl havzalarında BGHY'nin etkin ve etkili uygulaması için, gerekli yasal düzenlemeler buna göre yapılmalıdır.

Anahtar Sözcükler: Göl Havzası, Bütünleşik Göl Havzası Yönetim Planlaması, Sürdürülebilirlik, Katılımcılık, Beyşehir Göl Havzası

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LIST OF ABBREVIATIONS

GEF	Global Environment Facility
GWP	Global Water Partnership
ILBM	Integrated Lake Basin Management
IWRM	Integrated Water Resource Management
ILEC	International Lake Environment Committee Foundation
LTDP	Long Term Development Plan
SHW	State Hydraulic Works
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
WFD	Water Framework Directive
WLV	World Lake Vision

CHAPTER I

INTRODUCTION

I.1. INTEGRATED LAKE-BASIN MANAGEMENT: A SUSTAINABLE MANAGEMENT APPROACH

Lakes and their basins are used for various purposes like drinking water supply, irrigation in agriculture, energy generation for housing and industry, and recreation. Obviously sustainable use of lakes depends on how they are managed. The unwise use of them causes problems like degradation, decreasing of water quality, damaging of natural environment, etc. Unsuitable type and/or inappropriate location of industrial facilities in lake basins, rapid population growth and urbanization, unsustainable mining practices, overconsumption of water for irrigation are among the reasons for the problems that lake basins face. Lakes are vulnerable water resources since they are closed systems and their pollutants may remain for years. In order to solve the problems and manage the pressures, a sustainable management approach is needed for lake basins. However, they have been paid attention quite recently in literature, although they are valuable habitats for aquatic biota and natural beauty for human beings, Integrated Lake Basin Management Planning¹ (hereafter ILBM) was introduced in 2002 by the GEF-LBMI², and widely recognized in the international platform as a major approach.

¹ Although the term Integrated Lake Basin Management already includes the planning of lake basins, this study prefers using the word “planning” together with “management”, and makes the name Integrated Lake Basin Management Planning, so as to highlight the significance of planning in this approach.

² Global Environment Facility-Lake Basin Management Initiative

This study aims at elaborating the ILBM as a sustainable management and planning model for lake basins, and understanding its applicability in Turkey. In Turkey, basin management planning was started with EU studies in the context of Water Framework Directive (WFD). Between 2002 and 2003, the MATRA project was implemented, through which the adaptation of WFD in Turkey was observed. With the project, 26 river basins were defined in the country. The project also analyzed how a basin management planning could be implemented in Turkey, and introduced the basin level management planning for water resources. However, there are still some basic problems in water resources management in Turkey. In order to develop and implement an efficient basin management plan, especially the deficiencies in the legislation need to be revised. The deficiencies, rather than conservation principles, are mostly related to the overlapping or conflicting roles of institutions; coordination, cooperation and collaboration of stakeholders; efficiency of database. Therefore, ILBM, which combines institutions, policies, participation, technology, information and finance pillars in the planning process, and adopts the principles of World Lake Vision in management plans, is essential for the sustainable management of lake basins. This said, the study aims at answering the following questions:

1. Why is a sustainable management needed for lake basins and how did ILBM come into the picture as an answer?
2. What are the essential features of ILBM plans and planning processes?
3. How could ILBM planning be applied in Turkey? Is the existing administrative structure of Turkey suitable for ILBM?
4. What kind of revisions may be required for an efficient application of ILBM in Turkey's lake basins?

Water Resource Management has been discussed since the end of the 19th century. In the second half of 19th century the water was seen as **an inviolable social source** and not has a prominent management definition. At the beginning of the 20th century, with the revolutionary development in science and technology, enlightenment period and capitalism, the general belief was **the total controllability of natural resources**. Water was considered as both an economic and a social resource. Towards the 1970s,

besides these considerations, **environmental awareness** on water resource management was also paid attention. The Earth Summit of 1992 (Rio Conference) and one of its resulting documents Agenda 21 brought about the integrated water resource management concept, which treats water as a natural, social and economic good. Finally, during the 2000s, **the political aspect** came to the fore. The main emphasis was on participation, consultation and inclusive political institutions. In this period, Integrated Water Resource Management (hereafter IWRM) was elaborated profoundly at international conferences.

IWRM is defined as a process that promotes “...*coordinated development and management of water, land and related resources...*”. Different from the traditional water management approaches, it manages human systems together with physical systems. Since water decreases because of increasing population, urbanization, industrialization and irrigation; an integrated approach which brings society and natural environment together is proposed for sustainable development and environmental conservation. The principles of IWRM are as follows:

- IWRM should follow a *holistic approach* that including whole hydrologic cycle and interaction with natural resources.
- IWRM should be developed by a *participatory approach* which enables the involvement of different social groups in decision making.
- IWRM should be developed with the *participation of women* in decision making process.
- IWRM should value water as an economic good.
- Water should be used efficiently in order to balance water demand and supply.
- Everybody should access water in an equitable manner.
- Environmental and ecological sustainability should be satisfied.

The requirements to achieve these principles are listed below:

- *An enabling environment*; policies, legislations and mechanisms at national, provincial or local level are needed to increase participation.

- *Institutional roles*; for an effective coordination between different groups, the roles and functions of institutions should be defined for strong institutional capacity building.
- *Management instruments*; to make rational choices between alternatives, the tools and methods should be defined for decision makers.

Based on the IWRM, the first step towards the ILBM approach was taken in 1996 with the “Integrated Lake and Reservoir Management” study of the World Bank. This study aimed at improving lake basin management. In 2002, with a project launched by the Global Environment Facility (GEF), a comprehensive focus on lake management was developed. In 2003, the World Lake Vision was recognized internationally. In 2005, the resulting paper of the GEF project was published which defined the ILBM approach.

In order to implement the ILBM efficiently, six components have been defined by the International Lake Environment Committee Foundation (hereafter ILEC):

1. A well established **institutional structure** at local, national, regional and international scales to increase participation/collaboration and decrease conflicts between institutions and local groups.
2. **Policies** to monitor the use of lake resources and adverse human impacts on lakes.
3. **Participation** of stakeholders to enhance management knowledge, decrease conflicts and support financial options.
4. **Technology** to monitor lake resources in the long term and find out options for pollutant controls.
5. **Information** --both scientific and socio-economic-- to define reliable and demonstrable knowledge for the management.
6. **Finance**, to use for institutional capacity building, improvement of participation, technological advancing, information gathering and monitoring.

As mentioned before, the ILBM was officially introduced with the project of GEF-LBMI in 2005. The 4th World Water Forum emphasized the implementation of

ILBM as a must. Likewise, the recent World Lake Conferences (2005-2007-2009-2011) recommended ILBM as the main management model for lake basins.

The international conferences have considered the World Lake Vision (WLV) together with the ILBM as the two important milestones for the sustainable management of lakes. The seven principles of the Vision are as follows:

1. A harmonious relationship between humans and nature is essential for the sustainable use of lakes.
2. A lake drainage basin is the logical starting point for planning and management actions for sustainable lake use.
3. A long-term, preventative approach directed to preventing the causes of lake degradation is essential.
4. Policy development and decision making for lake management should be based on sound science and the best available information.
5. The management of lakes for their sustainable use requires the resolution of conflicts among competing users of lake resources, taking into account the needs of present and future generations and of nature.
6. Citizens and other stakeholders should be encouraged to participate meaningfully in identifying and resolving critical lake problems.
7. Good governance, based on fairness, transparency and empowerment of all stakeholders, is essential for sustainable lake use (ILEC, 2003).

This thesis analyzes the ILBM approach and exemplifies it via the case study on the Beyşehir Lake Basin. Beyşehir Lake Basin is important with its cross-border administrative status as well as natural characteristics. It lies on the administrative boundaries of two provinces (Konya and Isparta), which implies the need for a strong cooperation to achieve sustainable management. It is the largest freshwater resource in Turkey and used by the majority of people living in the area. However, the Lake Basin does not have an integrated management plan. There are several plans developed for parts or the whole of the Lake Basin, nevertheless they seem not to have been fully efficient in implementation.

I.2. SCOPE OF DISCUSSION

This dissertation is organized in two parts; namely the literature review and the case study. Accordingly, the Chapters II-III-IV include literature review about water resource management planning, ILBM and lake basin management planning in Turkey. In the light of this review, Chapter V elaborates past planning efforts based on ILBM principles and criteria; and the profile of Beyşehir Lake Basin. The concluding chapter underlines the inferences to implement an effective ILBM Planning on the Beyşehir Lake Basin. It is concluded that there are deficiencies especially in institutional collaboration, participation and awareness level of stakeholders about the Lake.

With respect to the ILBM principles, two groups of research questions have been developed for elaborating the Beyşehir Lake Basin:

1. How was the Beyşehir Lake Basin handled until today in the management plans, and how were these plans developed? Do they satisfy the ILBM Planning needs?
2. How is the relationship among various stakeholders? What are their contributions to planning processes for implementing the ILBM?

Following the Introduction, **Chapter II** examines the paradigm shifts in water resource management and the arrived point in this regard; IWRM as a main management approach. IWRM's definition, principles and implementations are analyzed. **Chapter III** elaborates the Integrated Lake Basin Management as a component of IWRM. The planning process and principles of ILBM are explained. Successful world examples about lake basin management are examined and inferences are drawn for the Beyşehir Lake Basin Planning. The chapter concludes with the, principles and criteria are for an efficient ILBM Planning, which are derived from previous academic researches. **Chapter IV** discusses the lake basin management planning in Turkey. The problems in water resource management, basin management planning, the legal and institutional structure, relation with Water

Framework Directive and previous studies on lake management in Turkey are examined. **Chapter V** evaluates the past planning practices for the Beyşehir Lake Basin with regard to the ILBM principles and criteria. Meanwhile, it includes a field survey conducted with the national and local stakeholders of the Basin, which aims at revealing their awareness level on the problems/potentials of the Basin, existing Basin-related projects, and capacity/willingness for collaborative planning. The findings are analyzed in two units as 1) planning history of the Basin and 2) stakeholder approach to the Basin. Finally, **Chapter VI** evaluates the overall discussion and draws a conclusion.

CHAPTER II

WATER RESOURCE MANAGEMENT AND “INTEGRATED” WATER RESOURCE MANAGEMENT (IWRM): HOW DIFFERENT THEY ARE

II.1. PARADIGM SHIFTS IN WATER RESOURCE MANAGEMENT THROUGHOUT HISTORY

Allan (2003) explains the evolution of water resources management (WRM) with five paradigm shifts especially in semi-arid North Asia. He explains these shifts with different temporal characteristics of communities (Table 1). In the period of 1850-1900 communities are defined as *pre-modern communities with limited technical or organizational capacity*. In this period water is seen as an infinite social resource and there is not a prominent management definition.

The end of the 19th century witnessed the start of *Industrial Modernity* with revolutionary development in science and technology. The period is characterized by the Enlightenment, engineering capacity and science and investment initiatives of the state and private sector. The basic assumption of the period is that the nature could be controlled in order to meet human needs, which is denoted as '*hydraulic mission*'. The water is utilized to increase agricultural output and generate power. However, the structure of capitalism (organization of the production process) in this period puts a strong pressure on natural resources and environment. This situation is criticized by environmentalists like Rachel Carson (1965) who states that rather than being controlled, nature is damaged because of indifference. In the 1970s, in the United States, Jimmy Carter (president at that period) spreads the idea that “*harnessing the forces of nature for the benefit of mankind*” is risky, not feasible and not cost-

effective. By the help of this idea, the improper water management approach is abandoned in the North (Allan 2003). Environmental concerns in management of natural resources (including water resources) became the dominant point.

The period of the 1970s is called '*Reflexive Modernity*' within the Social Theory. Allan explains this period with three paradigms in water management. As mentioned before, that period recognizes the environmental value of water besides its economic value. Therefore the main characteristic of the third paradigm (1960s-1980s) is *environmental awareness* with green movement. In the early 1990s in North Asia, water is recognized as a scarce source and its economic value comes into being (fourth paradigm). In this period, international organizations such as World Bank, United Nations Conference on Environment and Development (UNCED), World Water Council arranged meetings with the aim of drawing attention on the scarcity and conserving water as an economic good. In 1992 two important global meetings were organized; namely International Conference on Water and the Environment (ICWE) in Dublin and United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. The Dublin Statement on Water and Sustainable Development starts with emphasizing *scarcity and misuse of fresh water and sets four guiding principles* for taking actions at local, national, and international levels (Dublin Statement 1992, 1-3).

1. Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment
2. Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels
3. Women play a central part in the provision, management and safeguarding of water
4. Water has an economic value in all its competing uses and should be recognized as an economic good.

It is understood from these principles that water is not an infinite value and it is used for different purposes by human beings. It is important to find out a management

model that both *conserves* the water resource and *sustains* the development. Water resource is affected by everybody ranging from users to planners and policy makers. Therefore a *participatory approach* in planning and development is needed. Women's role in water usage is seen important and also active participation of women is supposed to bring gender equity. Everyone should afford water as an economic good in an equitable way. It is important for effective and equitable management.

The 1992 Rio Conference (which is informally known as the Earth Summit) is mainly concerned with environment and sustainable development. One of the resulting documents of this conference is Agenda 21 which is significant in water management. In Agenda 21, Chapter 18 titled "*Protection Of The Quality And Supply Of Freshwater Resources: Application Of Integrated Approaches To The Development, Management And Use Of Water Resources*" defines seven programme areas for freshwater sector:

- a. Integrated water resources development and management;
- b. Water resources assessment;
- c. Protection of water resources, water quality and aquatic ecosystems;
- d. Drinking-water supply and sanitation;
- e. Water and sustainable urban development;
- f. Water for sustainable food production and rural development;
- g. Impacts of climate change on water resources.

(UNCED 1992, Agenda 21, <http://habitat.igc.org/agenda21/a21-18.htm>, Accessed in May, 2011)

Agenda 21 suggests an integrated water resources development and management as a solution to water scarcity, pollution and destruction. The document says that "*The holistic management of freshwater as a finite and vulnerable resource, and the integration of sectoral water plans and programmes within the framework of national economic and social policy, are of paramount importance for action in the 1990s and beyond.*" Therefore the need for an **integrated** management approach is emphasized, which considers water as a natural resource, a social and an economic

good altogether (Agenda 21, <http://habitat.igc.org/agenda21/a21-18.htm>, Accessed in May, 2011).

The above-mentioned conferences urge a management model that combines economic and environmental sides of water resources. The fifth paradigm, which dates back to the early 2000s, points to the political side of water management and allocation besides the economic and environmental sides. This paradigm brings notions such as *participation*, *consultation* and *inclusive political institutions*. The basic aim associated with this paradigm is to implement Integrated Water Resources Management (IWRM) and Integrated Water Resources Allocation Management (IWRAM) (Allan 2003). The international conferences held in the 2000s have helped to spread the IWRM as the new approach to water management.

Actually the background of IWRM had been established in the United Nations Conference on Water in the Mar del Plata in 1977. It is a milestone conference in the history of water resources management since it is in this conference that water management had been founded on a holistic and comprehensive basis (Biswas 2003). As mentioned before, this conference was followed by the 1992 the International Conference on Water and Environment. Throughout the 2000s, at various water forums and other arrangements, the importance of IWRM, implications, success stories, requirements and policies have been discussed deeply. Second World Water Forum in 2000, World Summit on Sustainable Development in 2002 and Third World Water Forum in 2003 can be given among the important conferences.

In 2000, Second World Water Forum was organized in the Hague by World Water Council, and World Water Vision was presented in this Forum. The main message in this vision is “...it is essential to take a holistic approach to integrated water resources management (IWRM). Decisions must be participatory, technically and scientifically informed, and taken at the lowest appropriate level—but within a framework at the catchment, basin, and aquifer level, which are the natural units by which nature manages water” for water management (World Water Vision, Commission Report 2000, 21). The significant issues highlighted in this vision are;

- 1.) a holistic approach, and
- 2.) the natural boundaries to be paid attention in water management rather than boundaries such as administrative or political ones.

In the report, it is also mentioned that this approach should be integrated with the environment, hydrological cycle and human socioeconomic system of activities (World Water Vision, Commission Report 2000, 25). In the light of this water forum, Global Water Partnership (hereafter GWP) published a paper in 2000 named Integrated Water Resources Management and made explicit definition of this new management model.

In 2002, the World Summit on Sustainable Development (WSSD) in Johannesburg noted to the necessity of a sustainable and integrated management. In order to prevent the degradations in natural resources, integrated management of land, water and living sources should be supported. One of the actions determined to achieve this goal is to *“develop integrated water resources management and water efficiency plans by 2005, with support to developing countries”* (United Nations 2002, 22). In 2003, Third Water Forum, held in Kyoto, also recommended the IWRM to achieve sustainable use of water resources.

To sum up the evolution of water resource management, it is understood that in early periods water was mainly regarded as a **social source**. By the developments in technology and science in the early 20th century, it was mostly used for human needs like agriculture and energy. Therefore it was more seen as a source for **economic sustainability**. However, throughout time it is recognized that unwise use of water was disturbing the quality and quantity of water. **Environmental sustainability** should be the basic criterion in water management. Due to unwise use of water, global warming and climate change, water scarcity problems emerged in the 1990s. In order to raise awareness about those problems and take actions, international conferences have been organized. These conferences note the need for a holistic approach in water management. At the beginning of the 2000s, it is observed that water resources management has also a **political aspect**. In order to implement

IWRM, a participatory structure should be achieved and social, economic and environmental sustainability should be taken into consideration simultaneously.

Allan claims that the semi-arid North Asia completed its transformation in all these five paradigms. However, the South Asia is still in its hydraulic mission period which is the second paradigm (Allan 2003).

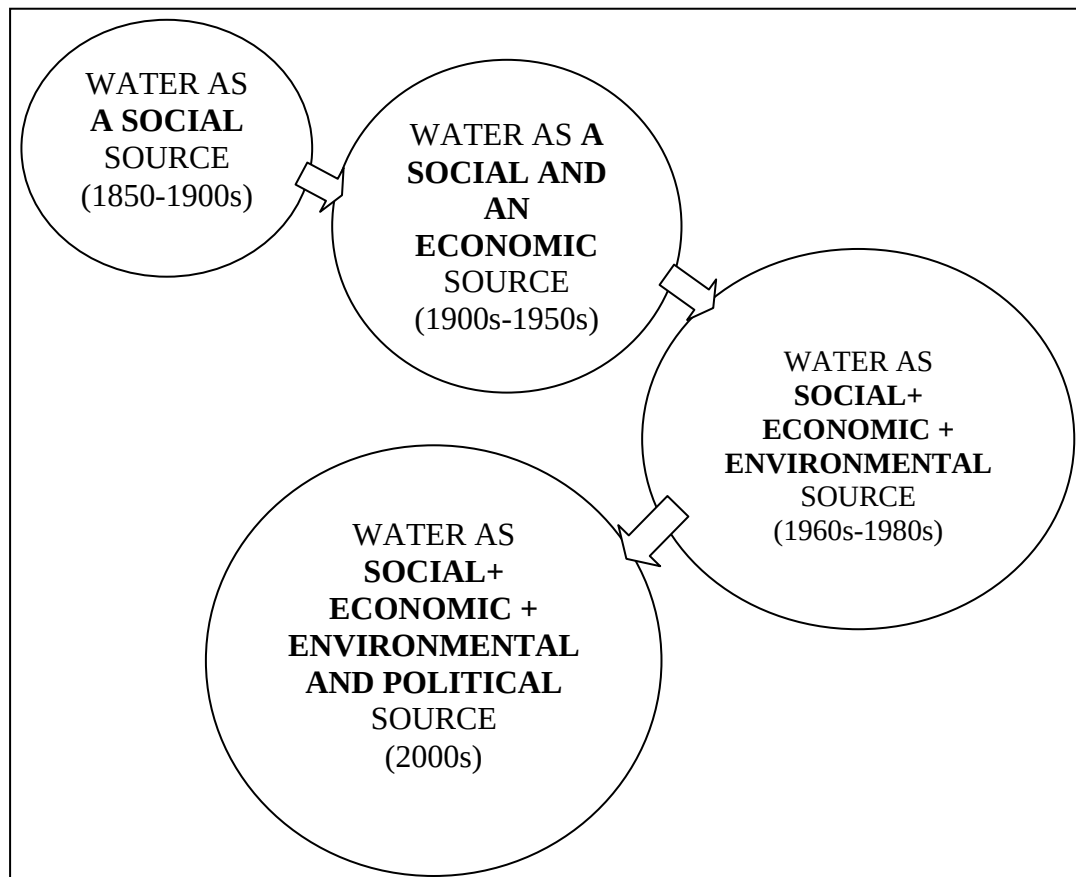


Figure 1. Paradigm shifts regarding water resources management

Table 1. Five paradigm shifts in water resources management (Derived with reference to *IWRM: The New Sanctioned Discourse*, Allan 2003)

	Water Management Paradigms	Period	Characteristics	Water Resources Management	Sustainability
	1 st Paradigm	1850-1900s (second half of 19 th century)	Pre-modern communities	Domestic and livelihood water as inviolable social resource	Society sustainability
	2 nd Paradigm	1900-1950s	Industrial modernity Hydraulic mission	Modernity inspired by the Enlightenment, science, capitalism and the belief that natural (including water) resources could be controlled.	Economic sustainability
Sub phases of Reflexive modernity	3 rd Paradigm	1960s-1980s	Environmental awareness	Change of water allocation and management priorities inspired by the environmental awareness promoted by the green movement.	Environmental sustainability
	4 th Paradigm	1990s	Water as an economic value	• Water with its economic value is important as a scarce economic input. • Increasing awareness in global level (World Bank, UNCED, World Water Council, GWP)	Economic sustainability
	5 th Paradigm	2000s	Water allocation and management are political processes.	IWRM and IW RAM • Participation • Consultation • Inclusive political institutions	Economic efficiency, social equity and environmental sustainability

II.2. INTEGRATED WATER RESOURCE MANAGEMENT (IWRM) AS THE CONTEMPORARY APPROACH

II.2.1. DEFINITION OF THE IWRM

The Global Water Partnership (GWP) defines IWRM as “... *a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems*” (GWP 2000, 22). This definition suggests that water, land and other related resources should be coordinated altogether. Besides managing physical values, IWRM also manages human systems. These features differentiate the IWRM from the mainstream water resource management; and give the adjective “integrated” to this approach. Unlike the traditional management, the IWRM includes both water demand and supply. This is to say that the term “integration” implies the consideration of both natural and human systems. While, the natural system determines water supply (availability and quality), the human system determines water demand (GWP 2000, 23).

Despite the increase in water demand, water supply is declining all over the world because of increasing population, urbanization, industrialization and irrigation processes. The uncontrolled use of water prevents sustainable development and environmental conservation. Hence an integrated approach is needed to “*integrate human society with its natural environment for the benefit of both*” (Castelletti, A. and Soncini-Sessa, R. 2007, 3).

II.2.2. PRINCIPLES OF IWRM AND IMPLEMENTATION

GWP sets the principles of IWRM based on Dublin principles. These principles are:

1. Water as a finite and vulnerable resource
2. Participatory approach
3. The important role of women
4. Water as an economic good (GWP 2000)

First principle, i.e. recognizing *water as a finite and vulnerable resource*, highlights the need for a holistic approach that includes whole hydrologic cycle and interaction with natural resources. Secondly, as explained before, a participatory approach is needed because water is the responsibility of everyone. At all levels of social groups should have a contribution in decision making process and so water management. GWP (2000) states that achievement of participation and participatory capacity is the responsibility of government. In some countries participation of women in water management is not cared, but it is important for equity. So, thirdly, In order to increase participation of women in decision making, gender awareness trainings are suggested by GWP. Finally, water is not a free good, it is an economic good. It should be valued according to supply and demand structure (GWP 2000).

Besides these principles, GWP also defines three further principles of IWRM. These are *economic efficiency in water use; equity; and environmental and ecological sustainability*. Firstly, water as a finite and vulnerable resource should be used efficiently to balance water demand and supply. Secondly, all people have right to access water in adequate quality and quantity. Finally, the water should be managed in a way that the same resource could sustain its value in the future. In order to satisfy these basic principles, GWP defines three musts for a proper implementation of IWRM; namely, *the enabling environment, the institutional roles and the management instruments*.

An enabling environment: In order to ensure the rights of stakeholders and conserve public values like nature, a good enabling environment is needed. Enabling environment is explained as “...*national, provincial or local policies and the legislation that constitutes the “rules of the game” and enable all stakeholders to play their respective roles in the development and management of water resources;... and mechanisms, including information and capacity building, created to establish these “rules of the game” and to facilitate and exercise stakeholder participation.*” (GWP 2000, 33). It means policies; legislations and mechanisms are needed in order to increase participation in water resource development and management. The role of government is explained as enabler, controller, regulator and service provider.

Moreover, the water legislation is defined as the one that enables a balance between development and conservation; enables sound economic, environmental and social assessment; and enables participation (GWP 2000, 38).

Institutional development: For the implementation of IWRM policies and programmes, creating an effective coordination mechanism between different agencies is important. The roles and functions of organizations of different levels are analyzed to understand institutional structure. In order to enhance this institutional structure, institutional capacity building is needed.

Management instruments: They are defined as *“the tools and methods that enable and help decision-makers to make rational and informed choices between alternative actions.”* These are (GWP 2005, 21):

1. *Water resources assessment – understanding resources and needs.*
2. *Plans for IWRM – combining development options, resource use and human interaction.*
3. *Demand management – using water more efficiently.*
4. *Social change instruments – encouraging a water-oriented civil society.*
5. *Conflict resolution – managing disputes, ensuring sharing of water.*
6. *Regulatory instruments – allocation and water use limits.*
7. *Economic instruments – using value and prices for efficiency and equity.*

In conclusion, the pressures on water resources such as population growth, urbanization and water scarcity have necessitated a sound management of water resources; and the IWRM has been acknowledged as a common management model to overcome the pressures. The implementation and viability of the concept still continue to be discussed.

CHAPTER III

INTEGRATED LAKE BASIN MANAGEMENT (ILBM) AS A COMPONENT OF THE IWRM APPROACH

Lakes are important as elements of earth's freshwater hydrological system. They include most of earth's surface store of liquid fresh water. They are utilized in multiple ways such as domestic, agricultural, industrial and energy supply uses. They are also important to compose a habitat for many species. Some of the lake species are economically valuable like fish. Moreover, lakes are recreational places that provide swimming, fishing, sailing, opportunities, as well as waterside promenades, parks, etc. Apart from these, lakes are used for disposal purposes in some regions. However, since lakes are *closed* ecological systems, it is hard to spill pollutants and they may remain for years. Therefore, they are defined as one of the most *vulnerable* water systems. Throughout the world, they are facing continuing deterioration. Lake basins are under the pressure of industrialization, rapid population growth and urbanization, mining, irrigated agriculture and climate change. Because of those pressures, they confront major damages like eutrophication, decrease in biodiversity, extinction of some species, and toxic contamination. Since the damages exceed their capacity for self repairing, a sustainable lake management is essential.

In order to overcome those problems, in 1986 the International Lake Environment Committee Foundation (ILEC) was established as a non-governmental organization (NGO). In 1987, a legal status was given to the Foundation by the Japanese Environment Agency and Ministry of Foreign Affairs. The aim of the foundation is defined as “...*promoting environmentally sound management of natural and man-made lakes and their environments consistent with sustainable development policies*”

by promoting international research and investigation, and by facilitating the exchange of findings and knowledge among the experts throughout the world.” (<http://www.ilec.or.jp/>, Accessed in May, 2011) Since it was founded, ILEC has been implementing many activities on lake management such as developing projects in cooperation with other international organizations like UNEP and World Bank; organizing World Lake Conference every two years, publishing journals and training materials; and organizing workshops in different parts of the world. The very concept of **Integrated Lake Basin Management** (ILBM) was developed in the project of Lake Basin Management Initiative; a jointly established initiative by ILEC, GEF and World Bank. Below table summarizes the stages taken towards the ILBM.

Table 2. Evolution of Integrated Lake Basin Management

Actor/Institution	Action	Aim/Scope
World Bank, 1996	Integrated Lake and Reservoir Management	• To draw attention to lake basins and improve their management, a Lake Basin Management Initiative is recommended. • Under this Initiative, to gather knowledge and experiences in management of lakes and reservoirs so as to introduce best policies

Table 2 (continued)

GEF-LBMI project ,2002 by World Bank and ILEC with • Lake Net, • Ramsar Convention on Wetlands, • Shiga Prefectural Government – Japan, • UNDP, • UNEP, • United States Agency for International Development (USAID)	Towards a Lake Management Initiative: Sharing Experiences and Early Lessons in GEF and non-GEF Lake Basin Management Project	• Main aim was improvement of lake and reservoir basin management at local, provincial, national and global levels. • The sub goals of the project were to produce outcomes from the analysis of 28 case studies, share the experiences with managers and stakeholders, and find out an effective lake and reservoir basin management and implementation. • As a project outcome, Lake and Reservoir Basin Management Initiative was recommended.
ILEC-Scientific Committee,2003	World Lake Vision: A Call to Action	• In order to identify the problems in lake management, a World Lake Vision is proposed. • Key principles of lake basin management, actions and strategies are determined. • Seven principles are determined for sustainable lake management.
ILEC, 2005	Managing Lakes and Their Basins for Sustainable Use. A Report for Lake Basin Managers and Stakeholders	• Main report of GEF-LBMI project. • As an outcome for successful management of lakes the ILBM which links land use, water use; and social and economic factors, is introduced. • Six components (institutions, policies, participation, technical measures, information and financing) that should be integrated are defined.

Table 2 (continued)

ILEC, February 2007	World Vision: Report	Lake Action	• To promote implementation of principles determined in the Vision, the Action Report is prepared. • From different regions, 28 lakes are examined according to seven principles and lessons learned are shared.
ILEC, 2007	Integrated Basin Management: Introduction	Lake An	• Why ILBM is needed is explained in preserving and using lake ecosystems • The six pillars of lake management are examined in details. • The relation between World Lake Vision and ILBM is introduced.

In 1996, the paper “Integrated Lake and Reservoir Management” was published by World Bank. In this paper, the problems in managing lakes and reservoirs were examined. Management of lakes and reservoirs were seen as a part of IWRM; and a Lake Basin Management Initiative that would help to develop policies, programs and operations was recommended (Ayres et al. 1996, 20). **In 2002**, GEF submitted a project named “*Towards a Lake Management Initiative: Sharing Experiences and Early Lessons in GEF and non-GEF Lake Basin Management Project*” in cooperation with World Bank and ILEC. The main objective of the project was defined as “...to strengthen capacity for improved lake and reservoir basin management at local, provincial, national and global levels.” (World Bank and ILEC 2002, 6). With this project traditional management that focused on individual lakes was replaced by a comprehensive focus on lake basins. **In 2003**, with the studies of Scientific Committee of ILEC, World Lake Vision (WLV) was prepared. For a sustainable lake basin management, principles, actions and strategies were determined. **In 2005** the main report of GEF-LBBI project was published, which was named “Managing Lakes and Their Basins for Sustainable Use: A Report for

Lake Basin Managers and Stakeholders”. The report stated that the project addressed the concept of Integrated Lake Basin Management (ILBM) through analyzing the experiences in the 28 lake basins. **In 2007**, the cases were examined with respect to the principles of “World Lake Vision : Action Report”. Within the same year ILEC published the paper “Integrated Lake Basin Management: An Introduction” as a user’s guide to the GEF-LBMI Report and explained the need for ILBM in preserving and using lake ecosystems in a sustainable manner.

ILBM is not merely an application of IWRM or IRBM (Integrated River Basin Management) principles. It is “...*a management approach that provides many subtle but crucial dimensions of basin system management that have in the past tended to be neglected.*” (ILEC 2005, xiv). It is “...*a conceptual framework for assisting lake basin managers and stakeholders in achieving sustainable management of lakes and their basins. It takes into account the biophysical features of as well as managerial requirements for lake basin systems, that are associated with the lentic (standing or static) water properties of lakes as well as the inherent dynamics between humans and nature in the process of development, use and conservation of lake and basin resources.*” (ILEC 2007b, 12). Accordingly, ILBM can be interpreted as an approach developed on the basis of IWRM in static waters. Likewise the IWRM, it aims both using and conserving lake basin resources and achieving sustainable development.

The lessons learned from the GEF-ILBM Project showed that there are many different issues in different cases. In order to address these issues, an integrated and common approach is needed in lake basin management. The components that are essential for an effective lake basin management are defined with six pillars. These are pointed as “*the essential components of basin governance about which ILBM can provide the overall framework for application*” (ILEC 2007b, 13)³.

³ The previous planning experiences for the Beyşehir Lake Basin are to be evaluated with regard to these pillars in Chapter III.4

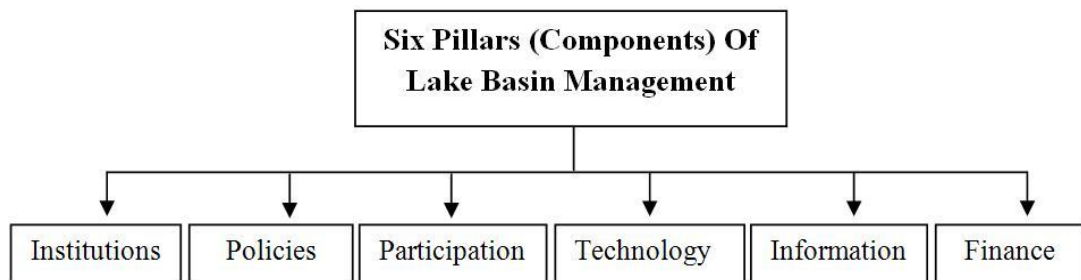


Figure 2. Six pillars of lake basin management

1. ***Institutions***; managing the lake and its basin for the benefit of the entire lake basin resource uses; functioning in local, national, regional and international scales.

A strong institutional structure helps to increase participation and enhance local government capacity. Lake basin institutions congregate different groups and help to decrease conflicts. They develop policies and rules for the management. Moreover the institutions can collect and store knowledge. This pillar, in sum, notes to the significance of **a well-established institutional structure, which allows collaboration of institutions and local groups.**

Institutions are separated according to their function; namely resource development, service delivery, regulation, advisory and coordination (ILEC 2005, 29-30).

2. ***Policies***; governing people's use of lake resources and their impacts on lakes.

Policies can be both informal and formal. In formal way, laws, statutes and regulations are encoded and implemented by formal institutions. In informal way, they are accepted and developed by traditional groups around the basin.

The policies involve two levels, national and local. National policies are government intentions for resource usage. It is important to note that the policies of different sectors which have relation with lake basin resource,

should not include lots of differences because in the use of resources there could be conflicts and problems. Local policies are more related with managing people and their actions. At the local level, it is important to allocate resources fairly and efficiently. Experiences suggest that poverty reduction and development policies are the essential policies in lake basin management. Lake basin degradation is contributed by poverty. Furthermore, if stakeholders are benefited they would much like to participate in the process (ILEC 2005, 39-40).

3. **Involvement** of people; being central to lake basin management. The benefits of their involvement can be summarized as enhancing management knowledge and contributing to finance.

Participation or involvement of stakeholders is necessary for implementation of projects. It is also important to include women, indigenous people and displaced people. Locally embedded knowledge needed in the process can be gathered from local communities. Participatory approach brings different groups together and decreases the conflicts between groups. In addition, public participation attracts support of politicians (ILEC 2005, 48-49).

4. **Technological** possibilities and limitations exist in almost all cases. Technical investments may help to enhance access to lake's resources and solve some problems.

For environmental protection, long term resource values of the protected area are needed in decision making. Long term viewing helps to introduce protective technological interventions. The important thing here is to find out lower cost technological options combining with pollutant controls. The technologies are defined as 1) those applied within the lake basin and 2) those applied directly in the lake. The first type measures include flow control, flow diversions, control of point-source pollution, control of nonpoint source pollution and control of mining wastes. The second type measures are control of water level, control of nuisance species and control of water quality (ILEC 2005, 57-66).

5. **Information;** -both of a traditional and a scientific nature- is valuable for efficient management. It is important to identify reliable and demonstrable knowledge for an efficient management.

Information is needed in decision making process; because, without information the institutions, rules and technology may be used inefficiently. Information is considered to include both scientific and socio-economic information. Scientific information include measured parameters (dissolved oxygen, nutrient concentrations, etc.); while socio-economic information consist of values and goals of peoples for their resources (ILEC 2005, 67).

6. **Finance;** in order to fund the activities listed. It is important for institutional development, increasing participation, technological advancement and collecting and monitoring information.

Financial resources are 1) local sources, 2) national sources 3) international funding. Although generally they may not be sufficient, main financial resource for lake basin management is local sources. In locally generated funds, participation of all stakeholders is important. The national sources are more responsible for capital infrastructure investments; the local sources are more related with routine recurrent expenditures. Besides local and national sources, external support is needed in lake basin management. External funds are defined as a catalytic source for implementation. In international lake basins, GEF is a major source of funds (ILEC 2005, 77-81).

III.1. PLANNING PROCESS OF INTEGRATED LAKE BASIN MANAGEMENT

ILBM is not a prescriptive planning procedure. Rather, it is “ *...a compilation of the lessons learned from lake basin management experiences globally, synthesized to address complex planning issues using a basin governance framework that reflects the unique features of the lentic waters as lakes and reservoirs*” (ILEC 2007b, 22).

The planning process is defined with the following steps:

- 1) a set of goals agreed by the stakeholders,
- 2) alternative strategies to achieve goals,
- 3) selection of strategy according to a feasibility assessment,
- 4) implementation of strategy, and
- 5) revision of strategy by the help of monitoring and evaluation (ILEC 2005, 85)

As the above steps imply, an ILBM plan is basically a strategic or structure plan; around which lower level sectoral and settlement plans should be developed. An ILBM plan should include the components of lake basin management. Therefore, involvement of stakeholders and institutions, use of reliable and timely information, assessment and selection of both policies and technological tools, and identification of financing options for implementing plans are needed in making plans (ILEC 2005, 86).

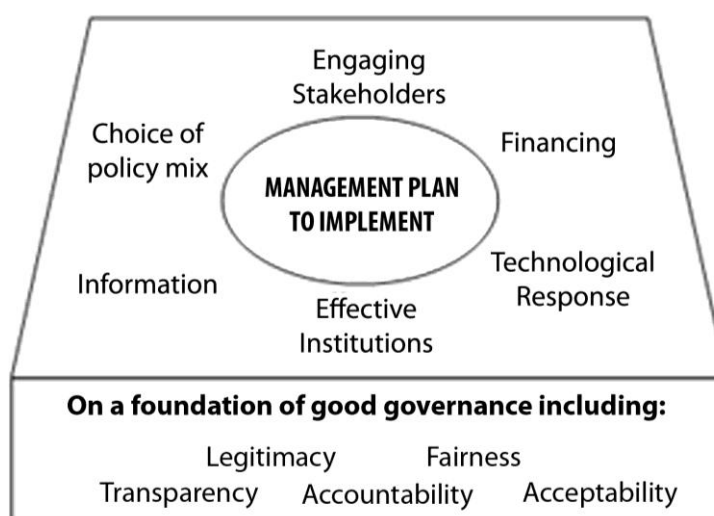


Figure 3. A Conceptual Framework of Lake Basin Management Planning (ILEC and JICA, 2)

A lake basin plan should also comply with regional and national plans. The viability of a lake basin management plan highly depends on its alignment with higher level national and regional plans (ILEC 2007b, 21). ILEC proposes three approaches to integrate sectoral and regional planning activities over time and space.

1. Integration by Encompassing: integration of different sectoral development projects and programs into a coherent and collaborative framework by encompassing. It covers cross-sectoral integration across different government Ministries, and different countries for trans-boundary lakes.
2. Integration by Unification: independently developed sectoral plans in different time-space conditions, later integrated by unification. This type of integration is more suitable when a new project or program is developed and introduced to lake basin resource development, while a functional older plan exists.
3. Integration by Broadening and Evolution: integration when a single activity expands its coverage of issues and regions. Because of their previous successes, some activities, grow and mature over time and extend their operations either spatially or sectorally (ILEC 2007b, 21; ILEC 2005, 91).

Holdren (2005, 2-5) explain the ILBM planning process with eight general steps.

1. *Clarifying goals*: In this step it is needed to define visions that are “*general statements of where the lake community wants to go and what it will accomplish over a given time span (usually 5 to 10+ years)*”. After settling the vision, goals (what is needed to achieve the vision), objectives (steps to achieve goals) and action items (implementation of objectives, the responsibilities of stakeholders, indicators) are need to be defined in a specific way.
2. *Gathering information*: In lakes and their drainage basins the basic information that will be useful are defined as hydrology, geology, soils, slopes, land use; chemical and biological characteristics and affected population. The information about hydrology, geology, soils, slopes and land use is important to understand sedimentation, lake filling, stream corridor instability and erosion potential.

3. *Evaluating the alternatives:* The alternative methods for restoring lake water quality and beneficial uses are evaluated with respect to pollutant reduction, practicality, effectiveness, cost and environmental impacts.
4. *Making a formal decision:* Two important things that should be included in a successful management plan are choosing feasible alternatives and a realistic budget. Therefore the method and activities are selected which can be sustained by the budget.
5. *Defining measurable objectives:* According to Holdren “*An effective management plan should answer the question: Who will do what by when and with what expected result?*”. In this question “who” implies the investors that participated in management plan, “what” implies the actions that are defined by a meaningful and measurable objective, and “when” implies the deadline of the plan. Therefore, to take actions, objectives should be defined before the implementation.
6. *Implementing:* In implementation process, it is important to put a schedule that shows the time requirement. Moreover, an effective management plan needs to include expected results. Those expected results are needed in implementation because they force an ongoing evaluation of the plan.
7. *Evaluating the results:* Effectiveness of the plan should be evaluated according to the attainment of objectives. Water quality monitoring, quantification of specific construction activities and surveys of lake users are the evaluations defining by Holdren.
8. *Repeating the process:* Since the conditions, scientific and technological methods and human values are changing over time, a good plan should not be a static document. Lake management plans should recognize that changing situations. Periodic evaluations and monitoring programs are needed in that last process.

Four types of plans are defined by ILEC for lake basin management, which are vision plans, action plans/intervention plans, comprehensive plans and statutory plans.

- A *vision plan* can be helpful to agree on the higher level goals in the lake basin for stakeholders and to develop more detailed management plans. A vision statement includes sectoral goals and strategies.
- *Action plans and Intervention plans* are described as “...*short term plans with sectoral commitments to carry out specified actions in pursuit of the agreed management goals for the lake basin.*” (ILEC 2005, 87). They are not very useful for the problems of cross sectoral issues.
- *Comprehensive plans* give the long term structural and non-structural actions including multiple sectors and jurisdictions to meet the development and conservation goals. The aim of comprehensive plan is to solve limitations of sectoral approaches to problem management (ILEC 2005, 87). Integration of actions across sectors is useful for increasing effectiveness in planning. The challenges of that plan are described as the implementation can be expensive, coordination can be costly and it is inflexible to changing political priorities.
- *Statutory plans* are used to control development activities in the lake basin through the legal and institutional framework (ILEC 2005, 85). In order to implement these plans a good governance structure and institutional capacity are needed.

These plans should be developed and implemented “strategically”. The term strategic means “*the achievement target would be clear and the required resources would be committed according to some priority considerations*” (ILEC and JICA, 4). It is recommended to develop and implement “Strategic Action Plans (SAP)” and particularly combine it with “Transboundary Diagnostic Analysis (TDA)”. TAD aims to show priority concern areas under the transboundary settings. The diagram below shows the relation of plans according to time span and degree of sector orientation.

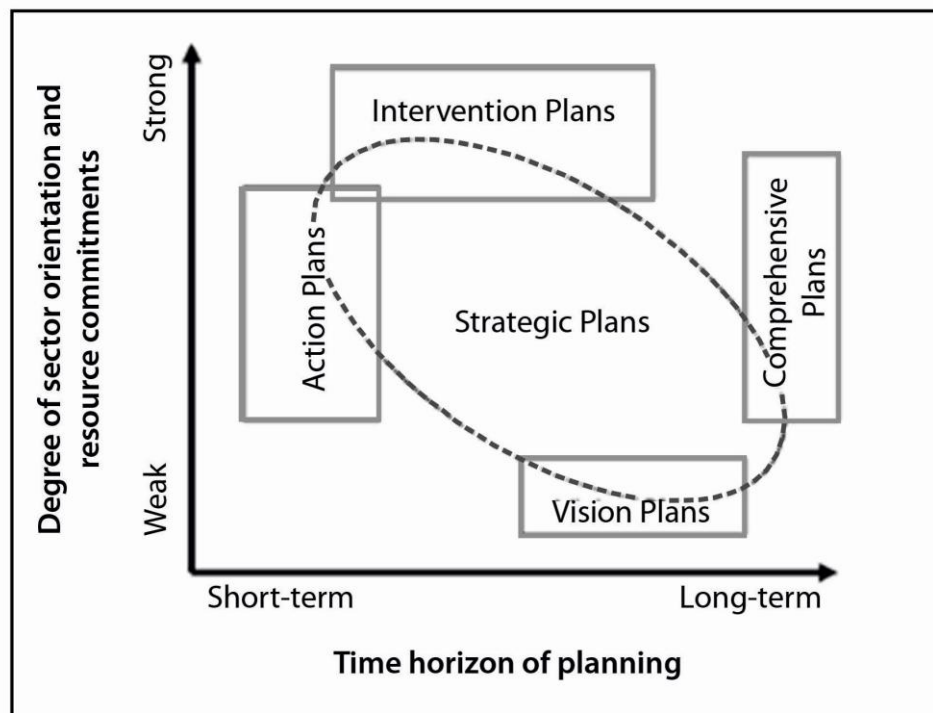


Figure 4. Types of plans based on degree of sector orientation and time span of planning (ILEC; and JICA, 4)

Besides those plans, Environmental Impact Assessments (EIAs) which integrate environmental and social issues into planning are needed for approval, evaluation and implementation process of proposed investment projects. EIAs evaluate the alternatives of proposed project; analyze positive and negative consequences of environmental and social management plans; and make a framework for monitoring. Recently many countries started to apply Strategic Environmental Assessments (SEAs) which need to integrate potential environmental impacts at a higher level in planning process. SEA is not only used for specific project proposals, but also applied to policies, plans and programs so as to compose a more preemptive and strategic assessment (ILEC 2005, 89).

The important characteristics of the planning process and plan can be listed as follows (ILEC and JICA):

- The planning is defined as a *dynamic* process depending on time. A lake management plan includes many different sectors and local management interventions and initiatives. In lake basin management, development of a management plan is only the initial step. Therefore the management plan should be implemented through time and space, and include all stakeholders (ILEC and JICA, 5).
- A comprehensive basin management plan should be developed and implemented for lake basin management planning with the administrative measures integrated over the concerned sectors.
- There are different forms of plans that have different purposes, scopes and schemes; but all of them should have a strategic approach.
- Individual planning efforts should be integrated over time.
- According to experiences the integration in planning process should:
 1. take place where the pressures are greatest.
 2. be phased over time.
 3. be pursued by necessity rather than by design. (ILEC and JICA, 6)
- The lake basin plans should be adaptive. They should be both responsive to monitoring data results and to changing social needs and external factors. In order to sustain that, reviewing and modifying processes are needed in lake basin management planning.
- Planning of lake basin management should be evaluated for its achievements and performance. For the assessment, the indicators of *stress reduction, environmental state, and the process of creating the enabling environment* are proposed (ILEC and JICA, 10).
- In planning process, the contribution and responsibilities of political institutions and politicians, and socio-political situation should be thought.

III.2. PRINCIPLES OF INTEGRATED LAKE BASIN MANAGEMENT

In 2003, through cooperation of ILEC, Shiga Prefectural Government and United Nations Environment Programme-International Environmental Technology Centre (UNEP-IETC), a “**World Lake Vision**” was introduced. The main aim was to find out a general vision for the future of lakes. The vision follows an integrated framework and puts principles and strategies for achieving a sustainable management in lakes. ILEC proposes that,

“WLV (World Lake Vision) and ILBM (Integrated Lake Basin Management) are two ‘wheels’ needed to carry ‘Lake Basin Management’ forward to ‘Sustainability’ ” (ILEC 2007a, 23).

According to the vision, seven principles are needed for sustainable use of lakes through an integrated approach (Table 3).

Table 3. Principles for the sustainable use of lakes according to WLW

1	Harmony between humans and nature	Misuse of water by humans causes problems and makes hard to maintain sustainability. Therefore humans should use the water with respect to natural capacity of lake ecosystems.
2	A lake drainage basin approach in planning and management	A lake management should focus on the scale of drainage basin and integrate hydrological-ecological processes and also socio economic structure.
3	A long-term, preventative approach	Instead of solving problems after they have happened, the need is a preventative framework to identify problems before they have happened.

Table 3 (continued)

4	Policy development and decision making with sound science and available information.	• Since the ecologic and socio economic characteristics like are different for each lake, a systematic, continuous and up-to date monitoring and evaluation for each lake is essential for sound lake management practices. • Accurate and current information is important for an effective policy development so the quality and relevance of the data is needed to be considered.
5	Resolution of conflicts between competing groups and importance of the needs of present and future generations and of nature.	• Since lakes are used by wide range of groups there are conflicts. Finding out the conflicts and solving them are needed for an effective lake management. • Based on the notion of sustainable development, water needs for present and future generations should be considered.
6	Participation of citizens and other stakeholders	All stakeholders (NGOs, local authorities, business and industrial organizations, advocacy groups, educational and research institutions) and citizens should be included in the process by information sharing, policy developing and decision making.
7	Good governance, based on fairness, transparency and empowerment of all stakeholders	• For good governance in lake basin management an approach that is participatory, equitable, accountable, responsive, consensus-oriented, and transparent is essential. • Fairness help to increase participation of citizens and stakeholders, transparency is needed for trustfulness of process and empowerment of stakeholders helps to fulfill their roles in implementation.

III.2.1.INTERNATIONAL CONFERENCES AS MILESTONES FOR ILBM

As mentioned, the ILBM is quite a recent concept that came into the picture with the project of GEF-LBMI in 2002. Following that the WLW was announced at the 3rd World Water Forum in 2003. Examining the approaches and outcomes of the international conferences on lake basin management, it is observed that ILBM and WLW were evaluated separately in the very first conferences. However, in the 4th World Water Forum the joint use of these two concepts was recommended in order to implement a sustainable management in lakes. Further conferences, therefore, searched the ways to improve the implementation of WLW in basin management, and promoted ILBM as a key management model.

The WLW was first announced at the 3rd **World Water Forum** in 2003. In the forum key issues were defined as *Safe clean water for all, Governance, Capacity building, Financing, Participation and Regional issues*. The sessions related to Governance and Participation especially emphasized the IWRM as the key model. Since one of the challenges of IWRM is the relation between administrative units and hydrological units (basins), these sessions mainly dealt with river basin or lake basin management. Discussions on the implementation of the vision focused on the topics of capacity building, monitoring and stakeholder involvement (Session Report 2003, 2). The outcomes of the session are:

- To implement individual lake visions and action plans, WLW should be disseminated.
- To increase capacity for a sustainable management of lake resources, a world lakes management initiative that help to evaluate and share lessons learned is needed.
- To implement WLW at the global, regional, national and local scales, governments, industries, organizations and individuals should be encouraged.

- By the help of global partnerships, effective lake management actions should be enhanced between local communities and individuals.
- In local lake visions, whole participation that also includes women and young should be supported.

The forum is important for its promotion of World Lake Vision through the Lake Management Initiative (GEF-LBMI Project) which brings the concept of ILBM.

In 2005, **11th World Lake Conference** was held in Nairobi, Kenya. The main theme was "Management of Lakes for their Sustainable Use: Global Experience and African Issues". The conference is important in that the experiences of Lake Basin Management Initiative were shared and the ways of successful lake basin management were discussed. The conference emphasized that "WLV and ILBM should go together as the two wheels of the vehicle to facilitate the management of lakes." (ILEC Newsletter 2006, 4).

In 2006, the **4th World Water Forum** was organized in Mexico City. The forum repeated that the WLV and Lake Basin Management Initiative should be used together in order to achieve a sustainable lake basin management. Therefore the need of promotion and dissemination of Integrated Lake Basin Management was agreed by participants.

The outcomes can be listed as follows:

1. To use lakes and their resources in a sustainable manner, implementation ILBM is a must.
2. To prevent lake degradation a long term, precautionary approach is needed.
3. To sustain diversity, increase participation and awareness, national and local government institutions should be encouraged.
4. To manage sub-basins, integrated basin management policies and practices should be used.

5. To enhance lake management efforts, international collaborations that include technical and funding programs are needed. (Session Report 2006, 5)

The conference recommended local lake-based stakeholders' voluntary organizations, a national, regional network and the basin-level network of lake management initiatives and organizations for joint advocacy and action programs for the promotion of ILBM (Session Report 2006, 6).

The **12th World Lake Conference** was organized in India, Jaipur in 2007. The main objective was to find and implement new alternatives in the management of lake resources all around the world. Legal framework and economic utilization of environment were discussed in the conference. The outcome of the conference is the Jaipur Declaration, in which the emerging concept ILBM was pointed out.

Some points mentioned in this declaration are:

- The lakes and wetlands are important for domestic, agricultural and recreational uses
- Lakes are valuable in varying functions as economic, social, cultural and spiritual
- Lakes and wetlands are threatened by rapid deterioration
- The impacts of climate change should be taken into account in lakes and wetlands
- Available technology, sharing experiences and practices are needed in managing
- The role of lake drainage basin in the quantity of water in lakes and wetlands and their ecological health is significant. Therefore the ILBM is needed to take attention. Actions should be taken at global, regional and national scales.

In 2009, **13th World Lake Conference** was organized in Wuhan, China through the participation of Chinese Society for Environmental Sciences (CSES), Chinese Research Academy of Environmental Sciences (CRAES), Wuhan Municipality and ILEC. The conference concluded with the Wuhan Declaration (officially named as

“Rehabilitate the Lake Ecosystem: Global Challenges and the Chinese Innovations”) was published. The Declaration described the fundamental theme of the conference as developing ecological civilization through controlling lake pollution and rehabilitating lakes overloaded with pollutants (Wuhan Declaration 2009, 1). ILBM was recommended as the main management model in lakes.

In 2011, the **14th World Lake Conference** was organized Austin, Texas, USA between 31 October - 4 November by the River Systems Institute, Texas State University, and ILEC with the title of “Lakes, Rivers, Groundwater, and Coastal Areas: Understanding Linkages”. One of the basic aim of the conference is to highlight upstream (lotic waters) and downstream (lentic waters) water systems that have hydrological linking and sharing experiences of ILEC. The hydrological linkage of lentic-lotic water is simply defined as *“Upstream rivers (lotic waters) fundamentally influence the quantity, quality and sustainable use of lakes and reservoirs (lentic waters).”* (Austin Declaration, <http://www.wlc14.org/>; Accessed in February, 2012)

Austin Declaration recommends;

- Participatory approaches to manage lakes reservoirs, wetlands, rivers, groundwater, coastal and other water systems with consideration of climate change impacts and extreme events (drought and floods)
- ILBM approach for effective management with consideration of the hydrologic linkages between flowing and pooled water systems
- As an important element of water management, maintenance of ecosystem services sustained by water systems
- Educating and informing of water users and stakeholders at all levels (also women and youth) about their impacts and roles on aquatic ecosystems
- Gradual, continuous and holistic improvement of basin governance, that integrating institutional roles, policy developments, participations, scientific and traditional knowledge, technology and funding, is necessary.

- Freshwater management systems are continuing efforts with assessment, action, evaluation and revision.
- For sustainable use, continuous & adequate finance and proper technical & governance potential are necessary.
- Sharing of past experiences about implementation of integrated approaches especially by current drought in Texas and Southwestern United States
- Implementation of ILBM principles and components by governments, NGOs and civil society (Austin Declaration, <http://www.wlc14.org/>; Accessed in February, 2012)

To sum up, the co-existence of two important concepts of lake basin management -- ILBM and WLW-- have been discussed in the conferences since 2003. It was the 4th World Water Forum where the content of ILBM was explained. The following conferences tried to improve the ILBM as the main approach at lake basin management.

Table 4 summarizes the achievements of the conferences elaborated above.

Table 4. International Conferences on ILBM

Conference	Aim/Objective	Participants	Importance/Results/Messages
3th World Water Forum Kyoto, 2003 Session of Strategies and Actions to Implement the World Lake Vision	- Strategies for a sustainable lake management - Promoting World Lake Vision and implementation of the principles	- ILEC - Shiga Prefecture, Japan - UNEP-IETC	- Dissemination of World Lake Vision (WLV) - A world lakes management initiative to increase capacity for a sustainable management of lake resources - Implementation WLV at global, regional, national and local scales.
11 th World Lake Conference Nairobi, Kenya, 2005	Sustainable management of lake basins with global experiences and African issues	- Kenya Ministry of Water and Irrigation ILEC - African Water Ministers - International Scientists - Scholars in the field of water resources management	- Sharing the experiences of Lake Basin Management Initiative - Announcement of World Lake Vision Action Report
4 th World Water Forum Mexico, 2006 Session of Promoting world lake vision and integrated basin management for the future of global water	- Enhancement of WLV and promotion of principles for sustainable lake management - Preparation of World Lake Vision Action Report	- Shiga Prefectural Government, Japan - ILEC - Global Nature Fund - Conference of Promotion for Lake Biwa - Yodo River Basin Area Renaissance - World Bank - Global Environment Facility - UNEP-International - Ministry of Land, Infrastructure, and Transport of Japan	- Promotion and dissemination of Integrated Lake Basin Management (ILBM) - Evaluation of WLC and ILBM concepts together - Establishment of WLV Action Committee

Table 4 (continued)

12 th World Lake Conference India, Jaipur, 2007	To find out better alternatives for the management of lake resources	- Government of India, Minister for Environment and Forests - ILEC	- ILBM - Distribution of WL V Action Report
13 th World Lake Conference Wuhan, China, 2009	- To discuss lake management issues and challenges - To rehabilitate lake ecosystem and find out global challenges and Chinese innovations	- Chinese Society for Environmental Sciences (CSES) - Chinese Research Academy of Environmental Sciences (CRAES) - Wuhan Municipality - ILEC	- Promotion of ILBM as the main approach in lake management - Establishment of linkages to a strong ILBM concept at global level
14 th World Lake Conference Austin, Texas USA, 2011	- To explore lentic-lotic linkages, interactions, and their management implications - To share experiences and discuss lake and reservoir issues in Latin America, especially in Texas.	- UNEP - ILEC - WWF-Mexico - River System Institute-Texas State University - U.S. Environmental Protection Agency - Lake Atitlan Environmental Protection Society, Guatemala - Russian Academy of Science, Federal University of Rio de Janeiro, Kyoto University, Shiga University, University of Palermo, University of Zimbabwe, University of Nairobi, Research Institute for Humanity and Nature, Baylor University	- Implementation of ILBM principles and components - Consideration of the hydrologic linkages in ILBM approach - Improvement of gradual, continuous and holistic basin governance

III.3. SUCCESSFUL CASES ON INTEGRATED LAKE BASIN MANAGEMENT: INFERENCES FOR PLANNING IN THE BEYŞEHİR LAKE BASIN

In this chapter two examples, one from America and one from Africa, are examined. The first example, Lake Champlain Basin, is chosen because

- likewise the Beyşehir Lake, it lies on more than one settlement's administrative boundaries,
- and it is shown as a good example for integration of ILBM pillars to its Plan by ILEC.

Meanwhile, the second one, Lake George Basin, is chosen since

- it shows how to develop a management plan for a basin with various partners and conservation statutes,
- and, with its organization structure, it is successful in satisfying the WLV principles and ILBM pillars.

III.3.1. LAKE CHAMPLAIN BASIN

III.3.1.1. General Profile of the Lake Champlain Basin

The Champlain Lake, with 193km length and 19 km width, locates within the borders of the states Vermont and New York of United States, and the province Quebec of Canada. The average lake depth is 19.5 m and it covers 1127 sq. km area of surface water. It includes more than 70 islands. The *population* of the basin is 571.000; 541.000 in the US part and 30.000 in Quebec. 68% of the population lives in Vermont, 27% in New York and 5% in Quebec. 35% of the population (app. 200.000 people) uses the lake as drinking water and for individual purposes (app. 4.149 people directly pump water) (Lake and Basin Facts, <http://www.lcbp.org>, Accessed in May, 2011).

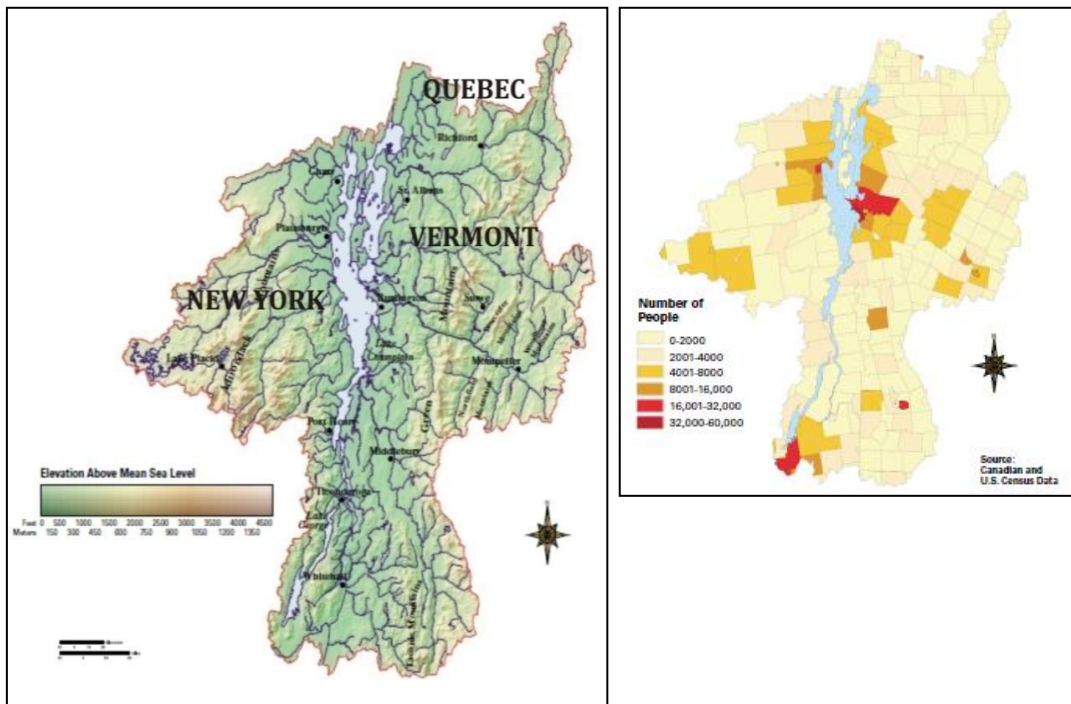


Figure 5. The Lake Champlain Basin Area and population 2000 by towns (<http://www.lcbp.org/Atlas>, Accessed in May, 2011)

The *land use* of the Champlain Basin is composed of 64,3% forested land, 16% agricultural land, 10,3% open waters, 5,6% developed areas and 3,8% wetlands. Major problem in the basin is urban sprawl which causes degradation of water quality, increase of urban runoff and losing of wetlands. Since the landscape became more fragmented, the productivity of wildlife habitat, farmlands and forests have been decreasing (Basin Landscape, http://www.lcbp.org/Atlas/HTML/so_landuse.htm, Accessed in May, 2011).

The Basin is in the responsibility of more than one administrative unit. The states of New York and Vermont and Quebec province share the resources according to the *administrative boundaries*. There are 239 municipalities in the Basin; namely 37 in Quebec, 57 in New York and 145 in Vermont. Apart from these administrative bodies there are various NGOs, private sector and individuals that play role in the management of Lake. Therefore an efficient collaboration is essential in the Basin

(Political Boundaries, http://www.lcbp.org/Atlas/HTML/nat_political.htm, Accessed in May, 2011).

The environmental problems of the Lake are **high phosphorus levels** caused by discharges of sewage treatment plant and runoff from agricultural and urban surfaces; **toxic substances and pathogens** threatening human and aquatic health; and **aquatic invasive species** negatively affecting on fish, wildlife, other living resources and recreational use (LCSC⁴ 1996, 7-8). Moreover, because of the continuing landscape alterations and fragmentation of habitat, there are changes in hydrology, habitat, biodiversity and climate which led to loss of recreational and cultural use of the resource (LCSC 2010, 10).

III.3.1.2. Lake Champlain Basin Management Plan

Named as “Opportunities for Action: An Evolving Plan”, the management plan of the Lake was signed in 1996. This plan was then revised in 2003 and 2010. It combines the components of lake basin management into a comprehensive plan (ILEC 2005, 86). The plan mainly aims to develop “... *coordinated action by each jurisdiction and community in the Basin, as well as members of the public, to restore and protect water quality and the diverse natural and cultural resources of the Lake Champlain Basin*” (LCSC 2010, 11).

The Lake Champlain Basin Management Plan has seven approaches, which are (LCSC 2003, 6-8):

1. *Partnership Approach*: Implementation of the Plan depends on the collaboration of many partners of the region, since it increases the accomplishment of important goals. Meanwhile, the efficiency and effectiveness of resource use has increased through participation.
2. *Ecosystem-Based Approach*: It regards the Lake as an interconnected system with its drainage basin; i.e. every change affects on another component in the ecosystem.

⁴ Lake Champlain Steering Committee

3. *Watershed Approach:* Administrative boundaries cannot help discovering the threatened areas. To solve the problems caused by land use activities and pollution, projects should be done according to watershed boundaries. The Champlain Plan proposes a local level watershed approach rather than a basin- wide level. Rather than basin wide approach, local level approach gives chance to examine local capabilities for watershed planning and since the land use planning of The Champlain Basin mostly develops at the municipal level, a local level watershed approach is proposed. By this way, local communities find the opportunity to use their local knowledge to increase water quality.
4. *Integration of Environmental and Economic Goals:* The actions in the Plan aim to both protect and rehabilitate ecological and cultural resources; and in the long term get economic benefits.
5. *Pollution Prevention:* It is a cost-effective method which removes pollution before it is formed. Pollution prevention decreases the expenditures of industrial enterprises and citizens in the long term, since there will be no need for expensive waste treatment, waste disposal and cleanup.
6. *Consensus-Based, Collaborative Approach to Decision-Making:* In decision making process a consensus based approach that includes wide involvement of participants is supported for implementation of the Plan. This approach strengthens the outcomes and allows stakeholders to take an active role in the implementation process.
7. *Flexibility:* The plan aims to keep responding public needs in the Basin. In order to sustain that, feedbacks on policy development, implementation, legislative regulation needs and funding are necessary. Moreover, the organizations should be adaptable to changes.

Since the Lake is under the authority of various groups with different interest, some legal regulations were developed. In 1990 the Lake Champlain Special Designation Act aiming to gather different groups together and develop a comprehensive plan for the Lake and its watershed area, was signed by senators from Vermont and New

York. However, identifying particular problems and developing an integrated plan was a challenge. In order to overcome that, the Act was reauthorized in 2002 with the Lake Champlain Basin Program Act (LCBP). LCBP, which has the mission of implementation of Lake Champlain management plan, is a partnership between New York, Vermont, Quebec, the US Environmental Protection Agency, other federal and local government agencies, and various public and private local groups. The guiding body of LCBP is Lake Champlain Steering Committee that includes government agencies representatives; the chairs of advisory groups representing citizen Lake users, scientists, and educators. The Program works for conservation and enhancement of integration of environmental, social and economic benefits of the Lake Basin. It provides finance for pollution reduction, involvement of participants, information gathering, education, planning, demonstration, research, and monitoring projects (LCSC 2010, 10).

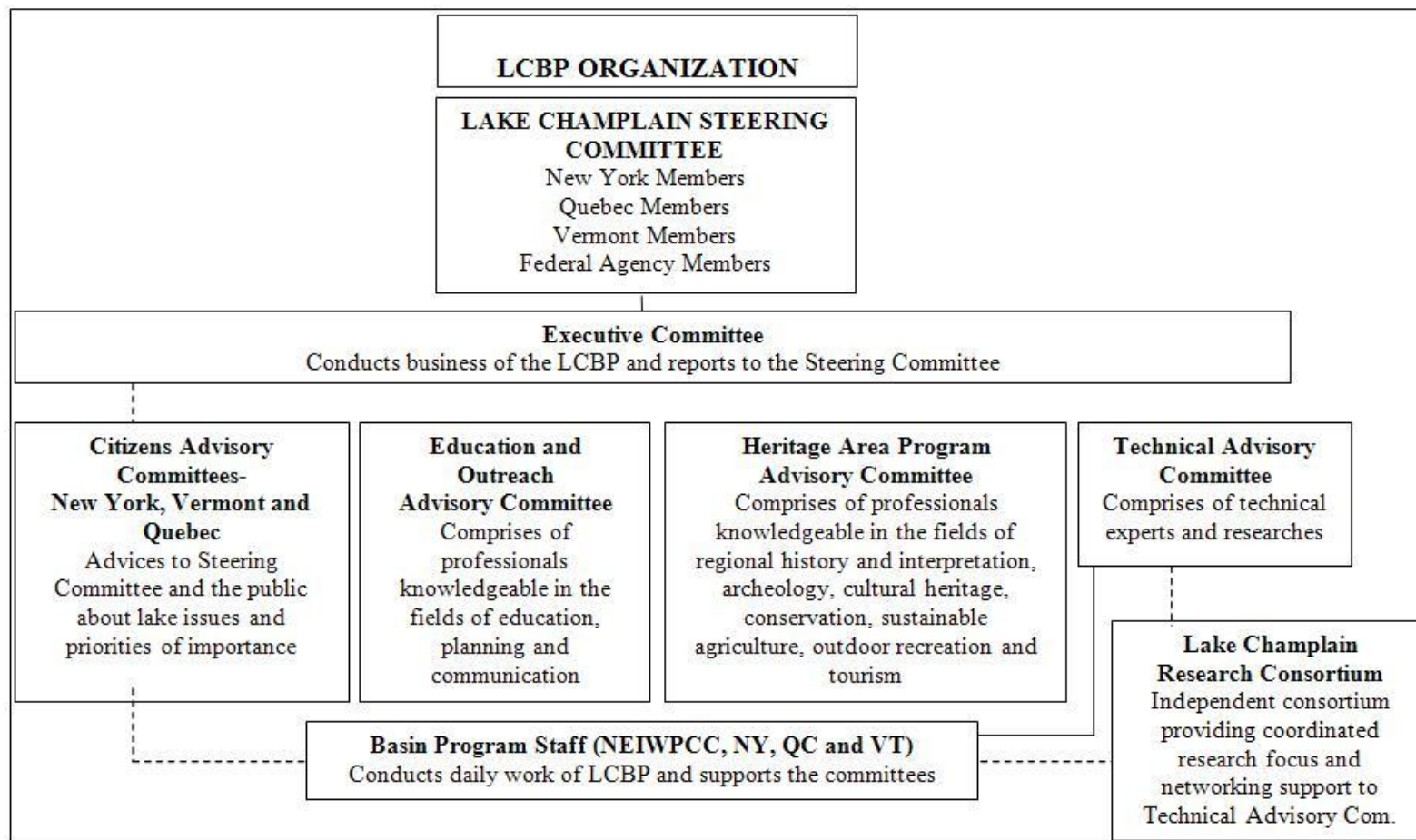


Figure 6. The Role and Structure of LBMP (LCSC, 2010, 18)

The **vision statement** of the Plan is “*a Lake Champlain that supports multiple uses – including commerce, a healthy drinking water supply, wildlife habitat, and recreation, such as swimming, fishing, and boating. These diverse uses will be balanced to minimize stresses on any part of the Lake system.*” (LCSC 2010, 12)

Based on the vision **goals, objectives** and **actions** are identified in the Plan via collaboration of stakeholders. The eight goals are,

1. Increase the involvement of the public and informing
2. Reduction of phosphorus pollution in the Lake
3. Reduction of toxic substances and pathogens
4. Management of fish, wildlife and plants
5. Management of aquatic invasive plants and animals
6. Identification of climate changes effects on the Lake ecosystem
7. Explore of cultural heritage and recreation resources
8. Sustainable economic development in the Basin

III.3.2. LAKE GEORGE BASIN

In the case of Lake George, first of all, in order to include multiple stakeholders, the Lake George Basin Integrated Management Organization (LAGBIMO) has been formed (Musinguzi, Nunan and Scullion 2003, 3). The organization was formed by the three local governments around the lake, and all stakeholders related with fisheries and lake resources. The integrated lake management was defined with three dimensions: 1) inter district 2) inter sectoral and 3) inter stakeholder. These integrations are at national, lake wide/district and community level.

III.3.2.1. General Characteristics of Lake George and LAGBIMO

The Lake George, being one of the five major lakes in Uganda, is in the southwest of Uganda, lies in the western part of the Great Rift Valley. It is a small shallow lake of about 260 km² surface area with an average depth of 2.5 m. The lake is mostly supplied by the rivers arisen in the Rwenzori Mountains. The outlet of the lake is the Kazinga Channel which drains toward Lake Edward (an international lake shared

with Democratic Republic of Congo). In hydrological context, the lake is defined as remarkably stable. Moreover, with a high phytoplankton biomass, the lake is naturally eutrophic (Musinguzi, Nunan and Scullion 2003, 5).



Figure 7. The location of Lake George in Uganda

There is a protected area and a national park in the lake basin and it was designated as a Ramsar site. The site is important with its rich flora and fauna. There are remarkable mammals, wintering Palaearctic water birds and more than 50 fish species (Ramsar 2005, 29). The Queen Elizabeth Protected Area (QEPA), which is under control of the Uganda Wildlife Authority (UWA), covers about 75% of the lakeshore. The Rwenzori National Park is a huge park that locates in the Rwenzori Mountains, and includes Lake George in its area. The protected area and national park cause difficulties in integrated lake management in terms of livelihood strategies and bringing stakeholders together (Musinguzi, Nunan and Scullion 2003, 6).

LAGBIMO aims “to provide a framework for coordination and coherence in the planning and implementation of any form of interventions for the socio-economic development of communities within the basin through the sustainable management of Lake George basin natural resources” (Musinguzi, Nunan and Scullion 2003, 6). The organization is composed of The Lake Wide Assembly (LWA); Executive Committee (EC); Fisheries Management Committee (FMC); Finance, Planning and Budgeting Committee (FPBC); and Secretariat (Musinguzi, Nunan and Scullion 2003, 7).



Figure 9. Queen Elizabeth National Park (http://www.africa-adventure.com/places/queen_elizabeth_national_park, Accessed in May 2011)



Figure 8. Boundaries of Rwenzori National Park (Ramsar 2005, 16)

The objectives of the LAGBIMO are:

- Promotion of poverty eradication; integrated and sustainable management of Lake George Basin to maintain social and economic development of the Lake Basin communities

- To improve management and sustainability; collection, exchange and use of information
- Enhancement of social and economic benefits to all parties especially to the poor
- Encouragement of operational, economic and other partnerships between the groups (central government agencies, local governments, private sector, local communities, civil society organizations) to promote alliances in the management
- Development of a framework for local communities' effective participation
- Establishment of funding mechanisms and finding out financial resources for sustainable management of the lake basin (Musinguzi, Nunan and Scullion 2003, 20)

The following scheme shows the organization structure and contribution of the organs.

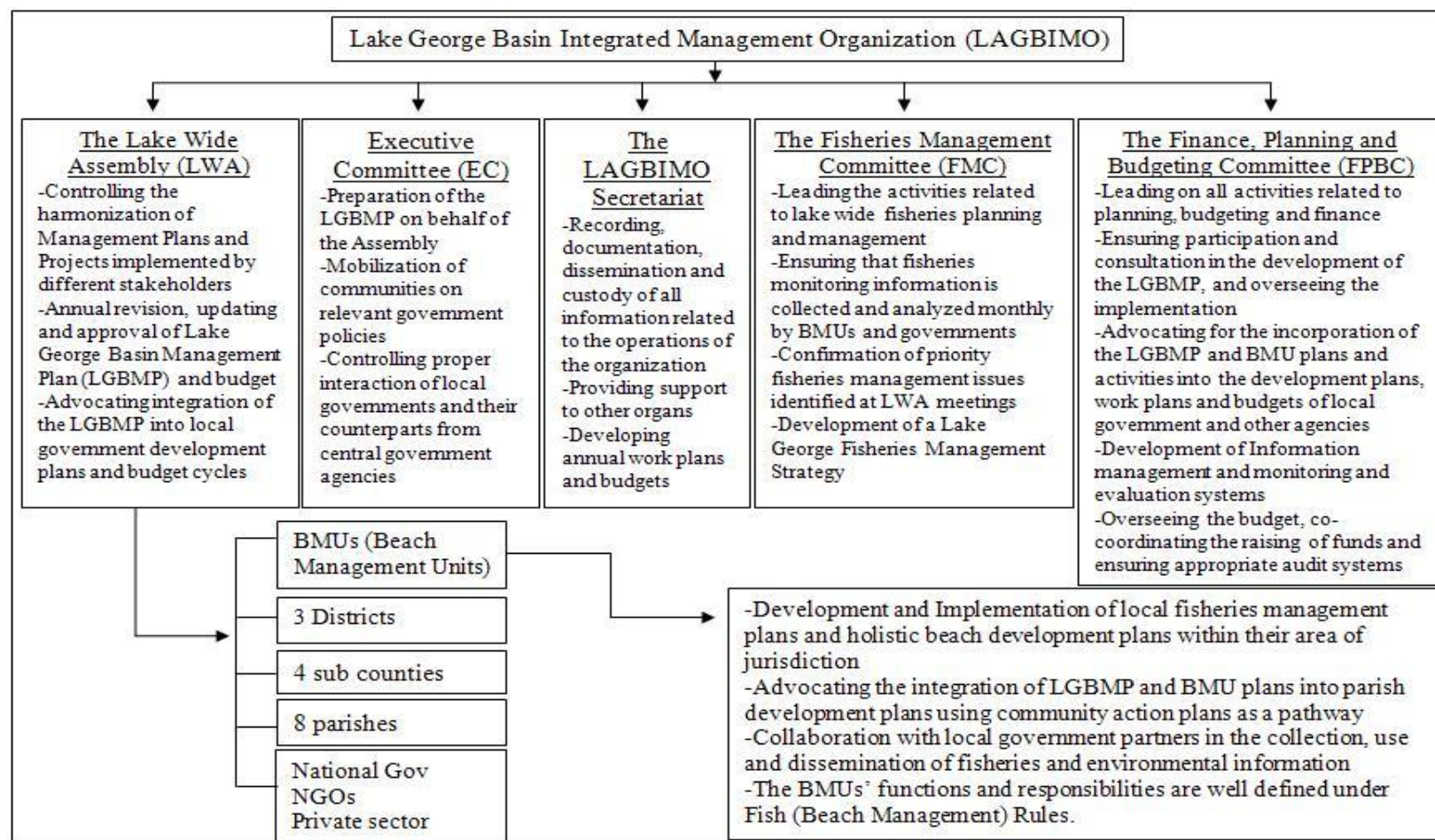


Figure 10.Organization scheme of LAGBIMO

III.3.2.2. Lake George Basin Management Plan

The Lake George Basin Management Plan (LGBMP) was prepared through the participation of LAGBIMO and other partners that have interests and responsibilities for the lake basin. The vision was determined as “*Sustainable management and use of Lake George natural resources for the improved livelihoods of poor communities within the Basin by 2013*” (Musinguzi, Nunan and Scullion 2003, 7). In order to implement this vision, nine outputs were set and activity areas were determined:

1. *Information for participatory and integrated planning at all levels generated, used and disseminated*
2. *Fish resources sustainably used and managed*
3. *Post harvest fishery efficiencies improved*
4. *Livelihood security of lake dependent communities improved*
5. *Equitable access to, and benefits from, natural resources within lake dependent communities*
6. *Sustainably managed environment within the lake and its basin*
7. *Improved capacities of BMU and other LAGBIMO structures to participate in integrated lake planning and management*
8. *Sustainable funding for integrated lake management in place*
9. *Monitoring and evaluation systems at all levels of LAGBIMO development and implemented* (Musinguzi, Nunan and Scullion 2003, 23-24)

According to these outputs the following activity areas were determined:

1. In order to implement an effective planning and management, information at all levels (community, sub-counties, district and lake wide) is needed.
2. Fishing is important in that lake as an economic value so it is essential to maintain and improve productivity for lake dependent communities.
3. The post harvest efficiency is reduced because of inadequate infrastructure and service provision which cause health and livelihoods problems. Therefore, the post harvest fishery efficiency should be improved.

4. To improve livelihood security the activities needed are improvement of education and health facilities; access to saving schemes; supporting those living with the impacts of HIV/AIDS; improvement of housing conditions and increasing opportunity to earn money in fishing.
5. Women, poverty groups and communities living within QEPA have troubles in accessing sufficient natural resources. LAGBIMO is planned to be assist for access agreements between fisheries and QEPA authorities.
6. Soil erosion, pollution from agrochemicals and encroachment into wetlands are basic environmental problems in this basin. It is important to manage these problems in a sustainable manner.
7. The institutional capacity should be improved to develop plans and strategies. The capacity building is planned to sustain by training, regular meetings and activities.
8. The local government, central government, BMUs and equitable taxation are some of the finance resources defined.
9. In reviewing process, monitoring and evaluation plans are needed (Musinguzi, Nunan and Scullion 2003, 23-24).

The implementation process of the plan included many stakeholders and partners. The partnership aimed at “...*integration of issues and actions into the work plans and operational plans of partners, and into local government development plans...*” (Musinguzi, Nunan and Scullion 2003, 7). This is to say that integration of the Lake’s plan into local government planning activities was considered important. The Lake Wide Planning Systems is described in the following diagram.

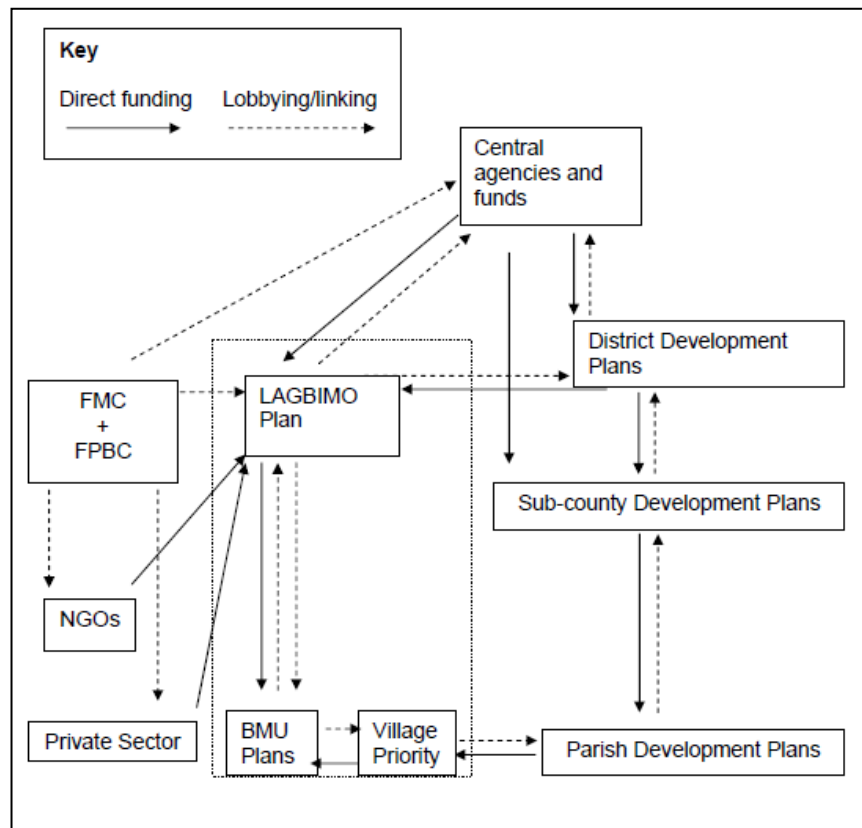


Figure 11. The Lake Wide Planning Systems (Musinguzi, Nunan and Scullion 2003, 10)

LGBMP was aimed to be reviewed annually and revised in a three-year time frame. The finance of the plan was from the Integrated Lake Management project and local governments at district and sub-county levels.

III.3.3. INFERENCES FOR THE BEYŞEHİR (AND OTHER) LAKE BASIN PLANNING

The above examples provide valuable inferences for an efficient lake basin management planning which can be summarized under the following topics:

1. **A strong institutional capacity:** In order to implement the integrated basin management plans, a strong **institutional capacity** is needed.

- There are various institutions with different responsibilities in the Lake Champlain Basin. This is also observed in the Beyşehir Lake Basin because of its cross-border administrative structure. In Lake Champlain Basin, local governments are more responsible for planning and zoning and also for local comprehensive plans based on a watershed planning approach. Regional organizations (i.e the county planning offices in New York and the regional planning commissions in Vermont) try to find out mutual concerns of watershed that cross town boundaries. At the international scale, since the Lake is under the responsibility of two states from US and a province from Canada, it is important to bring them together. In order to achieve efficient implementation of the Plan, a coordinating body was established; namely the Lake Champlain Basin Program (LCBP) that has the role to coordination and implementation of the Plan by bringing cross boundary and multidisciplinary leadership experience. It is the main organization which works with various partners and controls the activities of institutions for attaining environmental integrity, social and economic benefits. Several other international teams were also created between US and Canada to foster collaboration (LCSC 2010, 17-34). Apart from those institutions local residents and visitors; state and provincial agencies; US federal agencies; New England Interstate Water Pollution Control Commission (NEIWPCC); legislative bodies; NGOs; academic institutions and research organizations; international partnerships; and business and industry are also defined as other partners.
- Similarly, in Lake George Basin in order to include various stakeholders to an Integrated Management Organization (LAGBIMO) was established. The LAGBIMO, the strongest institution in management of the Lake, included representatives from communities, districts and sub counties; thus improved partnership of various institutions (Musinguzi, Nunan and Scullion 2003, 11-17).

2. ***An enabling policy-making and legal environment:*** An enabling legal structure is significant in order to sustain institutions' maturation and control allocation of funds. Participants should be informed and included in policy-making.
- In Lake Champlain, to make necessary legislative revisions and prepare the plan for the lake basin, Memorandum of Understanding on Lake Champlain (1988) and the Water Quality Agreement (1993) were signed by New York, Vermont and Quebec. Through the Memorandum of Understanding, the Lake Champlain Steering Committee, being the advisory committee of three jurisdictions, was created (ILEC 2007, 14). With regard to the prepared plan, an agreement between New York and Vermont was signed about daily loading and in-lake concentration nutrient targets. Moreover, Vermont and Quebec agreed upon the joint responsibility for phosphorus reduction on the north of the Lake (ILEC 2005, 86).
 - The main policies pointed Lake George Basin are Poverty Reduction Strategy Papers (PRSPs) and government decentralization. PRSPs are developed to form policy framework for Highly Indebted Poor Countries (HIPC) by International Monetary Fund and the World Bank. PRSPs are used as policy plans for poverty reduction through natural resource management. Moreover, decentralization is proposed to make the management and delivery closer to receiving communities (Musinguzi, Nunan and Scullion 2003, 11-17).
3. ***Awareness raising and participation:*** A participatory and inclusive approach is needed to implement an effective integrated lake management planning.
- An **awareness raising and participatory approach** was pursued in the Lake Champlain Basin. In order to develop and implement the Lake Champlain Basin Management Plan federal, state, and provincial agencies; watershed and conservation groups; heritage and recreation organizations; local, regional and nongovernmental organizations; legislative bodies; academic institutions and research organizations; international organizations; local residents and visitors involved. The report "Opportunities For Action" defined the roles of the partners from New York, Vermont and Québec. To

increase awareness and participation of local groups and students, education workshops to share information about the Basin were organized. There is a Lake Champlain Farm Award for farmers given annually, and long-running series, Champlain Connection, on a TV channel for increasing involvement and information. It is also possible to visit the Resource Room at the ECHO Lake Aquarium and Science Center located at the Leahy Center (a combined museum and science center) for information on the Lake Champlain.

- In Lake George Basin, the full participation is supported by the BMU Statute, where responsibilities of groups (boat owners, crew, fishmongers, women etc.) are defined. LAGBIMO supports community based planning including the involvement of BMUs. Stakeholders need to be aware of ownership and have access to resources. Access to the resource is defined with licenses, permits and registration with a BMU. In 2001, central government decided to give responsibility of distributing boat licenses to district governments. This decision enables involvement of local governments in regulations and increase access of minority groups e.g. women to the resource. This new licensing system and BMUs help to raise awareness about ownership and sharing the resource equitably (Musinguzi, Nunan and Scullion 2003, 11-17).
- 4. *Reliable information and sustainable funding;*** Reliable data in policy making and sustainable funding in implementation process is essential.
- In the Lake Champlain Basin Case, in order to implement the management plan, LCBP developed several projects with respect to **reliable/scientific data and technical models**. For instance, the projects that aim to detect and quickly respond to AIS; to monitor and sample blue-green algae (cyanobacteria) blooms for toxins; to define critical source areas of pollution in the Missisquoi Watershed (a sub basin) were developed by identifying monitoring approaches and locations, potential models and available data for the region (LCBP 2009, 4-7). LCBP develops funding programs. The LCBP has funded significant research and demonstration projects in the Champlain Basin since 1992. (Grants and Requests for Proposals <http://www.lcbp.org/grantrfp.htm>, Accessed in May, 2011). There are various

institutions as financial resources in different fields of the Plan. For instance in federal funding basic institution is United States Environmental Protection Agency. It helps to coordination, technical and outreach activities of the partners. Moreover, the financiers of the Leahy Center are private donors, the federal government and other supporting organizations (ILEC 2005, 86).

- In the Lake George Basin, for an effective planning and management, *information* regarding fisheries is collected by LAGBIMO and BMUs. The *finance* for institutional structures and LAGBIMO operations are obtained from local government and BMU funds. To sustain information and finance, the stakeholders should be fully aware. (Musinguzi, Nunan and Scullion 2003, 11-17)

III.4. PRINCIPLES AND CRITERIA FOR AN EFFICIENT ILBM PLANNING INFERRED FROM THE LITERATURE REVIEWED

Table 5. Principles and Criteria for efficient ILBM Planning

	Principles	Criteria
Planning Process	1. The six pillars of ILBM are needed to be included in planning process: institutions, policies, participation, technology, information and finance	• involvement of stakeholders and institutions, • the use of reliable and timely information, • the assessment and selection of both policies and technological responses to issues, • and the identification of financing options for implementing plans
	2. Planning process should follow eight general steps.	Clarifying goals, Gathering information, Evaluating the alternatives, Making a formal decision, Defining measurable objectives, Implementing, Evaluating the results, Repeating the process.
	3. A dynamic planning process is needed.	Implementation of the plan through time and space. Integration of individual planning efforts with other related plans.
	4. The planning process needs to follow a multiplicity of approaches in harmony with one another.	<u>Participation approach:</u> Involvement of all stakeholders (NGOs, local authorities, business and industrial organizations, advocacy groups, educational and research institutions) via information sharing, policy development and decision-making Awareness of ownership and having access (e.g licenses, permits and registration) to resources by stakeholders <u>Consensus-Based approach:</u> Wide involvement of partners and taking active roles in decision-making and implementation. Collaboration between partners (governments, private sectors and individuals) Resolution of conflicts between competing groups

Table 5 (continued)

Planning Process	4. The planning process needs to follow a multiplicity of approaches in harmony with one another.	<u>Ecosystem-based approach, Lake drainage basin approach:</u> Recognition of the Lake as an interconnected system with its drainage basin. Development of projects according to watershed boundaries. Utilization of water according to natural capacity of the lake ecosystems. <u>Sound science and available information approach:</u> Evaluation of wide range of factors such as socio-economic, political, technological, historical, cultural, physical, chemical and biological ones by current and accurate information in policy development and decision-making. Consulting to experiences and knowledge of lake people <u>Integration of environmental and economic goals approach:</u> Sustainability of both economic development and ecological quality enhancement at the same time. <u>Preventative approach:</u> Removal of the causes of lake degradation before they are formed. Determination of problems initially and prevention before emergence <u>Flexibility approach:</u> Responsiveness of the plans to public needs Adaptability to changes <u>Governance approach:</u> Adoption of participation, equitation, accountability, responsiveness, consensus and transparency approaches in management.
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Table 5 (continued)

Management Plans	5. There are four types of plans that have different purposes, scopes and schemes for lake basins.	Development of vision plans, action plans and intervention plans, comprehensive plans and statutory plans.
	6. All forms of the plans need to have a strategic approach.	Definition of the target clearly and commitment of required resources according to some priority considerations
	7. The lake basin plans should be adaptive.	Sensitivity to monitoring data results and changing social needs and external factors Reviewing and modifying processes
	8. Plans need to be evaluated for its achievements and performance.	Putting the components, resource development, environmental protection and social benefit in an effective way. Evaluating the indicators of stress reduction (decrease of invasive species...etc.), Environmental structure (degradation, loss of resources...etc.) and enabling environment creation for planning
	9. The lake basin plans should correspond to regional and national plans.	Alignment with higher level national and regional plans

CHAPTER IV

INTEGRATED LAKE BASIN MANAGEMENT PLANNING IN TURKEY

IV.1. EVOLUTION OF ILBM PLANNING APPROACH IN TURKEY

IV.1.1. WATER RESOURCES MANAGEMENT IN TURKEY

In Turkey the usage of water resources (for drinking, agriculture, industry, energy, fishery, tourism and recreational purposes) is in the responsibility of the state. Water procurement and conservation activities are performed by various public institutions and organizations. Since these activities are shared among more than one institution; water management has a fragmental structure (Karadağ 2008, 390).

IV.1.1.1. The Problems in Water Resources Management in Turkey

Karadağ (2008) defines the main problems related to water resources management system in Turkey under five main topics (Karadağ 2008, 394-396):

Table 6. Problems in water resources management in Turkey

<i>Boundaries</i>	1. Water resources are managed within administrative boundaries which cause a complicated institutional structure. 2. Water resources are treated as point (lake, river, etc.) sources rather than continuous systems. 3. SHW defines 26 river basins in Turkey, but the sub basins of them are neglected. This leads to independent evaluation of surface, underground and coastal waters from each other.
<i>Institutional Structure</i>	1. In water management various central and provincial institutions assume responsibility. The jurisdictions are not defined clearly, and inter-institutional relationships are insufficient. 2. Water management has a rather complicated and hierarchical structure, which does not give the main responsibility to the local scale.

Table 6 (continued)

	3. There is not enough coordination, cooperation and communication between institutions. 4. Lack of inter-institutional relationship and participatory management cause a fragmented management; slowing down implementation.
<i>Database</i>	1. Institutions, within their jurisdictions, investigate and store data about water resources, but there is not a database for water resources and their basins. 2. There is not an efficient database about water resources both at national and local scale, which prevents development of effective management plans. 3. The evaluation criteria for composing data are different from developed countries.
<i>Monitoring-supervising</i>	1. Insufficient database prevents monitoring. 2. Water quality monitoring points are not constant. 3. Monitoring of water resources as point sources prevents controlling all pollution sources. 4. There are no monitoring activities for non-point pollution sources. 5. Monitoring based on authority and responsibilities of institutions is insufficient.
<i>Policies</i>	1. There are more than 70 laws and regulations regarding water resources which lead to conflicts of competence. 2. The laws do not include articles that are compatible with each other and the main responsibilities are not clearly defined. 3. There are independent laws for surface, underground and coastal water resources, which neglect the continuity and interrelations of water resources. 4. Existing sanctions (punishment of fine, stop work fine, closure penalty) are not discouraging as in international platforms. 6. Policies about water resources are developed according to government objectives. They are short term on the basis of political interests.

The State Hydraulic Works (SHW) is the highest authority for planning, management, development and operation of water resources in Turkey above other related institutions and organizations (Akkaya, Efeoğlu, Yeşil 2006, 200). In recent past, parallel with the international tendencies, the most significant change in terms of legislation and institutional structure is the involvement of natural environment in Water Resources Management. Deficiency in legislation is tried to be filled by “Water

Pollution Control Regulations” and “Environmental Impact Assessment Regulations” based on the Environment Law (no: 2872). However, since there are more than one institution and contradicting laws/regulations about water resources, efficient water management is difficult. For a sustainable water resource use and conservation, it is necessary to integrate the duties/functions of related institutions coherently and concretely (Akkaya, Efeoglu, Yeşil 2006, 200-201).

IV.1.1.2. Basin Management Planning in Turkey

Girgin (2008) explains that the biggest problem in basin planning in Turkey is related to the lack of upper scale plans that combine economic, ecologic, social and cultural issues. Moreover, at the planning stage the problem is the lack of coordination and thus conflicting implementations. According to our legislation, Sub-Regional Land-Use Plans⁵ are the upper scale plans, which were formerly under the responsibility of the Ministry of Environment and Forestry. However with the 644 numbered Statutory Decree, this duty is given to the Ministry of Environment and Urbanism in 2011. These plans have to be based on national and regional planning decisions. However, the lack of regional plans, which would guide the sub-regional land-use plans, reduces the quality of sub-regional land-use plans (Girgin 2008, 379).

In Turkey, various institutions develop different projects at the basin scale. For the region of Zonguldak, Karabük and Bartın, a 1/100 000-Scaled Sub-Regional Land-Use Plans was developed through an integrated basin management model at the basin and regional scale. Meanwhile, the “Yeşilırmak Basin Development Cooperation” was founded by Amasya, Çorum, Samsun, Tokat and Yozgat governorates to prevent pollution and land erosion; organize water regime; and sustain economic, social and cultural development in the region. In addition to that, under the coordination of the former Ministry of Environment and Forestry, “Eastern Anatolia Water Basins Rehabilitation Project” was conducted through the participation of public institutions, local administrations, and with the financial support of World Bank.

⁵ Çevre Düzeni Planı

Non-governmental organizations like WWF, Doğa Derneği are also very actively involved in basin projects (Girgin 2008, 380).

Moreover, basin-based natural resource planning is not mentioned in our legal structure. Natural resource planning is included within urban development legislation⁶; therefore soil, water and air pollution –being major elements of nature– are not adequately considered in planning (Girgin 2008, 381). However, the Statutory Decree of “Organization and Duties of the Ministry of Environment and Urbanism” has included basin and regional level environmental planning, and defined the responsible authority as the mentioned Ministry (Article 7/c).

It should be noted that the concept of basin management planning came into the Turkish agenda via the harmonization process with the Acquis Communautaire of the EU. Turkey as an accession country has to harmonize its legislation with the EU legislation under the coordination of the Ministry of Environment and Urbanism (Çiçek et al.2008, 177). In this context for the application of Water Framework Directive, river basin management planning studies were started.

IV.2. LEGAL FRAMEWORK AND INSTITUTIONAL STRUCTURE

IV.2.1. LEGAL FRAMEWORK

There are various laws and regulations related with water resources, water basins and their management.

1. *State Hydraulic Works Organizational Law*⁷, 1954, (Law no 6200)

General Directorate of State Hydraulic Works (SHW) was established to prevent damages in ground and underground waters and utilize them in various ways (Law No. 6200, Article 1). The institution is mainly responsible for usage, protection and research of ground and underground waters to prevent hazards to those resources and utilize them. Some of the tasks of the institution are 1) building of protected facilities against flooding, 2)

⁶ İmar Mevzuatı

⁷ DSİ Teşkilat Kanunu

establishment of irrigation facilities, 3) drying of the marshes, 4) energy generating from water resources, 5) drinking water and sewerage projects of cities and towns, 6) rehabilitation of rivers, 7) all kinds of etude, projects and construction works related with those jobs, 8) operation, maintenance and repair of the facilities (Law No. 6200, Article 2). SHW is currently occupied with the Ministry of the Ministry of Forestry and Hydraulic Works.

2. **Ground Waters Law**⁸, 1960, (Law no 167)

In that law it is explained that ground waters belong to the State. Usage, investigation, protection and registration of those sources are determined by this law (Law No. 167, Article 1). This law strengthened the authority of the General Directorate of State Hydraulic Works. Digging a pit in a ground water operational area is in the responsibility of the SHW. For ground water etudes and investigations the institution can dig a pit anywhere.

3. **Environmental Law**⁹, 1983, (Law no 2872)

The law aims at conservation of environment; usage of natural resources in appropriate ways in urban and rural areas; prevention of water, air and soil pollution; protection of natural and historical values and development of regulations compatible with economic and social development objectives to improve and secure level of livings of present and future generations (Law No. 2872, Article 1). Precautions and prohibitions have been defined for environmental conservation and penalties have been presented.

4. **Urban Development Law**¹⁰, 1985 (Law no 3194)

This law aims to arrange settlements and constructions suitable with the plan, science, health and environmental conditions. According to the law, the planning levels are Regional Plans, Sub Regional Land Use Plans, Urban Land Use Plans and Implementation Plans.

⁸ Yeraltı Suları Kanunu

⁹ Çevre Kanunu

¹⁰ İmar Kanunu

5. ***Water Pollution Control Regulations***¹¹, 1988

The aim of the regulation is protection of the potential of ground and underground water resources; sustainable use of the sources; and presenting legal and technical principles to prevent water pollution (SKKY, Article 1). The Article 5 of the regulation puts the need for basin plans. In order to utilize water resources in an effective way, a basin plan that shows the usage areas of the resources is essential. Since in our country the freshwater resources are limited, it is important to use those resources effectively. The responsible institutions to prepare basin plans are governorates and Regional Directorate for State Hydraulic Works (Article 5). In 2004, “Basin Conservation Plans” was added to the Regulation. This plan shows a long term conservation program and conservation precautions; and is prepared by General Directorate for State Hydraulic Works and Ministry through having feedback from related institutions. The fourth chapter of the Regulation gives definitions of strict protection zone, short range protection zone, medium-range protection zone and long-range protection zone (Article 17-20).

6. ***Coastal Law***¹², 1990 (Law no. 3621)

The aim of the law is to determine use principles of sea, natural and artificial lakes and river coastal areas regarding natural and cultural characteristics (Article 1). The law covers regulations for coast lines of seas, natural and artificial lakes and rivers; conditions for their utilization for public interest (Article 2). The viable constructions and planning principles are explained for coastal areas. According to the Statutory Decree¹³ numbered 644 (July 4, 2011), the coast line is determined, approved and registered by the Ministry of Environment and Urbanism.

7. ***Protection of Wetlands Regulations***¹⁴, 2005

The Regulation aims at protection and improvement of all wetlands based on the Ramsar Convention; and determination of the rules of collaboration and

¹¹ Su Kirliliği Kontrol Yönetmeliği

¹² Kıyı Kanunu

¹³ Kanun Hükmünde Kararname

¹⁴ Sulak Alanların Korunması Yönetmeliği

coordination between institutions (Article 1). The regulation defines conservation zones and restrictions in those zones. The areas are strict protection zone, wetland zone, ecological impact zone and buffer zone (Article 18-21). The fourth chapter of the regulation explains the announcement of Ramsar areas and management plans. Management plans in Ramsar areas are developed according to “The Ramsar Convention on Wetlands Management Plan Guide”. Related ministries, governorates, local governments, voluntary agencies and scientist participate in the planning process (Article 24-26). In this regulation, the establishments of national and local wetlands commissions are determined.

8. ***Organization and Duties of the Ministry of Forestry and Hydraulic Works Statutory Decree¹⁵, 2011***

This new Statutory Decree is aiming to organize establishment of the Ministry of Forestry and Hydraulic Works, its duties, authority and responsibilities. One of the main duties of the Ministry is determined as development of policies for conservation and use of water resources in a sustainable way; coordination of national water management (Article 1-c). According to that Statutory Decree, a General Directorate of Water Management is organized in the Ministry. The duties of this Directorate are (Article 9);

- a. Determination of policies about conservation, rehabilitation and usage of water resources.
- b. Provision of the water management coordination in national and international levels.
- c. Development of river basin management plans and conducting relevant legislation studies related with an integrated river basin management.

¹⁵ Orman ve Su İşleri Bakanlığının Teşkilat Ve Görevleri Hakkında Kanun Hükmünde Kararname-KHK 645

- d. Determination, evaluation and updating of precautions with related institutions for preventing pollution at the basin level and controlling implementation.
- e. Determination of objectives, principles and standards of the receiving environment with related institutions for conservation of surface and underground water quality and quantity.
- f. Determination of strategy and policies about flood; development of related legislation and flood management plans.
- g. Development of coordination about allocation of water resources on a sectoral basis in accordance with river basin management plans.
- h. Following international conventions related with water resources and processes originated from other legislation; carrying out works about trans-boundary waters.
- i. Development of national water data-base information system.

As mentioned before, the legislation defines Sub-Regional Land Use Plans which follow Regional Plans in the planning hierarchy. However, the Special Provincial Administration Law (no 5302), enacted in 2005, defines another sub-regional land use plan named “Provincial Land-Use Plan”¹⁶. The law states that “Provincial Land Use Plans are developed by greater municipalities in metropolitan cities; and by municipalities and special provincial administrations in other municipalities and provinces in coordination with governorship.” Since the scope, content and scale of those plans are not clear enough in the law, local administrations have been coping with difficulties in preparing and implementing these plans. The emerging conflicts between municipalities, special provincial administrations and the Ministry are aimed to be solved by a Notice (2005, no 2097-23859) published by General Directorate of Environmental Impact Assessment and Planning. It declares that the Sub-Regional Land Use Plans that exactly match the boundaries of provinces are developed by Special Provincial Administrations. Those with larger/smaller boundaries than provincial boundaries are prepared by the Ministry of Environment

¹⁶ İl Çevre Düzeni Planı

and Forestry. Even so, the Notice has not been sufficient to solve authority conflicts, and it did not mention the scale of those plans (Ersoy 2006, 221-225). To sum up, the place of Provincial Land Use Plan is still unclear in the planning hierarchy and it lacks a clear-cut scope and content, which lead to conflicts between related public institutions.

Karadağ (2008) mentions that there are over 70 laws and regulations related to water resources which causes problems in implementation. The articles in the laws are not compatible with each other; the main responsible actors are not well defined; laws about surface, underground and coastal water resources are separated from one another; and the penalties about water resources are not intimidating enough. Therefore, there is an authority contradiction in water management. Inland, coastal and underground waters are handled independently and water resources are supported to be managed in point scale (Karadağ 2008, 395). The basin scale water resources management has started with EU studies at last years and river basin management plans are developing.

Table 7. The Laws and Regulations related with water resources management

Year	Name	Aim	Regulations
1954	State Hydraulic Works Organization al Law (6200)	Establishment of General Directorate of State Hydraulic Works	Determination of the tasks of the institution
1960	Ground Waters Law (167)	Determination of the rules of usage, investigation, protection and registration of ground waters	• To dig a pit in ground water operational area is in the responsibility of SHW. • For ground water etudes and investigations the institution can dig a pit anywhere. • The protection and registration of ground waters are the responsibility of the institution.

Table 7 (continued)

1983	Environmental Law (2872)	• Conservation of environment • Usage of natural resources in proper ways in urban and rural areas • Prevention of water, air and soil pollution • Protection of natural and historical values and development of regulations	• Determination of precautions and prohibitions for environmental conservation and penalties • Development of environmental impact assessment reports
1985	Urban Development Law	• Planning of land uses in settlements and constructions suitable with the plan, science, health and environmental conditions.	• Development of Regional Plans, Development Plans, Land Use Plans and Tentative Plans based on their containing area and aims
1988	Water Pollution Control Regulations	• Protection of the potential of ground and underground water resources • Utilization of the sources with the best way • Presenting of legal and technical principles for determining water pollution control rules to prevent of water pollution compatible with economic and social development.	• Development of basin conservation plans to utilize water resources in an effective way • The responsibility belongs to SHW. • Determination of special protection zones for water resources

Table 7 (continued)

1990	Coastal Law (3621)	Determination of use principles of seas, natural and artificial lakes and river coastal areas regarding natural and cultural characteristics	• Development of principles about opportunities and conditions for utilization as public interest • Definitions of coastline, coast, shore edge line, coastal band and narrow coast areas • Determination construction implementations in those areas.
2003	Organization and Duties of the Ministry of Environment and Forestry Law (4856)	Establishment of the Ministry of Environment and Forestry	• Development of conservation and use plan for water resources • Studies on integrated basin management of water and soil resources
2005	Protection of Wetlands Regulations	• Protection and improvement of all wetlands based on Ramsar Convention • Determination of the rules for collaboration and coordination between institutions	• Determination of conservation zones • Development of management plans based on “The Ramsar Convention on Wetlands Management Plan Guide”
2011	Organization and Duties of the Ministry of Forestry and Hydraulic Works Statutory Decree	Establishment of the Ministry of Forestry and Hydraulic Works	• Development of river basin management plans • Development of legislation for integrated river basin management

IV.2.2. INSTITUTIONAL STRUCTURE

In water resource management, administrative boundaries, land uses and institutional responsibilities are defined by laws. This approach brings a rather complicated and fragmented management structure that involves more than one institution. Karadağ (2008) divides the responsible institutions into two groups; 1) enforcer- investor and 2) observer- controlling institutions (Karadağ, 2008, 390).

Enforcer- Investor Institutions	Observer- Controlling Institutions
• Ministry of Environment And Urbanism (former Ministry of Public Works) • Ministry of Energy and Natural Resources • Ministry of Food, Agriculture And Livestock (former Ministry of Agriculture and Rural Affairs) • Ministry of Internal Affairs • Ministry of Culture And Tourism	• Ministry of Forestry and Hydraulic Works (former Ministry of Environment and Forestry) • Ministry of Health • Ministry of Food, Agriculture And Livestock (former Ministry of Agriculture and Rural Affairs) • Ministry of Development (former State Planning Organization)

Table 8. The institutions responsible for water resource management (Karadağ 2008, 390)

IV.2.2.1. Enforcer- Investor Institutions

- **Ministry of Environment and Urbanism:** The water related duties of the Ministry are
 - a. Determination of procedures and principles about development of Master plans and Sub-Regional Land-Use Plans, including basin and regional environmental plans, in every type and every scale; develop, to be developed, approve, ensure the implementation and monitoring of these plans (Article 7/c).
 - b. Providing the development of sectoral plans as compatible with spatial strategy plans and environmental plans at basin or regional level (Article 7/ç).
 - c. Development and approval of integrated coastal zone management and planning activities, operations for organization of the coastal areas with geological and geotechnical etudes; determination, approval and registration of coast line (Article 7/ı).

d. Determination of objectives, principles and pollutants for conservation of surface and underground waters, seas and soil; determination of the principles and procedures about prevention and control of pollution; development of emergency intervention plans (Article 8/ğ).

- **Ministry of Energy and Natural Resources:** Planning, management, development and operating surface and underground water resources; producing energy from water resources; identifying and evaluating geothermal water resources are the main duties of the Ministry regarding water resources (Karadağ, 2008, 392). The General Directorate of Electric Power Resources Survey and Development Administration, as an affiliate institution, makes etudes to detect suitable water resources for generating electric energy; makes hydrological etudes and geotechnical researches; makes preliminary surveys, master plans, feasibility and engineering services on final design stages of dams and hydroelectric plants.
(Ministry of Energy and Natural Resources, 2010, http://www.enerji.gov.tr/yayinlar_raporlar/Mavi_Kitap_2010.pdf, Accessed in September, 2011)
- **Ministry of Internal Affairs:** The institution applies water legislation at the local government scale. Special Provincial Administrations, as an affiliate institution, provide drinking water and sewerage services to settlements less than 30.000 population (TUBİTAK 2010, 14). Furthermore, municipalities, villages and unions have authorities on conservation of water resources and environmental quality (Karadağ 2008, 392).
- **Ministry of Culture and Tourism:** In touristic regions searching of water resources for energy generation is the responsibility of the Ministry rather than Electric Power Resources Survey and Development Administration. (<http://www.orsam.org.tr/tr/SuKaynaklari>, Accessed in September, 2011)

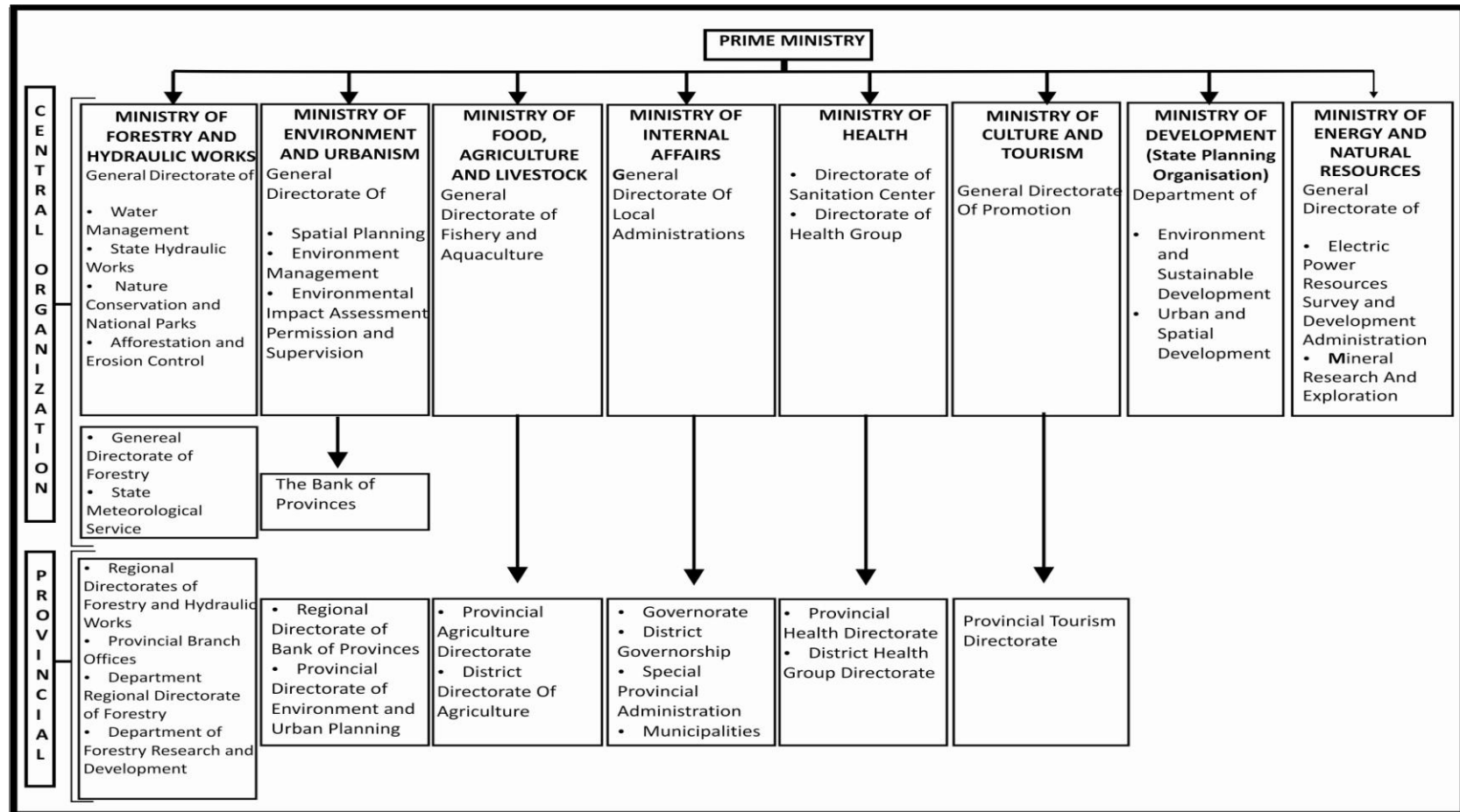
IV.2.2.2. Observer- Controller Institutions

- **Ministry of Forestry and Hydraulic Works:** The main duties of the Ministry about water management are conservation of water resources; prevention of pollutions and taking necessary precautions; usage and development of water resources in an efficient way; development of Sub-Regional Land-Use Plans based on ecologic plans and development objectives; determination of suitable technologies for environmental conservation; elimination and control of hazardous wastes; determination of conservation- usage principles based on land use frame; and development of national and international activities, principles and policies about these subjects (Karadağ 2008, 392).
- **Ministry of Food, Agriculture and Livestock:** The main duties of the Ministry are including improvement of animal and fisheries productions; conservation of soil, water resources and biodiversity (Article 2). Moreover, the duties of the General Directorate of Fishery and Aquaculture, connected to this Ministry, are containing development of sustainable fishery and water production in seas and inland waters; development, conservation and increase productivity of fishery and water product resources (Article 10).
- **Ministry of Health:** The institution makes regulations and controls related facilities to supply water in required drinking quality. It controls the qualities of drinking water, mineral water and thermal water; and implements and observes drinking water legislations (TUBİTAK 2010, 14).
- **Ministry of Development (former State Planning Organization):** The institution is responsible for general planning of water resources and pollution control investments. It prepares and presents annual and five-year programs to government for developing water resources and wastewater treatment plants; and prepares investment programs.

Karadağ (2008) points to the multiplicity of institutions that have responsibilities for water resources management, which leads to conflicts among them. The responsibilities of the institutions are not clearly separated from one another, and the

hierarchical relations among them are very complicated. The main authority at the local scale is not defined. Moreover, there is not enough cooperation, collaboration and communication between the institutions. Lack of institutional relationship causes a fragmented management slowing down operations and a participatory management is not implemented (Karadağ 2008, 394). The below table shows the complexity of hierarchical structure of water-related institutions;

Table 9. Institutional structure regarding the water resources management (derived upon the work of Karadağ 2008, 392)



IV.3. WATER FRAMEWORK DIRECTIVE

Evolution of water policies within the European Union can be analyzed in three waves. First wave focuses on “Environmental Quality Standards” and “Emission Limits Values” between the years 1975-1980. The second wave (1980-1995) composes of the enactments of Urban Waste Water Directive, Nitrates Directive, Integrated Pollution Prevention and Control Directive, and Drinking Water Directive. The third wave (from 1995 to present) emphasizes a necessity of fundamental handling. The Water Framework Directive (WFD) was enacted in 2000 to meet this necessity. Main aim of the WFD is good water quality. In order to achieve this quality, a new and integrated approach is adopted. The Directive creates a single legal framework in European water policy. Main concepts of the Directive are ***river basin planning, ‘river region’ approach, integrated water management***, prevention of pollution caused by hazardous substances, public information, consultation, ecologic quality, sustainable water resources, economic analysis, financial tools and costs (Çiçek et al.2008, 172).

The main principles of WFD are as follow (Akkaya, Efeoğlu, Yeşil 2006, 198);

1. Fair pricing of water: In order to meet costs of water services, making payments by polluters is the principle of the directive.
2. Sustainable water usage: in order to provide enough water for future generations and keep water in high quality the implementation of the Directive properly is needed.
3. International Cooperation and the New Water Association: In order to manage river basins a close cooperation of stakeholders and a common River Basin Management Plan is needed.
4. Water is everyone's subject: Cooperation of both all different countries and all actors from different sectors is needed.
5. Water is a vulnerable resource: The water is affecting from various activities so objectives for conservation of underground waters, rivers, lakes and coastal waters are put.

One of the important achievements of the WFD is the “*Integrated River Basin Management*”, which composes of

- An approach based on watershed
- Observing waters in different types and forms
- Watching land and water resources relations
- Integration of natural limitations, social and economic needs, politic and administrative processes (Grontmij 2004, 8)

Accordingly, accession countries should define their river basins and compose “River Basin Regions”. Those regions should be defined by geographical and hydrological conditions instead of administrative and political boundaries. This implies the need for cross-border collaboration. The river basins that are in the responsibility of different countries should be evaluated as “international river basin regions”. A coordinating authority is needed for the management and planning activities in such basins (Çiçek et al.2008, 173).

WFD developed a method that integrates water resources management with ecologic aims and River Basin Management Plans are chosen as the tool for implementation. In this direction, 26 river basins (which are grouped in 6 river basin regions) were identified for Turkey within the MATRA project (Coşkun 2010, 45).

IV.3.1. MATRA PROJECT

Under the umbrella of the WFD, the MATRA project (officially named as “Application of WFD in Turkey”) was conducted between the years 2002-2003 via the financial support from the Dutch government (Çiçek et al.2008, 177). One of the main aims of the project is to ease and accelerate cooperation between responsible institutions/organizations for integrated and participatory water management planning in Turkey. The project has three steps; 1) harmonization studies related with “2000/60/EC Water Framework Directive”, 2) river basin management studies in a pilot project area, and 3) implementation studies in the pilot region chosen as Büyük Menderes River Basin (Çiçek 2007, 34-35).

According to the Application Handbook of the Project, the necessary regulations for Turkey to meet EU necessities should cover the following issues (Grontmij 2004, 11);

- Coordination and cooperation between public institutions
- Transferring of authorities and responsibilities to regional scale (River Basin Regions)
- Integrated water management focusing water masses and users
- Information sharing and distribution
- Consultancy of public opinion and stakeholder participation
- Economic motivations and precautions

As mentioned before, in this project the 26 river basin of Turkey are grouped in 6 river basin regions. The action plans for those basins are to be completed and then the management plans for the basins are to be developed. The 6 river basin regions are (Grontmij 2004, 15):

1. Basins flowing into Marmara Sea: Marmara and Susurluk
2. Basins flowing into Black Sea: Western Black Sea, Kızılırmak, Yeşilırmak, Eastern Black Sea
3. Basins flowing into Mediterranean Sea: Ceyhan, Seyhan, Eastern Mediterranean, Western Mediterranean, Antalya
4. International Basins:
 - a. Basins flowing into Syria, Iraq, Iran, Georgia and Armenia: Asi, Fırat, Dicle, Aras, Çoruh;
 - b. Basins flowing into Germany: Meriç-Ergene
5. Basins flowing into Aegean Sea: Büyük Menderes, Küçük Menderes, Gediz, North Aegean
6. Closed Basins: Burdur, Göller, Konya Closed and Van Closed basins



Figure 12. River Basin Regions in Turkey (Grontmij 2004)

The project pointed to the need of handling management duties at the regional scale for an efficient integrated water management. With this approach, instead of establishment of a new organization covering all water issues of Turkey, the project aimed to enhance coordination and cooperation between existing institutions. Regional platforms or river basin study groups were considered as the most useful milieus to attain this aim.

A River Basin Study Group (RBSG) was composed for the pilot study area Büyük Menderes Basin. The group was composed by participation of whole institutions and organizations related with water (Grontmij 2004, 14-16). The Büyük Menderes Basin RBSG followed the stages of 1) stakeholder analysis, 2) development of a protocol to determine objectives, participants and their contributions, operating procedures of RBSG, 3) composing of different sub groups in special subjects, 4) ways for public participation (Grontmij 2004, 16-18).

To sum up, in Turkey, there are various problems in water resources management. Most of them are caused by the deficiencies in water legislation which lead to conflicts in management, inefficient evaluations of resources, not obtaining an efficient planning and management approach. However, there are also significant steps taken towards sustainable water resource management. The MATRA project taught how WFD and a basin management planning can be implemented in Turkey. As far as lake management is concerned, there are not specifically defined planning and management approaches for lake basins.

IV.4. EXAMPLES FROM TURKEY WITH LESSONS LEARNED

As the examples of Lake Management Planning in Turkey, Uluabat Lake and Eğirdir Lake Management Plans are analyzed. Uluabat Lake is chosen because it is the first example of Watershed Management Plan in Turkey and first planning study that assumed a participatory approach. Meanwhile, Eğirdir Lake is chosen because it is both located in a similar geography with Beyşehir Lake, and has witnessed a successful application of a conflict-free participatory planning process.

IV.4.1. ULUABAT LAKE, BURSA

The Uluabat Lake Management Plan that is the first participatory plan in Turkey was developed by the cooperation of WWF Turkey and the former Ministry of Environment and Forestry in 1998-2002. The planning process was conducted by the Uluabat Lake Steering Committee that assembled regularly in Bursa Provincial Department of Environment And Forestry. In order to solve problems in the region, the area was considered as a part of the Susurluk river basin. The Uluabat Lake Management Plan was approved by National Wetland Commission in 2002. The plan was awarded as "Good Practice and Successful Case" at Living Lakes Conference since it was implemented 80% within three years (Uluabat (Apolyont) Gölü <http://dogader.org/index.php/bilgi/28-uluabat-apolyont-golu>, Accessed in October, 2011). The Plan was aimed to pioneer to the planning activities in other Ramsar sites in Turkey (Çevik 2004, 3).

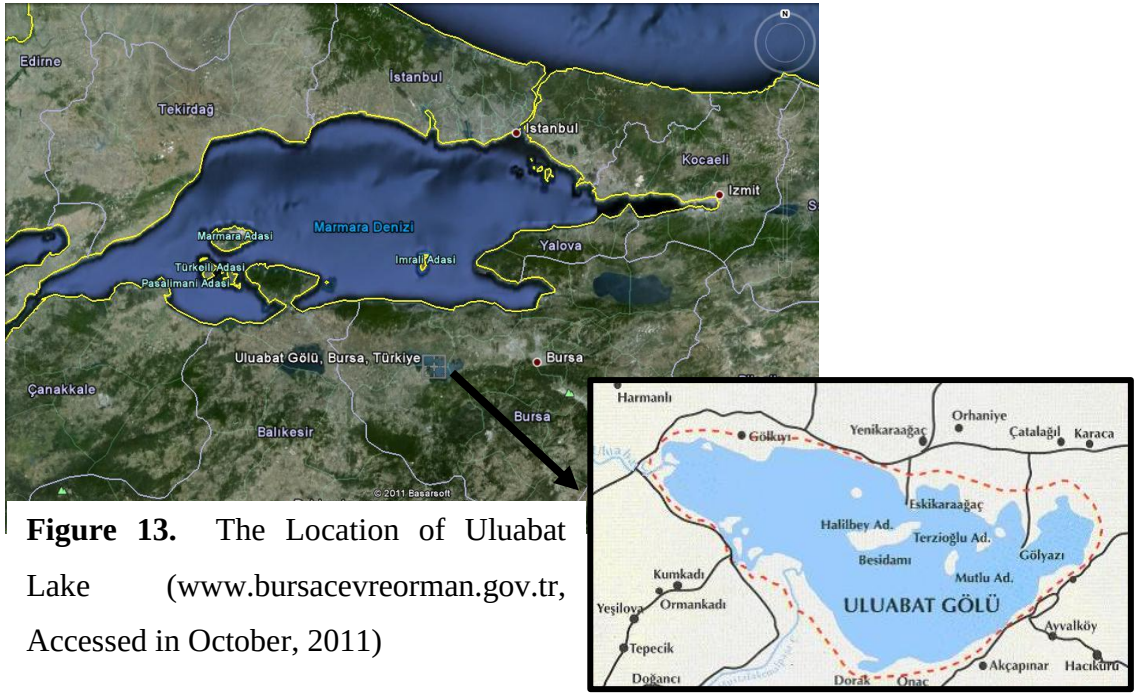


Figure 13. The Location of Uluabat Lake (www.bursacevreorman.gov.tr, Accessed in October, 2011)

IV.4.1.1. General Characteristics of Uluabat Lake

Uluabat Lake, a 13.500 ha freshwater lake, is located in the south of Marmara Sea and 30 km west of Bursa province. On the west coast of the lake, there are fertile plains up to Manyas. There are nine islands in the Lake. The most important river supplying the Lake is the runlet of Mustafakemalpaşa. The Uluabat Lake is a shallow water resource with the average depth of approximately 2.5 meter. There are 17 settlements near the Lake the livelihood of which depends on fishery, agriculture and husbandry (Uluabat (Apolyont) Gölü , <http://dogader.org/index.php/bilgi/28-uluabat-apolyont-golu>, Accessed in October, 2011).

Uluabat Lake is one of the 12 wetlands of Turkey protected by Ramsar Convention that aims at “Protection of wetlands that have international importance in terms of water birds”). Besides being protected by Ramsar, Uluabat Lake has also “Living Lake” appellation, a status owned only by 38 lakes in the world. The Lake is also rich with plankton and benthos and has approximately 21 different fish species (Uluabat (Apolyont) Gölü, <http://dogader.org/index.php/bilgi/28-uluabat-apolyont-golu>, Accessed in October, 2011).

Nevertheless, the lake faced the following problems:

- Waste water caused by uncontrolled industrial and domestic discharges and agricultural chemicals generate pollution.
- Exterior species decrease the number of other living things in the lake.
- Agricultural activities cause reclamation of land on shoreline developments.
- Uncontrolled hunting threatens the biodiversity.
- Tree cutting and burning destroy the habitat of species and increase the risk of erosion.
- Unplanned and uncontrolled irrigation affect on the hydrology of the lake negatively.
- Expansion of industrial activities around the Lake causes pollution problems.

(Çevik 2004, 1; Uluabat (Apolyont) Gölü, <http://dogader.org/index.php/bilgi/28-uluabat-apolyont-golu>, Accessed in October, 2011)

IV.4.1.2. Uluabat Lake Integrated Management Plan

A project to develop an Integrated Management Plan for Uluabat Lake was led by the former Ministry of Environment and Forestry together with the Society for the Protection of Nature (Doğal Hayatı Koruma Derneği) in 1998. Society for the Protection of Nature started the project, and later it was taken over by WWF-Turkey (Çevik 2004, 1-2). The Management Plan was developed and applied according to the Ramsar Convention Management Plan Guide.

The **aim of the project** was to bring all stakeholders together such as central and provincial administrations, farmers, fishermen, industrialists, NGOs and hunters; and to develop a Management Plan based on Ramsar principles (Uluabat (Apolyont) Gölü, <http://dogader.org/index.php/bilgi/28-uluabat-apolyont-golu>, Accessed in October, 2011). Through the development and implementation of an integrated management plan, it was aimed to reverse the threats on the Lake. Accordingly, preliminary meetings were arranged to determine primary problems, activities for

solutions and responsible institutions and individuals for executing those activities. These meetings witnessed a very high participation.

Moreover, ecology, hydrology, biodiversity, stakeholder analysis and socio-economic structure of the lake region were analyzed. For socio economic analysis public meetings with local people were held by WWF Turkey. The feedback from local groups was shared with the other stakeholders. WWF Turkey, together with the former Ministry of Environment and Forestry, also organized a “Management Planning Training Course for Wetlands” in Bursa (Çevik 2004, 2).

The main **objectives** were determined as follows (Çevik 2004, 3):

1. To control pollution in Uluabat Lake
2. To ensure sustainable fishery at Uluabat Lake
3. To ensure wise use of the lake’s natural resources
4. To enrich the wildlife of Uluabat Lake

After approval of the plan in 2002, 52 **activities** were started by various stakeholders. The Management Plan and activities would be assessed annually in the Management Plan Revision Meetings. First meeting was organized in 2004 by the former Ministry of Environment and Forestry, WWF-Turkey and the Steering Committee (Çevik 2004, 3). Uluabat Lake Stork Friendly Villages Project (Uluabat Gölü Leylek Dostu Köyler Projesi) was introduced as one of the most successful activities among the 52 activities. In this activity, in cooperation with TEDAŞ, open electric power transmission lines were converted to cable lines. In the new lampposts 57 stork nests were established. Moreover ULUKUŞ (Uludağ Üniversitesi Kuş Gözlem Topluğu), local bird watching group was founded with the support of WWF Turkey.

IV.4. 2.EGIRDİR LAKE, ISPARTA

Eğirdir Lake Management Planning was pioneered by the Isparta Provincial Department of Environment and Forestry and Isparta Governorate. WWF Turkey made contributions to the implementation process and started the project of “Yedi Renkli Gölü Yedi Renkli Hayat” for decreasing pollution, sustainable fishery,

development of new income sources and enhancement of natural resource use and management capacity in the region (Eğirdir Gölü, <http://www.wwf.org.tr/page.php?ID=11>, Accessed in October, 2011).

IV.4.2.1. General Characteristics of Eğirdir Lake

Eğirdir Lake, second big water resource of Turkey, is located in the boundaries of the Isparta Province and the Lakes Region (Göller Bölgesi). The Lake has the conservation statuses of the Important Bird Site, Drinking and Service Water Protection Area and Natural Protected Area. The total population around lake is approximately 80.000. The Lake, besides being used as drinking water, is also used for fishery, agriculture and tourism activities (Eğirdir Gölü, <http://www.wwf.org.tr/page.php?ID=11>, Accessed in October, 2011).

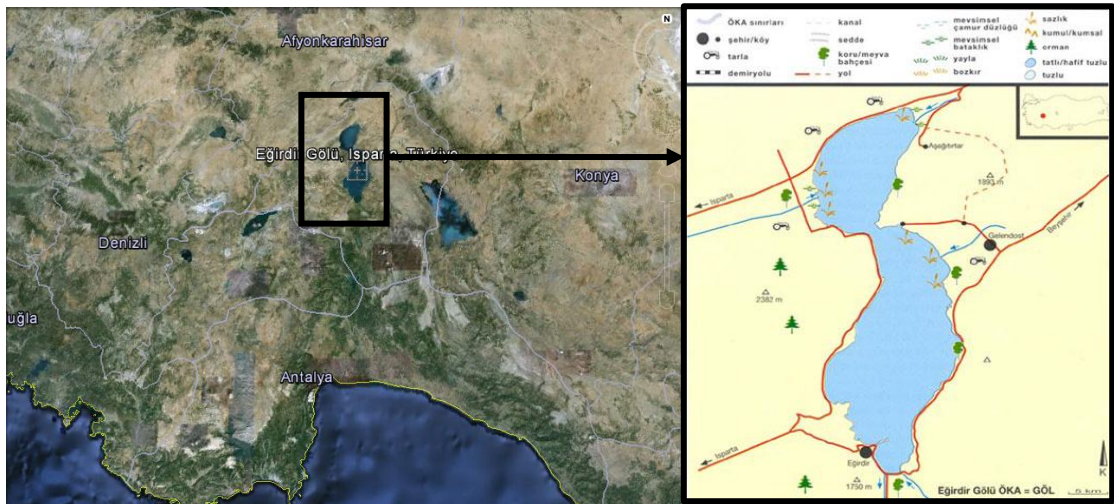


Figure 14. The location of Eğirdir Lake
(www.kultur.gov.tr, Accessed in October, 2011).

The problems/threats of the Lake are;

- The Lake is experiencing decline in water quality and serious pollutions because of agricultural, industrial and domestic wastes
- The agricultural wastes are the main pollution source. Additionally excessive and unconscious use of medicine and artificial fertilizers in agriculture;

disposal of empty boxes to the environment; agricultural pollution as a result of washing drug tools and equipments are causing serious pollution.

- Wastes of some districts and some industries around lake are disposed to the Lake without adequate treatment.
- Water level is declining because of excessive amount of water pumping for irrigation and drinking water supply.
- Some fish species are becoming extinct because of over-fishing, destruction of breeding grounds and illegal fishing.

(Eğirdir Gölü, <http://www.wwf.org.tr/page.php?ID=11>, Accessed in October, 2011)

IV.4.2.2. Eğirdir Lake Management Plan (2008-2012)

Eğirdir Lake Management Planning process was started in 2006. The Plan, covering 2008-2012 time periods, was approved unanimously by the National Wetlands Committee with the participation of high-level representatives from the former Ministry of Environment and Forestry and related institutions (Ministry of Agriculture, Ministry of Tourism, and General Directorate of SHW, University and NGOs) in March, 2008 (Isparta Provincial Directorate of Environment and Forestry, Eğirdir Göl Yönetim Planı, <http://www.ispartacevreorman.gov.tr/metinler/yerelsulakalan.htm>, Accessed in October, 2011).

The Eğirdir Lake Management Planning aimed at decreasing or removing the pollutants like solid and liquid wastes disposed to the Lake; unconscious agricultural disinfection; over fishing (Korkmaz et al.2009, 4). The plan had six objectives. Based on them 13 Activity Objectives, and 49 activities were determined. Moreover, the responsible actors, time periods, methods and the consultant actors for each activity were determined. The six **Objectives**, 13 **Activity Objectives** and responsible actors of the Plan are shown in the following table.

Based on the Management Plan, the “Eğirdir Lake Basin Conservation Plan and Special Principles Project” was completed in 2011. The Project described a strict protection zone; short-range, medium-range, long-range conservation zones.

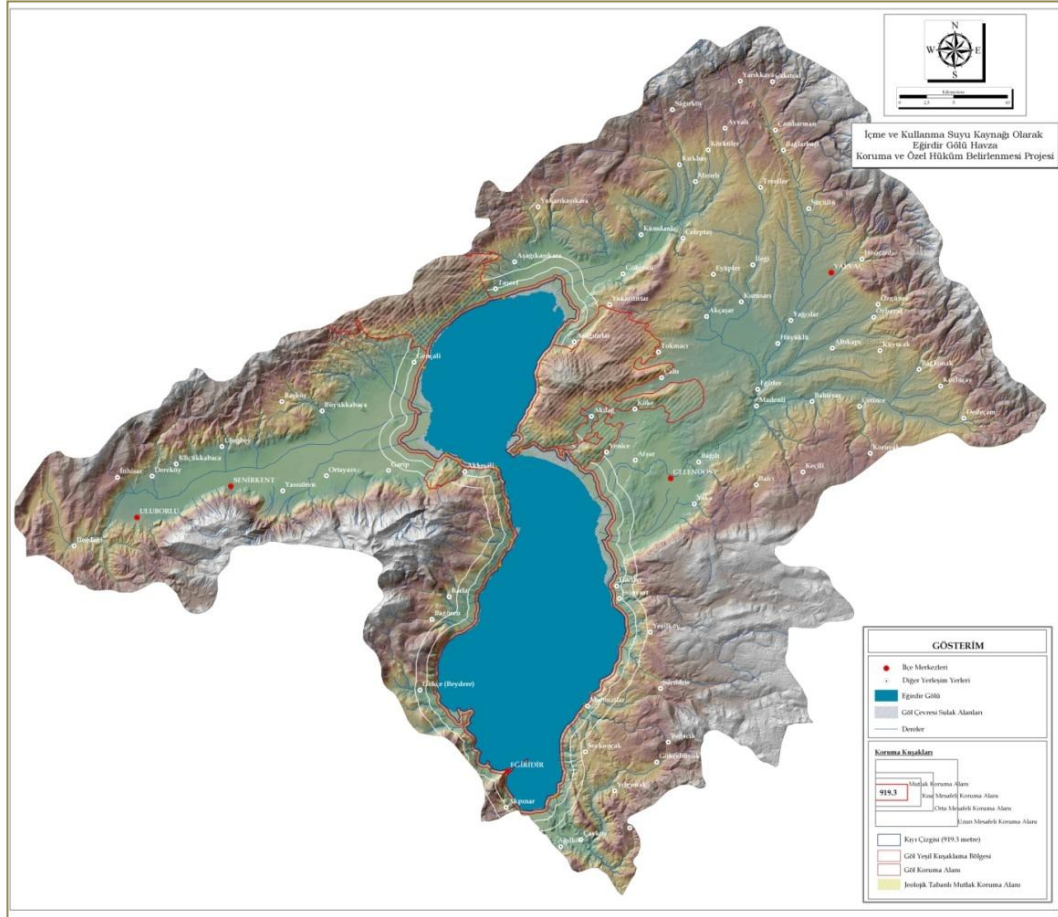


Figure 15. Eğirdir Lake Basin Conservation Plan and Special Principles Project

Table 10. Eğirdir Lake Management Plan Objectives, Activities and Actors Involved

Objectives	Activities	Responsible Institutions/Actors
1. Decline of pollution in the Lake	1.1. Decline the usage of pesticides and fertilizers by 25% until 2012 and monitor data during 5 years. 1.2. Decline the ratio of untreated domestic waste water by 50% until 2012 and monitor water quality during 5 years. 1.3. Regulate and control storage and transportation operations in 81 settlements around the lake until 2012. 1.4. Determine the amount of sediment carried by surface waters feeding the lake until 2010 and reduce it by 25% until 2012. 1.5. Increase natural water circulation where water circulation is low in Eğirdir lake. 1.6. Prevent of illegal constructions and reduce unplanned urbanization by 50% until 2012.	• Provincial Agriculture Directorate • 18th Regional Directorate of SHW • District Directorates of Agriculture (Eğirdir, Senirkent, Gelendost and Yalvaç) • Eğirdir Aquaculture Faculty of Süleyman Demirel Uni. • Environmental Engineer Department of Süleyman Demirel Uni. • Eğirdir Fishery Research Institute • Special Provincial Directorate • District Governorates of Eğirdir, Senirkent, Gelendost and Yalvaç • Certification Bodies • Garden Culture Research Center (Bahçe Kùltürleri Araştırma Merkezi) • Irrigation Unions • Provincial Department Of Environment And Forestry • EKOBİR (Waste Water Commission, Water Commission) • Municipalities • Provincial and District Directorates Of Health • Gendarmerie • Regional Directorate Of Forestry • General Directorate Of Railways, Harbors And Airports Construction (DLH) • Studying Group of Eğirdir Lake Management Plan

Table 10 (continued)

2. Ensure the sustainability of fisheries in the lake	2.1. Decrease the stock of carp and crayfish in 3 times until 2012.	• Ministry Of Agriculture • Fishery Cooperatives • EKOBİR • Provincial Agriculture Directorate • Eğirdir Aquaculture Faculty of SDÜ • Provincial Department Of Environment And Forestry • Special Provincial Administration • Eğirdir Aquaculture Research Institute
3. Ensure sustainability of tourism activities around the lake in the form of eco-tourism (Nature tourism, Agro tourism and Religious tourism)	3.1. Double the number of people benefiting from eco-tourism activities around the lake.	• Provincial Department Of Environment And Forestry • Natural Association • Bird Research Association • Biology Department of SDÜ • Provincial Culture And Tourism Directorate • Provincial Directorate Of Youth And Sports • Oğuzhan ÖZALTIN (Academic Member at SDÜ) • Provincial Agriculture Directorate • WWF
4. Ensure the sustainability of agriculture (fruit growing and animal husbandry) around the lake at the optimum conditions	4.1. Transition to modern irrigation methods throughout the whole agricultural lands around the lake.	• 18th Regional Directorate of DSİ • Special Provincial Administration • Provincial Agriculture Directorate • District Governorates of Eğirdir, Senirkent, Gelendost and Yalvaç • WWF

Table 10 (continued)

5. Ensure the sustainability of wildlife and the forest ecosystem around the lake	5.1. Increase reed cat and the bird population around the lake by 50% until 2012. 5.2. Begin studies for improvement of potential forest areas around the lake and degraded forest areas within a plan by 25% until 2012.	• Provincial Department Of Environment And Forestry • Provincial Agriculture Directorate • Forestry Faculty of SDÜ • Natural Association • SDÜ Bird-Watching Community (ORKUŞ) • Ecology and Nature Observation Community • Regional Directorate Of Forestry
6. Information sharing about Lake basin	6.1. Ensure monitoring of the Management Plan during the five years. 6.2. Develop training courses about the Management Plan	• All organizations involved in Management Plan • EKOBİR (Executive Committee) • Provincial Department Of Environment And Forestry • Directorate Of Nature Conservation And National Parks • Regional Directorate Of Forestry • WWF

IV.4.3. INFERENCES FROM THE TURKISH PRACTISES

The examples elaborated above prove the significance of the six pillars of ILBM planning:

A participatory approach:

- Özesmi describes the Uluabat Lake Management Plan as a successful project in terms of *participation*. Since the Lake does not have any conservation status except for Ramsar, there are not much jurisdiction conflicts. For a successful participatory method, many meetings with stakeholders were organized, they were introduced to each other, and a trustable environment was provided. In 2000, a course for wetland management for stakeholders was organized and the management plan process and the project were explained. A stakeholder analysis by using cognitive modeling was developed. Meetings with all stakeholders like Provincial Department of Environment, Local Agenda 21, Uludağ University and headmen. In those meetings the problems of the stakeholders were discussed and tried to involve them to the process actively. After development of draft plan meetings were organized with involvement of all stakeholders to develop solutions. Moreover in these meetings the responsibilities of different groups were determined. According to that meetings last management plan drafts were finished and main objectives were defined. In short, in the development and implementation process a participatory approach is used and stakeholders internalize this Plan as their own plans (Özesmi 2003).
- In Eğirdir Lake, a planning team was constituted by the Isparta Provincial Department of Environment and Forestry to ensure participation of related organizations. In order to determine methods for planning, the Planning Team organized awareness raising meetings that pointed to the importance, problems and solutions of Eğirdir Lake at national and local levels. Then, focus groups (water products manufacturers, farmers, local administrators) were composed and meetings with them were arranged. In order to share

experiences and have opinions of interest groups, a workshop (Eğirdir Gölü Yönetim Planı Çalıştayı) and a congress (Göller Kongresi) were organized. A roadmap was constituted in these successive meetings for both planning and implementation processes. In order to achieve efficient participation of local people, awareness raising meetings were organized with administrators of settlements, representatives having activities on fishery, husbandry, tourism and agriculture; representatives from related public institutions and organizations; and with the general public (Korkmaz et al.2009, 4-5). The participatory approach started in the planning process was aimed to be sustained in the implementation process as well.

Institutional capacity building and institutional connectedness

- To reach a strong institutional connectedness, a local steering committee was established in 2003 in Bursa. The duties of Uluabat Lake Steering Committee are monitoring management plan activities; sharing of knowledge and progress between all participants; disseminating the outputs of the plan; monitoring the field and taking action; and maintaining information for annual “Revision Meetings” (Çevik 2004, 3).
- In order to improve institutional connectedness to prevent authority conflicts and possible inconveniences in planning and implementation processes, the Eğirdir and Kovada Lake Environment Protection Union (EKOBİR- Eğirdir ve Kovada Gölü Çevre Koruma Birliği) was founded. The main duty of this Union was to sustain coordination between institutions and organizations (Korkmaz et al.2009, 5). Eğirdir Lake Management Plan would be executed by the Union and continuation of the Study Group as a Monitoring Group under EKOBİR for following the progressions was agreed. At the same time, EKOBİR would be the project coordinator of the whole projects demanded by the European Union and the Ministry of Environment and Forestry. (Isparta Provincial Directorate of Environment and Forestry, Eğirdir Göl Yönetim Planı,, <http://www.ispartacevreorman.gov.tr/metinler/yerelsulakalan.htm>, Accessed in October, 2011)

Enabling policies

- In order to develop effective **policies** against problems and threats of the lake, the protocol of “*Uluabat Lake and Settlements Conservation and Economic Development Cooperation (Uluabat Gölü ve Yerleşimleri Koruma ve Ekonomik Gelişim İşbirliği Protokolü)*” was signed by stakeholders. The Uluabat Lake was incorporated in the Living Lakes network. Moreover for policy decisions and development of a draft plan Society for the Protection of Nature, WWF, Ministry of Environment and Forestry and local public institutions conducted meetings (Özesmi 2003).

Adequate information, technology and funding

- At the first step, **information** about the area is gathered by the support of British Foreign and Commonwealth Office. In order to compose detailed data platform, beside existing data water quality, hydrology, limnology, landuse changes with satellite images, water products and ecologic structure of the Lake is searched by **technological** instruments. The Uluabat Lake Management Plan Project was started by Ministry of Environment and Society for the Protection of Nature, **funding** by Holland Agriculture Attache (Özesmi 2003).
- To attain adequate **information**, a large scale research was conducted to determine socio-economic structure, perceptions and expectations of people living at the settlements around the Eğirdir Lake. The methodology included documentation analysis, observation, questionnaires, structured and semi-structured interviews. The information gathered at this stage was shared with local people. The information was synthesized according to the feedback of local stakeholders within participatory meetings (Korkmaz, Alkan and Altunbağ, 5). The **finance** needed for the Plan was met by the Isparta Special Provincial Administration (Korkmaz, Alkan and Altunbağ, 5).

CHAPTER V

EVALUATION OF THE BEYŞEHİR LAKE BASIN PLANNING IN THE CONTEXT OF ILBM PLANNING APPROACH

V.1. AIM

The present chapter elaborates the profile of the Beyşehir Lake Basin, and questions the applicability of ILBM Planning there. With this aim, this chapter is to handle

- the existing structure of Beyşehir Lake Basin together with its problems that need to be considered in an ILBM Planning process
- the deficiencies of previous planning studies and their assessment with respect to the ILBM criteria (that have been analyzed in Chapter III.4)
- the collaborative capacity of the stakeholders to effectively develop an ILBM planning process in the Beyşehir Lake Basin

V.2. RESEARCH DESIGN

This study adopts the Case Study Research as the research method. Case Study is preferred when a) “how” or “why” questions are being posed, b) the investigator has little control over events, and c) the focus is on a contemporary phenomenon within a real-life context (Yin 2009, 2). The case study method allows investigators to retain the holistic and meaningful characteristics of real life events-such as individual life cycles, small group behavior, organizational and *managerial processes*, neighborhood changes, school performance, international relations and the maturation of industries (Yin 2009, 4).

The Case Study Method has been chosen because the research focuses on the questions “Why ILBM is needed in lake basin management planning in the Beyşehir Lake Basin?” and “How could this approach be applied in the Beyşehir Lake Basin Planning?”. Moreover, ILBM is a contemporary phenomenon within a real-life context and the investigator has no control over events. By the Case Study Method the holistic and meaningful characteristics of ILBM planning process can be analyzed.

Yin (2009, 46) explains that the case study can be designed with single or multiple-case studies with two variants as holistic (single unit of analysis) and embedded (multiple unit of analysis). Accordingly in this study, an *embedded single case study* is followed. Yin (2009, 47) defines five major reasons to conduct a single case study. One of them is when it represents the critical case in testing a well-formulated theory. In this study ILBM Planning as a well formulated theory in lake basins will be analyzed in the case of Beyşehir Lake. Beyşehir Lake has been chosen as a critical case since;

- It falls within the administrative boundaries of more than one settlement (two provinces and five district municipalities), which implies the obligation of a strong cooperation,
- It is the largest freshwater resource in Turkey, and is threatened to lose its natural characteristics,
- It is the source of livelihood for the majority of people living in the area,
- It has been handled in various development plans; but it does not have an encompassing management plan.

V.2.1. RESEARCH QUESTIONS

The research questions are two-fold: The first group elaborates the collaborative capacity of the stakeholders of the Beyşehir Lake Basin; while the second group analyzes the past plans produced for the Basin with respect to the ILBM criteria discussed in the previous chapters.

Questions Related To the Past Planning Studies;

- What plans have been produced so far for the Beyşehir Lake Basin? Do they meet the criteria of ILBM Planning?
- How the existing profile in the Beyşehir Lake Basin is suitable with ILBM Planning?

Questions Related To the Collaboration among Stakeholders;

- What is the profile of stakeholders of the Beyşehir Lake Basin? (awareness level on Lake's problems, action-taking towards solving these problems)
- What are the crucial roles of actors/stakeholders in an ILBM Planning process? What roles did the stakeholders of the Beyşehir Lake Basin play so far in the past planning studies?
- What kind of collaboration is needed between stakeholders in order to effectively implement an ILBM? Does the current legislative structure allow collaboration?

V.2.2. UNITS OF ANALYSIS

Units of Analysis are the events or entities to be studied in the framework of research questions such as individuals, groups, organizations, decisions, plans, implementation process and organizational change (Yin 1987, 31). The two units of analysis of this study are;

1. **Previous planning** activities regarding the Beyşehir Lake

Since the study aims at understanding the compatibility of the previous plans with ILBM criteria, the past plans for the Beyşehir Lake Basin are to be analyzed based on the criteria defined at the Chapter III.4.

2. The **stakeholders** having various authorities on the Beyşehir Lake; public institutions, national/local NGOs, local university, local professional chambers, private institution, international institution.

In order to understand the capability and eagerness of stakeholders for taking over an ILBM Planning in the Beyşehir Lake Basin, the actors involved in basin planning were analyzed. The decision-making institutions (national/regional/local public institutions) and decision-supporting institutions (national and local NGOs, international institutions, private institutions, professional chambers and the local university) constituted the units of analysis. A questionnaire was applied to stakeholders to find out their roles regarding the Beyşehir Lake, present collaboration between them, their awareness on the problems of the Lake Basin, and priorities in an ILBM planning.

V.2.3.FIELD SURVEY

V.2.3.1.Data Sources

The data were gathered through an elaboration of related literature, documents, plan reports, plans, maps on the Beyşehir Lake Basin and the questionnaires conducted with the mentioned stakeholders. The written and visual material was useful in understanding the profile of the Beyşehir Lake, surrounding settlements and previous planning studies. Meanwhile, the questionnaire method helped to find out the activities of decision-making and decision-supporting institutions in the region; and to what extent they are capable and willing to take part in a collaborative planning process –a must in an ILBM planning process. The questionnaire was applied to the representatives of 38 institutions; including 26 public institutions, 5 NGOs (4 national and 1 international), 1 research center, 4 professional chambers, 1 private institution, 1 international institution. The representative capacity of the respondents was paid attention; thus the questionnaire was applied to managers/vise-managers, planners, technical staff of the institutions.

V.2.3.2. The Obstacles Met In The Field Survey

The main problem was to find someone related with the conservation and management of the Beyşehir Lake Basin in institutions. In central Konya there is only General Directorate of Environment and Forestry that have studies on the subject. The General Directorate emphasized that there were various studies on Beyşehir Lake and the study can be successful only if a different point of view is developed. The Chamber of City Planners mentioned that they can only give technical support (plans, maps...etc.). Moreover, the surrounding districts are pointed that they do not have any studies since they are away from the Lake. Most of the institutions address the Beyşehir Municipality as having studies on the Basin. However, the planner at the Municipality mostly gave touristic information rather than environmental problems. Similar to Konya, in Isparta they pointed that only 10% of the Beyşehir Lake is in the boundaries of the city so there is not any studies for the Lake and they mainly concentrate on Eğirdir Lake.

V.3.FINDING OF THE SURVEY AND ANALYSIS

V.3.1. ILBM PLANNING FOR THE BEYŞEHİR LAKE BASIN

V.3.1.1. Overview on the Basin

V.3.1.1.1. Geographic and Geomorphologic Features of the Basin

Beyşehir Lake which is the third largest lake and biggest freshwater lake of Turkey is in the “Lakes District (Göller Bölgesi)” (**Figure 16**). Beyşehir Lake Basin that is approximately 414.000 ha, locates on the south west of Konya Closed Basin. The Lake is a tectonic lake, formed by the northwest southeast direction fault lines between Sultan and Anamas Mountains (Hoşafcıoğlu 2007, 13). Beyşehir Lake Basin composes of two different geographical regions, namely Central Anatolia Region with Konya province boundary and Mediterranean Region with Isparta province boundary. The basin is bounded by Dedegöl-Anamas Mountains on the west; the heights sequel Sultandağları on the northeast; and Erenkilit and Kızılören

Mountains on the east. The altitude is 1121m and the surface area of the Lake is 68.893 ha (**Figure 17**).

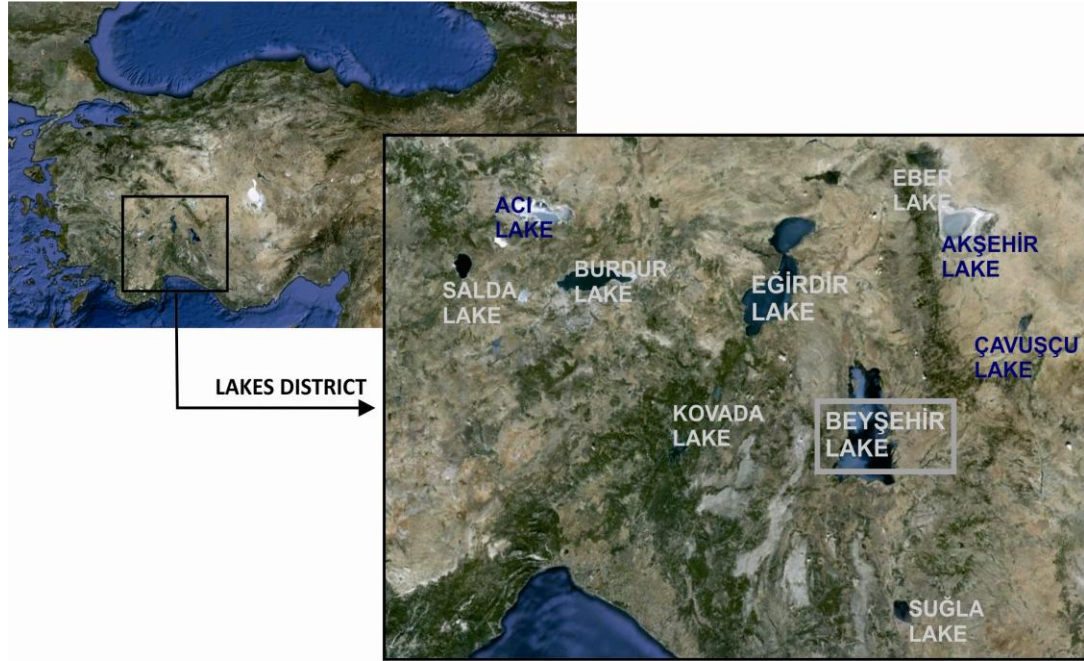


Figure 16. Location of the Beyşehir Lake and Lakes District

Around the lake Mediterranean climate and away from the lake in the mountainous area continental climate are seen. Lake is linked to other water masses by a large number of swallow holes. The barrier that separates the Beyşehir Lake from the Konya Closed Basin is Erenler Mountain which is a volcanic formation. There is a three folded carstic drainage system determining the feed and drainage of the lake. The lake is fed by 26 running waters, 45 spring waters and underground water (Mıhladı and Kaya 2003, 4).

There are approximately 33 islands on the lake, and this number can change according to water level. The main islands, which consist of various historical, environmental, touristic and archeological values, are Mana Island (Kazak), Hacı Akif Island, İğdeli Island, Orta Island, Kes Islands, Aygır Island, Kızıl Island, Çeçen Island, Gölkaşı Island, Eşek Island, Akburun Island, Kirse Island, Kız Kulesi, Höyük Island, Mindıras Island and Kül Island (www.beysehir.bel.tr, Accessed in November, 2011).

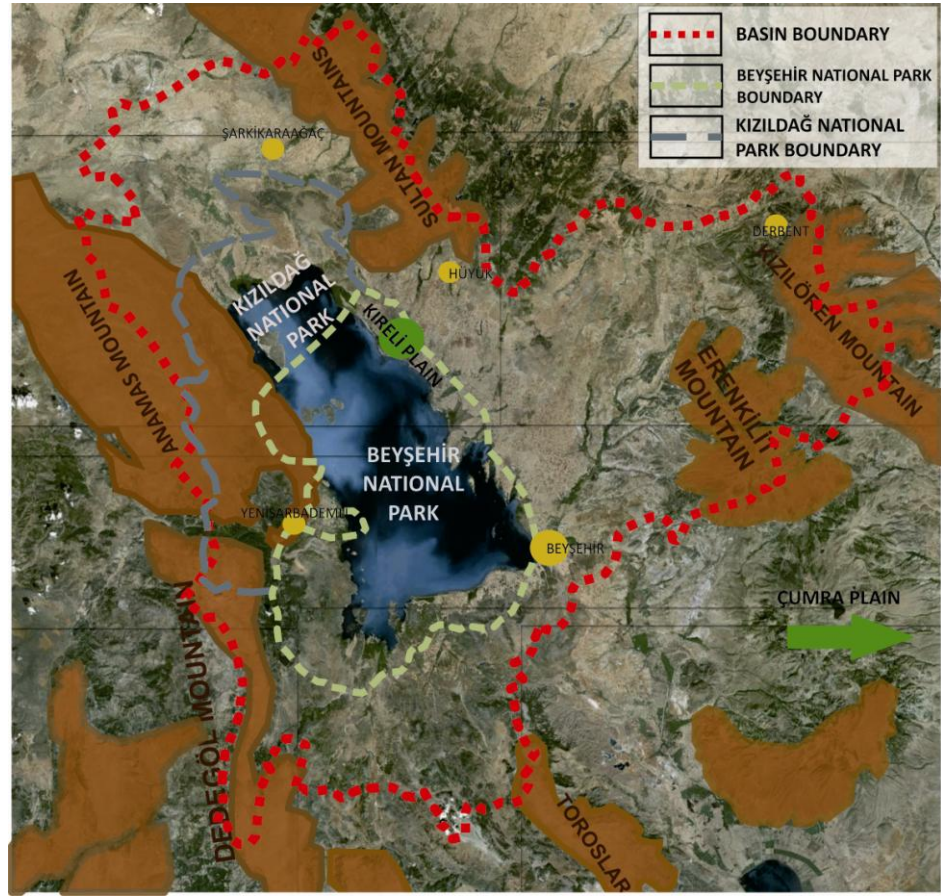


Figure 17. General view of the Beyşehir Lake Basin

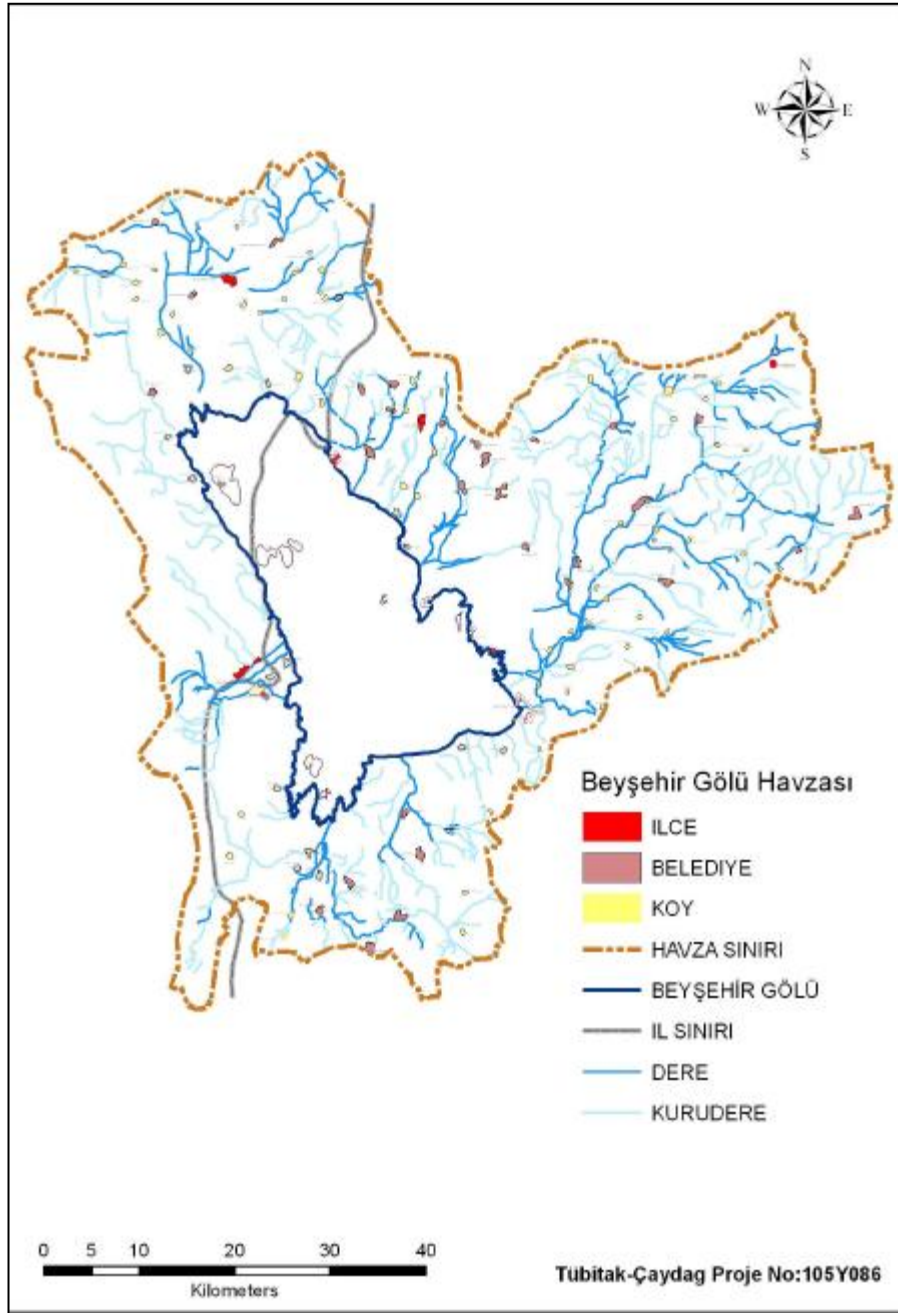


Figure 18. A map of Beyşehir Lake Basin (Nas et al. 2008,7)

V.3.1.1.2. Ecological Characteristics of the Basin

Beyşehir basin is important with its natural features. It accommodates national parks, a special bird site¹⁷, a special plant site¹⁸ and a natural protected site. The lake area was declared as a 1st degree natural protected site in 1991 by the Cultural and Natural Heritage Conservation Board; and WWF defined the area as a special bird site and a special plant site. In 1993 the region was identified with the names of two national parks. The national park at the Isparta part is called the Kızıldağ National Park, and the one at the Konya part is called the Beyşehir National Park (Figure 9). With regard to the Water Pollution Control Regulations, the Lake has the status of a reservoir for drinking water. The ecological qualities of the Beyşehir Lake Basin are recognized as internationally significant based on the Ramsar Agreement (Nas et al. 2008, 2).

Moreover, the Lake is under conservation as a drinking and utility water conservation zone¹⁹. The natural attraction sites and beaches around the lake make the area a tourist destination. Besides its natural beauties, the Beyşehir Lake is an income generating source for people. Fishing is one of the most significant economic activities in this area. Although fishing is frequent in areas close to shore, agriculture and stockbreeding is also common in interior areas. The lake is important for agricultural activities in the region, since it is used for irrigation of Isparta, Kireli and Çumra plains. In other words, it is the main livelihood source of a huge region accommodating nearly 150.000 people.

V.3.1.1.3. Administrative Structure

Beyşehir basin area is in the boundaries of two provinces; namely Konya and Isparta. There are five district centers in the basin which are Şarkikaraağaç, Yenişarbademli, Hüyük, Derbent and Beyşehir. Beyşehir, Hüyük, Derbent, are in the Konya Province, while Yenişarbademli and Şarkikaraağaç are in the Isparta Province. There are 78

¹⁷ Özel Kuş Alanı (ÖKA)

¹⁸ Özel Bitki Alanı

¹⁹ İçme ve kullanma suyu koruma sahası

villages bounded to these districts. Additionally, parts of some other district centers (Meram, Derebucak, Sütçüler and Aksu) are also included in the basin boundary. Table 11 portrays the profiles of the districts in the Basin.



Figure 19. Beyşehir Lake Basin Administrative Structure

Table 11. Five districts in the Beyşehir Lake Basin and their general characteristics

Districts and Populations	Municipal Units and Villages	Location	Main Economic Activity	Main Problems	Potentials
Şarkikaraağaç 27.367 total population in 2010 (9.849 in center, 17.518 in villages)	3 mun. units - Çarıkisaraylar -Çiçekpınar -Göksöğüt 25 villages	Located on the road of Isparta-Konya, on the north of Beyşehir Lake and Yenişarbademli, and on the north east of Hüyük.	•Main economic activities are • agriculture • husbandry • fishing in the villages located around the Beyşehir Lake •Although withered agriculture is dominant, after completion of Şarkikaraağaç Irrigation Project, a shift to irrigated farming started. Via this project, new fruit gardens were developed; and transition from traditional product (sugar beet) to industrial and fodder crops (alfalfa) was started. •In the villages by the Beyşehir Lake, aquaculture production is performed.	•Due to a variety of reasons, migration to big cities and foreign countries is common and population is decreasing. •Because of diminishing fish population, the number of fishermen is also decreasing.	•The district has a public education center and evening art school; a vocational high school of Süleyman Demirel University; and public libraries in each boroughs. •The district center is 5 km far from Kızıldağ National Park • Pınar Gözü is an attractive tourism place. • The project that development of a public beach near Beyşehir Lake in Karakaya village is proposed to the Ministry of Culture And Tourism.
Yenişarbademli 2.499 total population in 2010 (2.136 in center and 363 in villages)	4 mun. units -Yenicami, -Gündoğdu, -Yenice -Pınarbaşı 1 village (Gölkonak)	Located on the north of Beyşehir, south of Şarkikaraağaç and west side of Beyşehir Lake.	•Main economic activities are • agriculture • husbandry, • industry • trade	As a result of outward migration the population is decreasing rapidly.	•There are attractive tourism places; Pınargözü Cave, Kubad-ı Abad (settlement from the Anatolian Seljuk Sultanate), Dedegül Mountains, Karagöl, Kız Kalesi Island and Malanda plateau which is located between Beyşehir and Kızıldağ National Parks.

Table 11 (continued)

			•With the Toprak-Su irrigation project (1967) irrigated farming became common and in most of the cultivated lands irrigated farming has been applied. •In husbandry stock farming, milk dairying and apiculture is commonly seen.		•There is an elementary school, a high school, a public education center and a vocational high school of Süleyman Demirel University.
Hüyük 19.075 total population in 2010 (15.645 in center and 3.430 in villages)	10 mun. units -Burunsuz, -Çamlıca, -Çavuş, -Göçeri, -İlmen, -İmrenler, -Kireli, -Köşk, -Mutlu -Selki 9 villages	Located on the north of Beyşehir county, north east of Beyşehir Lake, and on the south of Şarkikarağaç	•Main economic activities are • agriculture • husbandry •Chickpea is the most seen product; and vegetable gardening and fruit growing are also common. •In husbandry, bovine breeding and sheep & goat farming are seen.		•There are thermal facilities in Köşk and Çavuş as important touristic values.
Derbent 5.262 total population in 2010 (2.767 in center and 2.495 in villages)	1 mun. unit -Çiftliközü 6 villages	Located on the west of Selcuklu, north east of Beyşehir and north of Meram.	•Main economic activities are • agriculture and • husbandry • Most of the people are going as agricultural workers to other places in beet season.	•Since the district is located on a mountainous and rugged terrain its economy is weak and urbanization level is low. •The economic structure is weak in the county because of unproductive and barren lands and not making irrigated farming. •The county gives outward migration because there are not enough employment areas, no industry and merely irrigated farming.	

Table 11 (continued)

Beyşehir The most populous district with a total population of 70.397 in 2010 (33.895 in center and 36.502 in villages)	11 mun. units -Emen, -Akçabelen, -Esence, -Üstünler, -Sevindik, -Yenidoğan, -Adaköy, -Huğlu, -Sadıkhacı, -Kayabaşı -Kurucova 37 villages	Located on the west of Konya, south east of Eğirdir, north of Derebucak, south of Şarkikaraağaç and Hüyük, east of Yenişarbademli.	•Main economic activities are • agriculture and • husbandry •According to fertility and size of lands the two activities are changing in the villages. •In the boroughs addition to these activities fishery, tourism, trade, industry and service are seen. •In the Huğlu main activity is gun production. •In the settlement located near the Lake, the fertility in agricultural land is high and revenue gaining from agriculture is higher. •Climbing and trekking; speleological tourism and paragliding are promoted as touristic activities.	•In the district road, water, communication and education infrastructures are nearly completed and migration is not in high levels. •There are 2 preschools, 11 elementary schools, 9 high schools and a vocational high school of Süleyman Demirel University.
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V.3.1.1.4. Socio Economic Structure

Demographic background

According to Address-Based Population Registration System (2010), 124.600 people live in the Beyşehir Lake Basin Area in total. The shares of female and male populations are approximately the same. With regard to provinces, 46.903 people live in Konya (Beyşehir, Hüyük, Derbent) and 29.866 live in Isparta (Şarkikaraağaç, Yenişarbademli). Beyşehir is the most populated district with a population of 70.397.

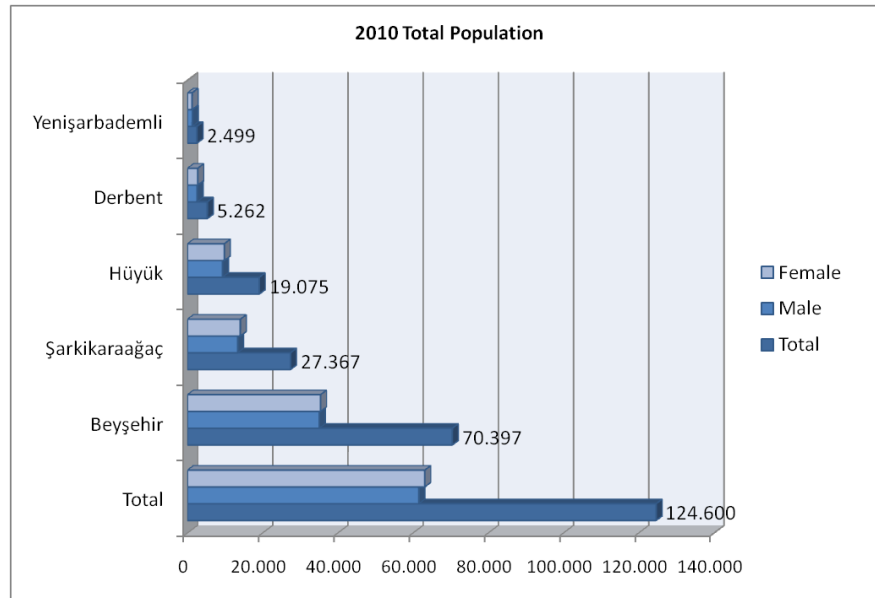


Figure 20. Total population of Beyşehir Lake Basin in 2010 (www.tuik.gov.tr, Accessed in November, 2011)

The population is mostly concentrated in villages. While 58,2 % of the total population lives in villages, 41,8% of the population is in the town centers (www.tuik.gov.tr, Accessed in November, 2011).

The following graphic displays that the total population was 196,195 in 1990, however, it decreased to 124,600 in 2010. Between 1990 and 2000 the rate of total population increase is approximately 28%; and between 2000 and 2010 it decreases nearly 50%.

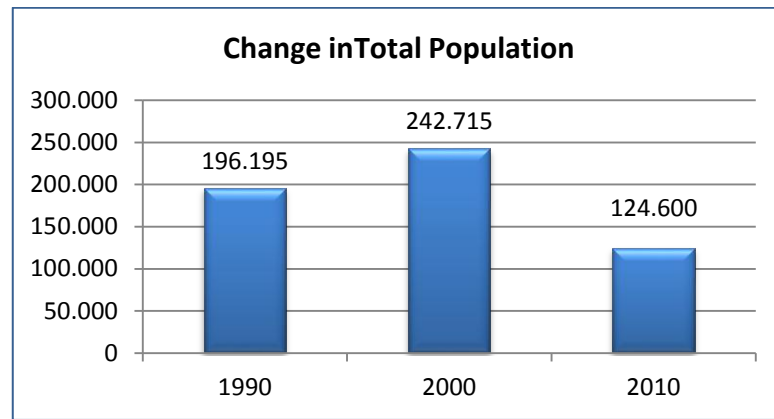


Figure 21. Change in total population between 1990, 2000 and 2010

When the population changes are examined according to the districts, it is seen that in general there is a decrease between 2000 and 2010.

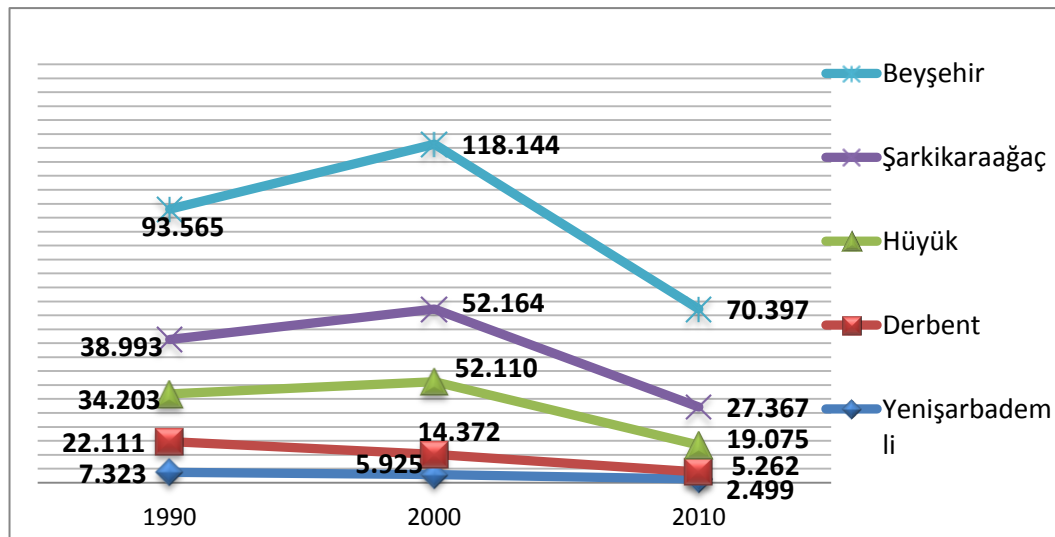


Figure 22. Population changes in districts between 1990, 2000 and 2010

The population decrease is mostly observed within the rural population. The rural population mostly migrates to metropolitan cities such as İzmir, Antalya and İstanbul and abroad. The remaining people living in rural areas are mostly retired, or they returned from abroad. The decreasing population in rural area makes it hard to sustain economic activities like agriculture, husbandry, grapery, etc (Mihladız and Kaya 2003, 5-6).

Table 12. Population of the districts based on Address-Based Population Registration System, 2010 (www.tuik.gov.tr, Accessed in November, 2011)

Population 2010		Districts			Villages			Total		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Konya	Hüyük	3.430	1.697	1.733	15.645	7.603	8.042	19.075	9.300	9.775
	Derbent	2.767	1.364	1.403	2.495	1.197	1.298	5.262	2.561	2.701
	Beyşehir	33.895	16.882	17.013	36.502	18.160	18.342	70.397	35.042	35.355
	Total	40.092	19.943	20.149	54.642	26.960	27.682	94.734	46.903	47.831
Isparta	Şarkikaraağaç	9.849	4.720	5.129	17.518	8.618	8.900	27.367	13.338	14.029
	Yenişarbademli	2.136	1.107	1.029	363	180	183	2.499	1.287	1.212
	Total	11.985	5.827	6.158	17.881	8.798	9.083	29.866	14.625	15.241
General Total		52.077	25.770	26.307	72.523	35.758	36.765	124.600	61.528	63.072

Table 13. Population changes in the districts between the years 1990, 2000 and 2010 (www.tuik.gov.tr, Accessed in November, 2011)

Population Changes	Districts			Villages			Total			% Changes	
	1990	2000	2010	1990	2000	2010	1990	2000	2010	1990-2000	2000-2010
Beyşehir	30.412	41.312	33.895	63.153	76.832	36.502	93.565	118.144	70.397	26,3	-40,4
Hüyük	4.387	8.472	3.430	29.816	43.638	15.645	34.203	52.110	19.075	52,4	-63,4
Derbent	6.469	7.440	2.767	15.642	6.932	2.495	22.111	14.372	5.262	-35,0	-63,4
Şarkikaraağaç	12.253	24.502	9.849	26.740	27.662	17.518	38.993	52.164	27.367	33,8	-47,5
Yenişarbademli	6.199	5.519	2.136	1.124	406	363	7.323	5.925	2.499	-19,1	-57,8
Total	59.720	87.245	52.077	136.475	155.470	72.523	196.195	242.715	124.600	23,7	-48,7

Educational Background

In the region, the literacy rates of the districts for the 6+ population groups are close to the average of Turkey which is calculated as 90, 02% in 2010 (except for Derbent, where the rate is 80,6%).

Table 14. Literacy rates in the districts based on Address-Based Population Registration System, 2010

	Total Population (6+ age)	Literates	Illiterates	Unknown	Literacy Rates (%)
Şarkikaraağaç	25.319	22.612	1.954	753	89,3
Yenişarbademli	2.380	2.218	119	43	93,2
Beyşehir	64.100	58.338	4.420	1.342	91,0
Hüyük	17.659	15.438	1.739	482	87,4
Derbent	4.839	3.899	863	77	80,6

The highest percentage of university graduates belongs to Beyşehir (4,85%). Beyşehir is followed by Şarkikaraağaç (4,32%), Yenişarbademli (4,33%), Hüyük (3,4%) and Derbent (1,69%) respectively. The average percentage of university graduate population in Turkey is approximately 7%, i.e. the region's figures are below the country average. At the same time, its figures are also below the averages for Isparta and Konya which are 7,73 % and 5,88 % respectively. When the high school graduate population is examined, Yenişarbademli has the highest rate with 21,76%. The average rate of high school graduation is calculated as approximately 17% in Turkey, 21,2% Isparta and 14% in Konya. This rate is 15%, in Şarkikaraağaç, 14,43% in Beyşehir, 10,81% in Hüyük and 6,41% in Derbent. Hüyük and Derbent have the lowest figures in this regard.

Table 15. Educational structure of the Basin

Educational Profile in districts (6+ age), 2010		Districts				
		Şarkikaraağaç	Yenişarbademli	Beyşehir	Hüyük	Derbent
Education Level	Illiterate	1.954	119	4.420	1.739	863
	Literate but not graduated	3.682	295	11.402	2.814	991
	Primary school graduate	9.242	920	20.522	6.565	1.637
	Elementary school graduate	3.466	246	10.439	2.601	732
	Secondary school graduate	1.124	128	3.398	922	144
	High school graduate	3.956	518	9.250	1.909	310
	College graduate	1.095	103	3.106	601	82
	Graduate degree	41	8	192	22	2
	PhD graduates	6	-	29	4	1
	Unknown	753	43	1.342	482	77
	Total	25.319	2.380	64.100	17.659	4.839

Economic Background

The Basin's economic structure, like the national economy, is transforming into a predominantly industrial economy from a predominantly agricultural economy. The main economic sectors in the basin are agriculture, husbandry and fishing. In urban settlements service sector is also seen beside agricultural activities. Fishing is concentrated in settlements close to the Lake. Away from the Lake, agriculture and husbandry become widespread (Özdemir 2004, 128).

There are three groups of economic activities in the Basin:

1. In plains and sloppy areas agricultural activities are dominant.
2. In lake shore and settlements near the coast, fishing is seen. However, it is not the main source of income, it is a *secondary* activity. The main sources of income in those areas are still agricultural activities.

3. In mountainous and forestry areas the economy depended on livestock and forest products until recent years, but new income sources are being searched because of various constraints (Mıhladı and Kaya 2003, 7).

In the basin, **agricultural** activities are performed in all lands with the convenient slope. The lake is surrounded by agriculture lands on its east and south. Cereal farming, vegetable gardening and fruit growing are main agricultural activities (Özdemir 2004, 129). The crops grown in the region are wheat, barley, oats, and corn; chick peas, beans and lentils; poppy and sugar beet; onion, garlic and potatoes; poppy and sunflower. Vegetable gardening and fruit orchards are seen nearly in the entire waterfront and valleys. Irrigated farming is seen especially in wide plains of the Sarısu stream (Eflatunpınar) region and in Şarkikaraağaç region. In Şarkikaraağaç region, water is drawn from the lake by pumping for irrigation purposes (Mıhladı and Kaya 2003, 7).

As far as **livestock** activities are concerned, ovine and bovine breeding are seen in the region. As it is mentioned before, towards the inland, these activities are increasing. Moreover, in rugged terrains pasture animal husbandry is seen.

In the Beyşehir Lake Basin, **industrial** sector developed in recent years; there are armories, fish handling facilities, flour mills, biscuit factories, spring water bottling factories, milk processing and storage plants, feed factories, textile factories, brick plants, pipe mills, mining, nail factory, slaughter house, chicken farms and various small sized industries. The industrial enterprises are spatially concentrated on Hüyük, Kireli, Beyşehir, Şarkikaraağaç, Üzümlü and Huğlu regions (Özdemir 2004, 129-131).

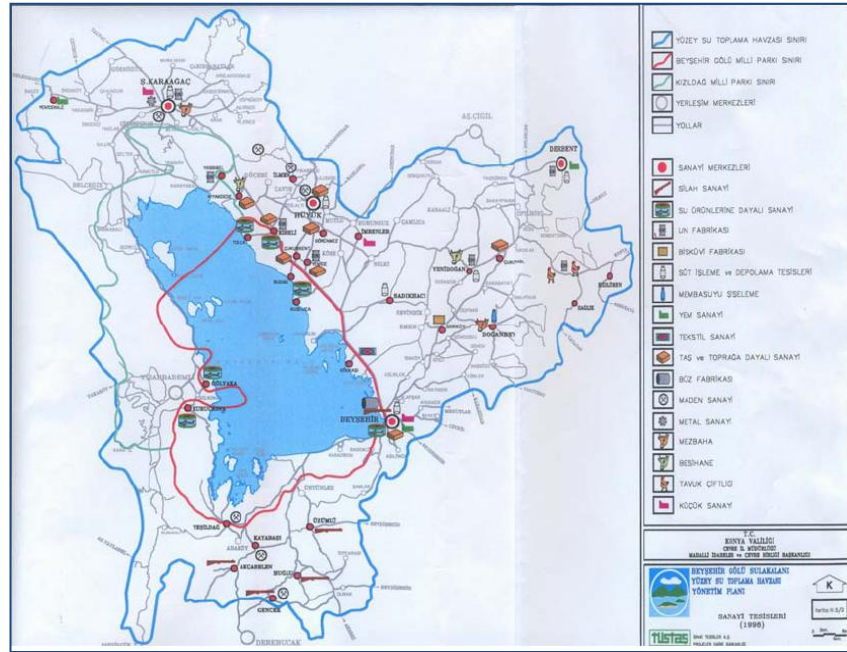


Figure 23. Industrial Enterprises in the Beyşehir Lake Basin by TÜSTAŞ, 1999 (Hoşafcıoğlu 2007, 18)

Obviously, **fishery** is common by the shore. Around the Lake, 23 settlements involve in fishery, and fish are collected by two different water products cooperatives (Özdemir 2004, 131). The zander species²⁰ that was sent to the Lake for economic purposes in 1978 is now a dominant species, which increased in number enormously and caused to extinction of other species. Fishery as an income source could not be a main sector in the region. Although fish is now an export product, it is not even a source of livelihood covering all coastal settlements (Özdemir 2004, 131). Interventions to natural environment cause extinctions in some species and negatively affected fishing activities.

Other than those sectors, a minor amount of handicrafts (carpet business, pottery, weaving) and manufacturing activities are seen. Carpet making is still performed in Gölkonak, Şarkikaraağaç and Hüyük. Additionally, there was reed production²¹ as a common activity in nearly all settlements by the Lake. Those reeds were used for straw making and paper industry. However, in recent years because it is harder and

²⁰ Sudak balığı

²¹ Kamyşçılık

economic value is lower than fishery, reed production is no longer a source of income. Furthermore, in Beyşehir district, there are mineral deposits which are operated with partial capacity (Özdemir 2004, 134).

V.3.1.2. Spatial Planning History in the Beyşehir Lake Basin and Evaluation of the Plans

V.3.1.2.1. Problems of the Basin

The main problem in the Beyşehir Lake Basin arises from the conflict between nature conservation and economic development. Beyşehir area has witnessed the deterioration of natural balances caused by local economies. This deterioration, in turn, leads to a tension in the social structure (Mihladiş and Kaya, 2003, 2). The problems of the basin would be analyzed under two subtopics; 1) environmental problems and 2) legal and administrative problems.

Environmental problems:

Major environmental problems of the Basin are 1) decreasing level of water because of a low level of precipitation and water pumping for irrigation; 2) reduction of biodiversity; and 3) pollution.

- **Decreasing Level of Water:** Since Beyşehir Lake is a freshwater lake, it has been used for drinking and irrigation purposes for many years. However, as a result of the irrigation projects of General Directorate of State Hydraulic Works (SHW) and General Directorate of Rural Services²², water has been pumped from the Lake since 1987. Besides those of SHW, there are other smaller water pumps that also have caused **excessive water pumping** from the Lake (Hoşafcıoğlu 2007, 26). Beyşehir Lake is used for irrigation of Isparta, Kireli and Çumra plains; and water is pumped mostly for agricultural purposes (Babaoğlu 2007, 15). The volume that can be taken from the Lake should be scientifically calculated and irrigation should be planned to prevent excessive water pumping (Mihladiş and Kaya, 2003, 11).

²² Köy Hizmetleri Genel Müdürlüğü

In order to solve water level problem, Gembos Derivation Project was prepared. Gembos derivation canals are in Derebucak District of Konya; and planned irrigations by derivation are in Yeşildağ and Gembos municipal units of Beyşehir. Moreover as another water resource improvement project, Mavi Tünel (Blue Tunnel) Project was developed to feed the Lake. By the tunnel and three dams, the water of Yukarı Göksu Basin is planned to be transferred to the Konya Closed Basin (Mihladız and Kaya 2003, 12).

The decreasing level of water mainly changes the lake ecosystem and thus fishery. As it has been discussed in the previous sections, fishery is not a major livelihood in the region because of the decreasing fish species. Other consequences of the decreasing water level are

- washing up of small fishes onto the shore because of streaming formed during water pumping;
- distortion of the structure of lake ground and drying of reed beds;
- as a result of low water in reed beds, decreasing number of spawns, larva and fish (Hoşafcioğlu 2007, 27).

- **Reduction of bio diversity:** In 1978 the zander (sudak), at the beginnings of the 1990s tench (kadife balığı), at the end of the 1990s silver pond fish (gümüşü havuz balığı) and in 2002 sand smelt (gümüş balığı) were infused to the Lake respectively,. The zander, carnivorous fish, destroyed some native herbivorous fish species of the Lake, corrupting biological balance (Babaoğlu 2007, 17-18).

In Gölkaşı, Akburun, Tolca and Çiftlikköy reed cutting has been performed intensively decreasing filtration characterization of reed beds. Furthermore, the bulbous plants in the Basin, which have economic and medical values, are removed excessively (Hoşafcioğlu 2007, 28-29).

- **Pollution:** In the Beyşehir Lake Basin, point pollution sources are waste water sites of settlements and industrial facilities. Almost all the settlements have drainage system in the basin area. However, only Beyşehir Municipality has a wastewater treatment plant. Some municipalities try to solve it through their own efforts and some are trying to develop common waste water treatment methods. Some of the municipalities release waste water to lad or dry streams after keeping it in their cesspools. However, most of the municipalities discharge it to running streams without any treatment and the discharged water directly reaches to the Beyşehir Lake, and causes a pollution problem. Moreover, in past fish handling facilities and slaughterhouses caused pollution in the lake. Chrome plating studios, some of the fish handling facilities and the textile factory have waste water treatment plants. However, there are some running problems in those plants and other facilities do not have such plants. Therefore, waste waters, which are partially refined or never been through the process, cause pollution in the lake (Hoşafcioğlu 2007, 32).

Beside point pollution sources, agricultural pollutants (pesticides, nitrogen, phosphate and heavy metals); cleaning of fishing nets and boat oils; and illegal housing violating the coastal line are other pollutants (Babaoğlu 2007, 21).

Because of pollution, living beings are endangered, water quality is decreasing and touristic attractiveness of the Lake is threatened.

Legal and Administrative Problems

- **Legal Problems:** The Lake has different administrative and legal statuses. The Basin is bound to various national laws, regulations and charters and international treaties. The laws and regulations for the implementations in the basin area are Environmental law, National Parks Law, Coastal Law, Code of Protection of Cultural and Natural Properties, Water Productions

Law, Forest Law, Zoning Law, Water Pollution Control Regulations, protection zone decisions of Cultural and Natural Heritage Preservation Board. The multiplicity of laws and administrations makes implementation and monitoring of plans harder, since the jurisdictions of different authorities interfere.

- ***Administrative Problems:*** Beyşehir Lake is within the boundaries of two provinces and five town districts. Besides the municipalities of these units, there are other institutions having responsibility in the region. Ministry of Environment and Urbanism, District Directorate of Agriculture, Directorate of Nature Conservation and National Parks, General Directorate of SHW, General Directorate of Cultural and Natural Heritage, Non-Governmental Organizations are among the most active stakeholders. Each stakeholder has their own priorities and understandings about the lake. Since there is not regular cooperation between these stakeholders, management of lake cannot be done efficiently. The Questionnaires, which is analyzed at the following chapter (V.3.2. Participatory Planning in the Beyşehir Basin), applied to stakeholders also gave similar conclusions. The plans that have been done by different institutions cannot be implemented because of conflicts between groups. These disagreements restrain development and management of the basin (Mihladız and Kaya 2003). This will be discussed in detail for the Beyşehir Lake Basin based on Questionnaires in next chapters.

In the article “Beyşehir Gölü Havzası Sosyo-Ekonomik Yapı ve İlgili Grubu Analizi” that was published by WWF in 2003, a stakeholder analysis has been done. In this analysis stakeholders were examined in five groups, civil society, public institutions, nongovernmental organizations, private institutions and media.

As civil society fishers, farmers, reed collectors, women, craftsmen and public servants, youth and elders; as public institutions Beyşehir District Governorship, Beyşehir Municipality, District Directorate of Agriculture, National Parks and Game Wildlife Engineering, Ministry of Environment (Environmental Protection Office), General Directorate of National Parks, General Directorate of State Hydraulic Works

and Mufti; as NGOs Beyşehir Environmental Volunteers Association, Beyşehir Chamber of Commerce, Water Products Cooperative, Vocational High School, Çumra Irrigation Union; as private institutions Fish Handling Factories, Manager of Brick Plant and as media local media organs were included in the study.

Basic findings of the analysis are as follows (Mıhladı and Kaya 2003, 52-54):

- Participation of community was not included in public policy development. The most powerful social movement was that of Beyşehir Chamber of Commerce for basin people, but it could not be successful. According to the Questionnaires (explained at Chapter V.3.2 in detailed) Beyşehir Chamber of Commerce has only tourism promotion projects related with Beyşehir Lake Basin.
- In addition to the conflicts between public institutions, the coordination between them is insufficient. Moreover, NGOs give up their efforts when they encounter with complicated situations.
- The conflicts among local people are pushing other groups to take advantage of loopholes in the law. Since the public institutions have no coordination and do not include local people in management, the local people destroy the lake and its environment through illegal uses.
- The General Directorate of State Hydraulic Works, drawing out water from the Lake for irrigation around Konya and Isparta, has not been pursuing a sustainable development approach.
- Local people were not informed properly about the declarations of the General Directorate of National Parks around the Lake. Therefore, both civil society and public institutions do not understand the need of national parks and want the abolishment of this decision.
- The most conflicting situations arise between local groups and General directorate of state hydraulic works and General directorate of national parks. The reason of this conflict is the neglection of local socio-economic profile and needs in development and conservation policies of central administration.

- According to the stakeholders, in developing national park long-term development plan, local conditions, traditional life styles and present requirements were not taken into consideration.

V.3.1.2.2. Plans Developed for the Basin

Up to date, five plans were developed for the Beyşehir Lake Basin Region. This part of the study elaborates the objectives, planning decisions and implementation/evaluation of the Plans; and reflects on the positive sides and deficiencies of them based on the ILBM principles and criteria that have been defined in Chapter III.4. The plans are:

- A. Beyşehir Lake Wetland Catchment Basin Management Plan, 1998-2000
- B. Beyşehir Lake Natural Park Long Term Development Plan, 2005-2007
- C. Kızıldağ Natural Park Long Term Development Plan, 2005-2007
- D. Konya-Isparta Environment Plan, 2006-2007
- E. Beyşehir Lake Conservation Action Plan, 2008

Searching for a sustainable water resource management was formally started with Dublin Statement and Rio Conference in 1992. The first attention to specially lake basin management was drawn by the study of World Bank in 1996. Moreover, Turkey signed Ramsar Convention on Wetlands in 1994 and Beyşehir Lake has natural site and national parks as conservation statues according to Ramsar criteria. Therefore, it can be inferred that Beyşehir Lake Basin Management Plan was developed behind time.

A. Beyşehir Lake Wetland Catchment Basin Management Plan

Konya Governorship and Provincial Environmental Directorate contracted out this plan to TÜSTAŞ (Turkey Industrial Corporation)²³. “Beyşehir Lake Wetland Catchment Basin Management Plan” (at 1/150.000 scale) was developed by TÜSTAŞ between 1998 and 2000. First stage covered the analyses related to the Basin: Natural characteristics, historical development of settlements, socio economic

²³ Türkiye Sınai Tesisler A.Ş.

and demographic structures of settlements, ongoing activities. After that, positive or negative factors affecting the natural system were examined; and activities conducted by local people together with their expectations were synthesized. A third stage consisted of the use of a “zoning” methodology to sustain and control the natural system of the area. By the help of this methodology, it was aimed to evaluate and compare regions that had homogenous qualities. According to zoning criteria, the basin area was divided into three conservation zones as 1st, 2nd and 3rd degrees. Moreover, zoning methodology was also used to determine sub basins for infrastructure decisions.

Objective of the Plan:

The main objective of the Management Plan is the sustainability of natural characteristics of Beyşehir Lake --which is used as a drinking and service water reservoir-- and its basin; and development of land use and management decisions for economic welfare of local people (TÜSTAŞ 1999, 61).

Based on this main objective, sub-objectives are determined as

- 1) Conservation and maintenance of the ecologic balance,
- 2) Development of tools that make the city ecosystem compatible with the natural ecosystem: balance of use in a way to ensure the continuity of the ecosystem,
- 3) Prevention of environmental pollution (TÜSTAŞ 1999, 1).

Planning Decisions:

The basin area is examined within three conservation zones and planning decisions are determined based on these zones (TÜSTAŞ 1999, 32-36) (Figure 24).

- **1st degree conservation zone** covers the areas within 300m distance in the direction of land from maximum 1125,5 m water level based on drinking water reservoir provisions in Article 17 of Water Pollution Control Regulations; the areas 700 m width from strict protection zone boundary; 1st degree natural sites; 1st degree archaeological sites; the whole of Beyşehir

Lake; areas of Mada Island except for housing areas and whole of other islands; areas important in terms of fauna; endemic plant areas; reed bed areas; preservation forests. Conservation decisions in this zone are as follows:

- The land-use in the Natural Park areas, which fall in this zone, cannot be determined according to 2873- National Parks Law before the identification of strict protection zones.
 - In the 300m distance areas construction is not allowed apart from compulsive technical facilities.
 - In the areas between 300 to 700 m distances, temporary constructions for recreation and picnic activities are allowed. Moreover, development of settlements is prevented according to the Water Pollution Control Regulations and it is obliged to make impermeable cesspit in existing settlements or connect sewerage system to treatment plant.
- **2nd degree conservation zone** (restricted area) includes areas within 1 km distance from short-range protection zone boundaries of drinking and service water reservoirs, which are determined as medium-range protection zone in Article 17 of Water Pollution Control Regulations; 2nd degree natural sites; entire forest areas; and pasture areas. In this zone, construction is not allowed outside the boundaries of existing settlements. If there are treatment plants constructed with respect to the Water Pollution Control Regulations, the activities of existing industrial establishments will be allowed. In pasture areas, temporary services and tracking routes are developed. Apart from determined land-uses in the Plan, no activity is permitted in this zone.
 - **3rd degree conservation zone** covers the area from the boundary of long-range protection zone of drinking and service water reservoirs, determined in Article 18 of Water Pollution Control Regulations, to basin boundary. In that zone, agricultural activities are allowed as long as chemical fertilizers and pesticides are not used. Since there are infrastructure problems in residential areas within this zone, the construction is not allowed outside the boundaries of residential areas or existing development plan. In order to use tourism

potential of the Beyşehir Lake Basin, which has natural, cultural and archeological values, various tour routes are determined. Moreover, pensioning in residential areas is supported.

Apart from those conservation zones, infrastructure-related decisions are also made. Basically, decisions are determined to solve environmental problems of the basin caused by increasing usage of fertilizers and pesticides, irrigation projects to gather more water from the lake, inadequate infrastructure to meet increasing population needs, infusion of other fish species, insufficient/lack of precautions against developing economic activities. Infrastructure is examined in three titles as drinking water, waste water and solid waste. Following the general decisions, specific decisions for the nine sub-basins, namely Şarkikaraağaç, Yenişarbademli, Gedikli, Soğuksu-Yeşildağ, Üstünler, Karadiken, Beyşehir-Suğla, Kireli, Sarısu basins, are explained (TÜSTAŞ 1999, 36-60).

In the Plan the priority projects are pointed. Accordingly, for water management, in order to prevent conflict between partners, assigning the authority of water management to one single institution is recommended. Therefore, the SHW, that has the largest authority and responsibility, is given that role by the Plan (TÜSTAŞ 1999, 93).

Implementation/ Evaluation:

There are several deficiencies about the planning process and the Plan. The Plan is recognized as the most comprehensive plan developed for that area; however, the implementation process was not successful because of the **lack of coordination**. The pre-Plan studies were made by Konya Governorship and Beyşehir District Governorship, and followingly, the Plan was developed by TÜSTAŞ . However, the Plan has never been put into force, because other institutions did not find the objectives of the Plan consistent with their own objectives, or they did not express their opinions since the Plan was not modified according to their requirements

(Beyşehir Lake Conservation Action Plan 2008, 21). This is the reason for the failure of the implementation.

Having elaborated the essential pillars of the integrated lake management planning in the previous parts of this study, I infer that the principles explained in those pillars were not fully satisfied: Analysis and decision making stages were based on reliable information and policies were defined. However related institutions, way of participation, technology and finance were not well defined in the Plan. The multiplicity of institutions that are involved in the protection and use of the Lake would have necessitated their active collaboration in decision-making. Since they were not included in the process in a coordinated way, they did not possess the plan.

A positive aspect of the Plan is its boundaries: The planning area was indicated as the entire lake drainage basin area. Within the drainage basin, the aims of the Plan are sustainability of natural resources and economic development. The planning process followed an *Ecosystem based and, Preventative approach*; it relied on *Sound science and available information*; and it aimed at *Integration of environmental and economic goals* in the integrated lake management plan. Moreover, the Plan had a strategic approach as it defined the objectives clearly and pointed out the priorities. Nevertheless, as mentioned above, even if an ecosystem based and preventative approach is followed with well-defined goals, no basin plan can be effectively implemented without an efficient and coordinated inclusion of relevant institutions in the planning process.

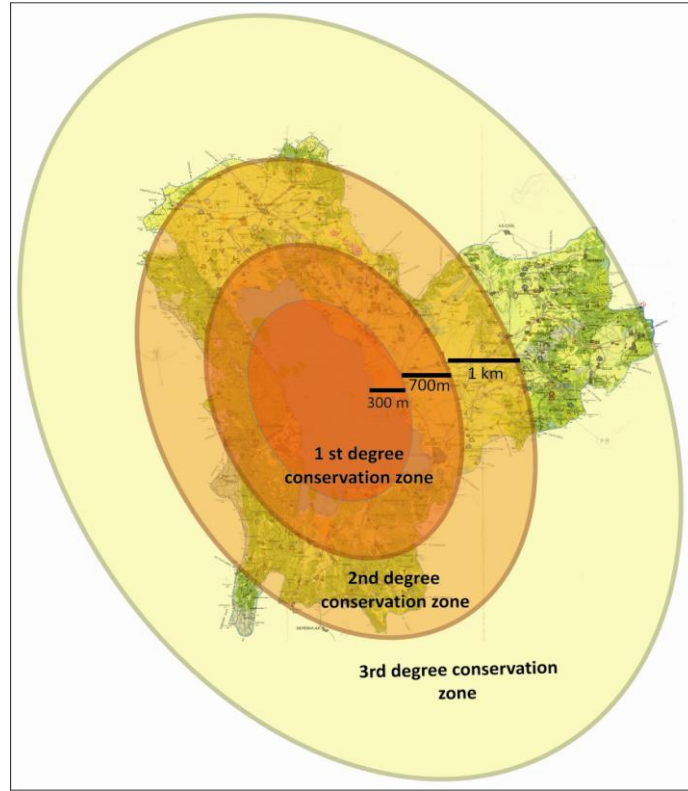


Figure 24. Conservation zones according to the Beyşehir Lake Wetland Catchment Basin Management Plan

B. Beyşehir Lake Natural Park Long Term Development Plan

1/25.000 scaled Natural Park Long Term Development Plan (LTDP) studies started in 2005 and was carried out by a private planning and engineering company²⁴. The plan was finalized having feedback from related institutions and approved in 2007. Planning area covers the Beyşehir Lake Natural Park (88.750 ha), which lies on both Konya and Isparta boundaries. Most of the area is 1st degree natural site; together with some rural settlements as 3rd degree natural site; a tumulus and islands as 1st degree archeological site.

Objective of the Plan:

The objectives of the long term development plan are determined as

²⁴ AKS Planlama ve Müh.Ltd.Şti

- conservation of the Beyşehir Lake National Park at national and international level
- ensuring the sustainability of the Lake and transferring it to future generations as the most important value of the National Park with its biological (flora, fauna, and ecology), archaeological, geomorphologic, geological, landscape and recreational values,
- developing land use decisions that ensure economic development of people in the region
- developing and describing implementation policies, tools and methods (Beyşehir Lake Natural Park LTDP, Plan Notes, 1).

Planning Principles and Decisions:

Before developing planning decisions, five planning principles are determined:

1. Sustainability of natural resources
2. Promoting socio-economic activities
3. Preventing environmental pollution
4. Improving management activities and administrative organization
5. Developing training activities

Based on those criteria, planning decisions are determined for the whole region. Then, zoning is done taking care of the natural structure, endemic species, ecological and biological significance, human activities, effects of natural hazards and land-use. In these zones --as required in the Natural Parks Law and Regulation on Strict Preservation Zone-- Restricted and Controlled Zones are determined (**Map 1**), and special planning decisions are developed.

- **Strict Preservation Zone** covers forest areas; areas with geological and geomorphological significance; Büyükgedikli, Küçükgedikli, Hacıakıfbey Caves and other caves; ecologically and biologically important areas for sustainability of natural flora and fauna; all water points (rivers, underground water sources) particularly Beyşehir Lake; and the regions determined as eco-

tourism area. In the eco-tourism area, no activity is permitted, except from tour routes, boat tour routes, resting points, landscape view points, wildlife observation points and fishing points.

- ***Restricted Zone*** covers the areas where some activities are allowed to a certain extent. These areas are naturally related with Strict Preservation Zone and compose of a buffer zone. Agriculture areas, meadows, pastures, and roads that remain out of Strict Preservation Zone are defined in the Restricted Zone. The activities that are included in this zone are tour routes, resting points, landscape view points, wildlife observation points, mobile checkpoints and fishing points.
- ***Controlled Zone*** covers the areas that have more human activities including settlements and excursion activities. Residential areas, agricultural products storages, excursion areas, beach, entrance control point, administration-visitor-promotion center, promotion units, camping area, university campus area, service units, recreations and restaurants are included in this zone. In the plan, the location and activities of entrance control points, administration-visitor-promotion center, promotion units, excursion areas, camping area and accommodations are defined.

This LTDP is defined as an upper scale framework plan for all researches, plans, projects and implementation works in this area. The structure of the plan --namely the identification of planning principles and development of strict preservation zones, restricted zones, and controlled zones—complies with the strategic spatial planning approach. The plan very well defines what land-uses and activities can/cannot take place within these zones; and leave the detailed solutions to the further lower scale plans. Based on this plan it is recommended to prepare four master plans, namely Lake Rehabilitation, Eco-Agriculture, Tourism and Training Master Plans. The Long-Term Development Plan is considered to become instrumental as long as these master plans are prepared followingly. The master plans are developed or made developed by the General Directorate of Nature Conservation and National Parks. They are approved by the former Ministry of Environment And Forestry.

For each master plan a vision, actions, stakeholders, time periods and success criteria are defined separately. Accordingly four visions are as following;

- Lake Rehabilitation Master Plan: Rehabilitation of disturbed flora and fauna balance by preventing eutrophication, ultimate erosion and pollution which have damaging effects on the ecology of the Lake and the wildlife around it.
- Eco-Agriculture Master Plan: Identification of ecological agriculture areas that will not disturb ecological balance in agricultural areas within the boundaries of Beyşehir Lake and National Park; promotion of ecological agriculture.
- Tourism Master Plan: In the regions determined as Eco-Tourism Zones, development of eco-tourism activities that help conservation and development of main resources of the Natural Park, and promote local economic and social development.
- Training Master Plans: Improvement of the capacity of people living in the National Park, and consequently development of human resources potential of people living in the boundaries of the National Park in order to improve values of the Park.

Stakeholders are defined as Directorate of Nature Conservation and National Parks, General Directorate of SHW, General Directorate for Environmental Management, Ministry of Agriculture, Minister of Culture and Tourism, Rectorship of the Konya Selçuk University, related Local Institutions and NGOs.

Implementation/ Evaluation:

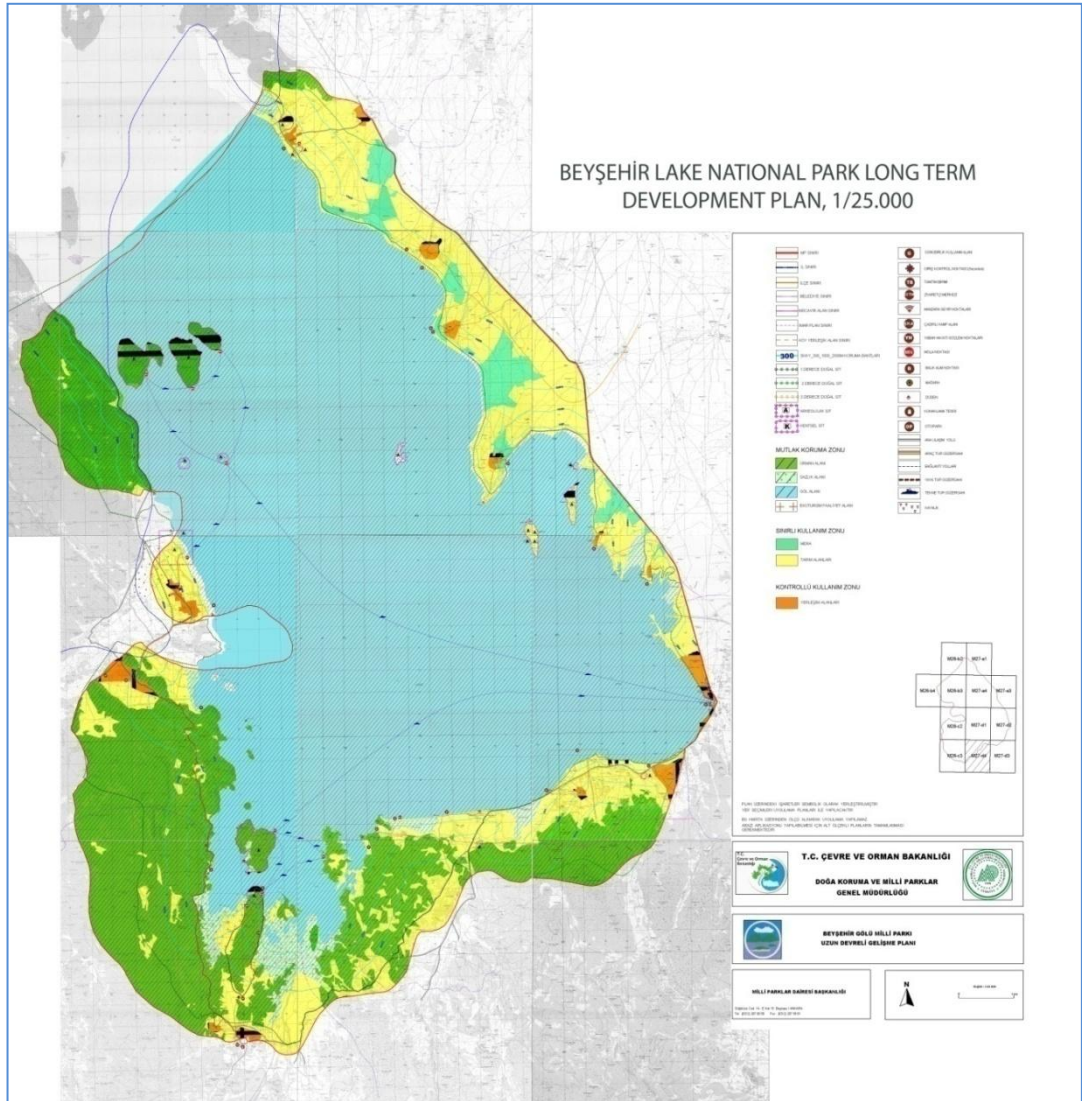
I infer that the ILBM pillars --namely institutions, policies and participation-- are respected in the planning process. However, the other two pillars --technology and finance-- are not well integrated. The stages of the planning process consist of developing a main objective and sub-goals, developing planning criteria and accordingly defining planning decisions. This is to say that the process does not fully follow the eight general steps of ILBM planning; still, it has a systematic order.

Since the Plan is prepared as an upper scale framework plan for further plans and projects, it has been linked to the above-mentioned four master plans. The visions, actions, stakeholders, time periods and success criteria are defined in the LTDP. It should be noted that according to the Turkish planning legislation, for the proposals of this plan be implemented, a 1/1000 scale Implementation Plan is needed.

The LTDP integrates environmental and economic goals to sustain the natural resources, while performing socio-economic activities. Furthermore, pursuing a preventative approach, it aims to prevent environmental pollution. In decision making opinions of different institutions are taken, and responsibilities of stakeholders are defined for the implementation stage.

Apart from these positive sides, there are some deficiencies:

- For the implementation of master plans, involvements and responsibilities of stakeholders are defined; however, how to provide coordination between them and how to solve conflicts are not considered.
- The Plan is developed for the Beyşehir Lake National Park, and does not cover the whole lake drainage basin.
- The Plan is not flexible enough; because the adaptability and responsiveness to public needs are not mentioned.
- The Master Plans are well defined with a strategic approach, but the implementation methods of defined programs are limited.
- The objectives and decisions are well defined, but funding required is not pointed.
- Although the Planning process followed a participatory approach to a certain extent; it still has deficiencies about partnerships; because the public is not well informed about the necessity of the Plan, so they think the Plan restricts their activities.



Map 1. Beyşehir Lake National Park Long Term Development Plan

C. Kızıldağ National Park Long Term Development Plan

1/25.000 scaled Kızıldağ National Park Long Term Development Planning process is started in 2005 and finished in 2007. The Plan is jointly developed by the General Directorate of Nature Conservation and National Parks as the executor, and a private company²⁵ as the consultant. The Plan area covers 59.400 ha National Park. The planning process is composed of three stages; analysis, synthesis and decision-making. The data obtained in the analysis stage are synthesized; and following that

²⁵ AKS Planlama ve Mühendislik Ltd. Şti

the objective and aims of the plan are developed. Moreover, for implementing and monitoring the Plan, a management organization and sub programs are proposed. Actually, related literature supports the establishment of such management bodies that guarantee effective implementation and monitoring. The Kızıldağ National Park Plan satisfies a significant condition in this regard.

Objective of the Plan:

The main objectives of the Plan are defined as

- making arrangements to ensure the sustainability of National Park's biological and ecological structure; geomorphologic, geological, natural and cultural values through a conservation & use balance,
- transferring them to future generations,
- determining/ developing implementation conditions, tools, and methods.

Relatedly, a sustainable and environmentally sensitive planning approach is aimed, which follows a balanced conservation & use, enables promotion of resources of the area, and improves love of nature. Based on the objective and aim, the sub goals are determined as

1. assuring continuity of ecologic balance,
2. developing tools that ensure a harmony between natural life and inhabitants through a conservation & use balance in a way to assure continuity of ecosystem,
3. controlling development of the settlements inside and adjacent to national park area and informing people about this,
4. ensuring continuity of transhumance, and maintaining husbandry without damaging the resource values of the area,
5. preventing environmental pollution,
6. supporting ecotourism activities that integrate with natural resource values of the National Park,
7. conserving habitats,

8. developing implementation strategies that provide coordination between institutions,
9. developing a management organization for implementing the Plan.

Planning Principles and Decisions:

The Planning Principles are as follows;

1. Sustainability of natural park resources
2. Promotion of agriculture, husbandry, fishing and tourism activities that improve the local economy
3. Prevention of environmental pollution
4. Development of a management organization of the national park
5. Development of a training program that improves consciousness for conservation

Likewise the Beyşehir National Park LTDP, all planning decisions are determined for the whole region based on these planning principles. Then, by zoning methodology Strict Preservation Zone, Restricted Zone and Controlled Zone are determined (**Map 2**).

Strict Preservation Zone covers forest areas, geologically and geomorphologically important areas (Pınargözü Cave and other caves), ecologically and biologically significant endemic plants and wildlife areas that must be conserved for the sustainability of natural flora and fauna, Kızıldağ at the north of the area, rocky areas at the south, and all water resources (rivers, sources) especially Beyşehir Lake.

Restricted Zone area and activities are determined similar to the Beyşehir Lake National Park LTDP. In this zone tour routes, resting points, landscape view points and mobile checkpoints are defined.

Controlled Zone includes residential areas in the National Park boundaries, excursion areas, entrance control point, administration-visitor-promotion center,

promotion units, emergency response center, festival area, camping area, accommodations in Park boundaries, gas stations and restaurants.

With its similar structure to the Beyşehir Lake National Park LTDP, the Kızıldağ Plan also resembles the quality of a strategic spatial plan. Different than the master plans of the Beyşehir National Park Planning process, subprograms are interlinked to the Kızıldağ Natinal Park LTDP.

Implementation/ Evaluation:

Implementation of the Plan is aimed to be realized through sub programs which are related to:

- Administrative Structure/Management
- Resource Management
- Economic Activities
- Spatial Development/Infrastructure
- Education-Promotion and Awareness-raising
- Resource Monitoring and Evaluation.

In order to solve and prevent problems in the Kızıldağ National Park area, aims, goals, strategies, activities, priority activities, responsible institutions, outputs and success indicators for each sub programs are explained in the Plan. The main responsible institutions for the implementation and management of the Plan are determined as Isparta and Konya Provincial Departments of Environment and Forestry.

For an effective decision-making and implementation, the management body is structured as follows:

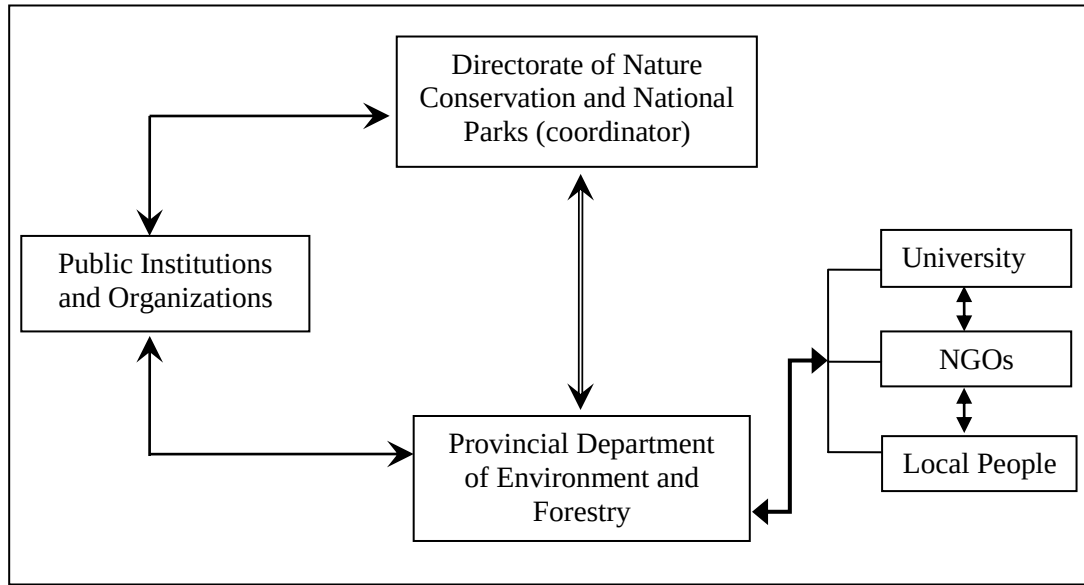


Figure 25. Proposed organization in Kızıldağ National Park LTDP (Planning Decisions, 80)

Table 16. Objectives, targets and strategies of the Sub Programs of Kızılbaş National Park LTDP

Sub Programs	Objectives	Targets and Strategies
Administrative Structure/Management	Strengthening management of the National Park	- Formation of a Park Entrance Control Point - Outfitting of that Point with systems that count visitor numbers regularly - Formation of Administration-Visitor and Advertisement Centers, advertising units, mobile control points and break points - Placement of information boards
Resource Management	- Conservation of natural resources - Conservation of water resources and prevention of pollution - Conservation of cultural and archeological values	- Conservation of the forest in the region - Development of conservation programs for endemic plants and animals - Prevention of the activities that can change natural topography and stream beds - Controlling the husbandry activities in the Park area, prevention of unscheduled pasturage - Conservation of the caves in the area - Pacification of giving Beyşehir Lake water to Beyşehir Canal Runlet, prevention of decreasing level of water - Prevention of discharging domestic, agricultural and industrial wastes to the Beyşehir Lake - Supervision of resource use in irrigation by canals - Taking precautions to prevent mixing of waste waters with surface and ground water - Prevention of drop litter to seasonal stream beds or discharging polluted water - Continuing Yoruk Culture and traditional transhumance activities - Conservation of two Yoruk areas situated in the area
Economic Activities	- Development of agriculture, husbandry and fishing - Development of tourism activities that contribute to the local economy	- Encouragement of organic agriculture - Taking precautions for increasing product efficiency - Development of product marketing - Determination of the boundaries of plateau and pasture areas for supporting husbandry activities - Supporting fishery activities - Utilization of forestry products - Development of facilities for entertainment, recreation and accommodation in settlements - Formation of recreational areas for daily use

Table 16. (continued)

		• Formation of tour routes • Promotion of plateaus • Supporting home pensioning
Spatial Development/ Infrastructure	• Controlling spatial development trends • Controlling housing rehabilitation demands • Developing of highway transportation with constraints and guidance • Overcoming solid waste and waste water problems	• Inducement of physical development tendency in settlements by taking under control • Evaluation of house restoration demands with not damaging traditional architecture • Improvement of the parts of Kurucuova-Yenişarbademli-Şarkikaraağaç Highway that including in Strict Preservation Zone without enlargement • Improvement of asphalt, stabilize and forest roads without enlargement • Development of waste water infrastructure in settlements that have not or inadequate sewerage system • Development of waste water infrastructure in pasture areas for not mixing domestic waste waters to ground and surface water • Prevention of discharging waste waters of rifle industry facilities to the Lake • Collection of solid wastes regularly
Education-Promotion and Consciousness-raising	• Development of education, promotion and consciousness-raising programs for all actors having interaction with the National Park	• Informing related institutions and local administrators about National Park • Informing local people about the National Park • Informing visitors about the area • Increasing the number and quality of signs in the area
Resource Monitoring and Evaluation	• Development of resource monitoring systems at the National Park area • Supporting scientific activities in the area	• Monitoring floristic structure of the Park • Monitoring faunistic structure of the Park • Taking periodic satellite pictures • Scientific research and publication of floristic structure of the Park • Scientific research and publication of faunistic structure of the Park • Research and publication on the geomorphologic values of the Park

The planning process includes the pillars of participation, policies, institutions and information. However, the technology for development of the Plan and for evaluation is not defined. Moreover, financial options for the defined activities are not pointed.

The Plan is prepared strategically and follows systematic steps. First of all objective, goals and sub goals are defined. Accordingly, planning principles and planning decisions are developed for both the entire region and zones. In the end, as mentioned before, a management organization and sub programs are developed for the implementation process.

The plan is integrated to lower scale plans. It is explained in the General Principles of the Plan that in order to realize proposals of the Plan, first 1/1000 scaled Implementation Plans, and then detailed projects (1/500, 1/200 scaled open space layout, landscape projects, architecture and engineering projects etc.) and implementation programs will be developed (General Principles-3.2,51).

Under the coordination of the General Directorate of Nature Conservation and National Parks, the plan is developed through the collaboration of various professionals ranging from city planners, geomorphologists, hydrogeological engineers, agricultural engineers, ecologists, flora specialists, vertebrate specialists, hydrobiologists, forest engineers, landscape architects, architects and environmental engineers. These professional groups determine values of the National Park in their own fields, prepare reports and maps; define problems of the region, and develop proposals. This is to say that a participatory and consensus-based planning approach is assumed that includes wide involvement of and collaboration between partners; a sound science and available information approach is pursued that enables trustable analysis of a wide range of factors like physical, chemical and biological factors.

In order to raise awareness and give information about the Plan, training activities are planned both for managers and local people. Since the plan aims at conserving resource values of the Kızılbaş National Park and sustaining them via conservation & use balance, the Plan pursues an ecosystem-based approach. The Plan also includes an “integration of environmental and economic goals approach” with the

sub goals of ensuring continuity of transhumance and keeping animal husbandry without damaging the resource values of the area; and supporting eco-tourism activities that integrate with natural values of the national park. One of the sub goals of the Plan is *preventing environmental pollution*, which coincides with a preventative approach. Moreover with the “Resource Monitoring and Evaluation” sub program, increasing adaptability is aimed; so there is a flexibility approach. At the same time with the “Education-Promotion and Consciousness-raising” sub program, related stakeholders and local public are aimed to be integrated in the process which shows a governance approach.

However, although the Plan includes most of the approaches identified within the ILBM, implementation also relies on other elements. According to the general principles, for implementation, the areas within the boundaries of the Plan need to have Implementation Plans. The implementations in settlements can be realized only according to these plans by related administrations. Furthermore, for implementation, it is obligatory to determine the Coast Line. However, the coast line of Beyşehir Lake cannot be determined because some parts of the settlements near the Lake and some lands that are classified as good agricultural lands are included in that coast line border (Nas et al. 2008, 22). Finally, implementation of decisions is under the responsibility of various institutions and laws, which make the Plan hard to implement.

D. Konya-Isparta Sub-Regional Land-Use Plan

1/100.000 scaled Sub-Regional Land-Use Plan that covers Konya-Isparta Planning Region is prepared by the former Ministry of Environment and Forestry and approved in 2007. The planning process composes of two steps: At first step a Research Report is published. The paper gives a detailed analysis about the region, synthesis and evaluation. The titles analyzed are location of the region; natural structure; natural, cultural, historical and archeological values; urban and rural use and settlement areas; technical and social infrastructure; existing land-use; land ownership; natural resource values; investments and projects devoted to planning region; environmental problems; and legal framework. At the second step a Report on Development Alternatives that contains principles, goals, strategies and scenarios was developed. The Plan displays spatial reflection of these developments by targeting the year 2025. The Sub-Regional Land-Use Plan is identified as a Plan of Principles rather than a physical plan that determine principles for the preparation of lower scale physical plans.

Objective of the Plan:

The main objective of the Plan is conservation, development and diversification of geographic, economic, human and social values in the Planning Region; attainment of a planned development that also contains socio-economic dimensions, determination of responsibilities of related institutions, development of documents integrating with the programs which supplement plans. Moreover, the Plan aims at decreasing socio-economic and spatial disparities in the Region; enhancing welfare and contributing to national economy, and developing ordered, sustainable and livable spatial systems by improving efficiency (Research Report 2006, 2).

The objectives of the Plan are listed as follow;

- Determination of goals and strategies for the planning region
- Determination of sustainable land use decisions
- Providing a conservation-use balance

- Conservation of natural, historical and cultural values in the planning region
- Evaluation of urban and rural development for sustainable development
- Sustainable development goals for different sectors
- Conservation of agricultural land, forests and vulnerable areas and improvement of agriculture
- Conservation of underground and surface water resources
- Providing a basis for lower scale physical plans

Planning Principles and Decisions:

Planning Principles necessitate the conservation and use of water basins, underground and surface water resources in accordance with the related legislation. Meanwhile, views of related institutions will be included in planning principles in developing lower scale plans (Implementation Principles, IV.1.3.16, 9-11).

In the Implementation Principles, duties and responsibilities of the institutions are pointed:

- For conserving drinking water resources in Planning Region, a “Basin Management Plan” is to be developed jointly by the (former) Ministry of Environment and Forestry, General Directorate of SHW, related municipalities and other public institutions.
- For conserving drinking water resources in the Region, a “Planning Region Water Management Master Plan” is to be developed jointly by the General Directorate of State Hydraulic Works, related municipalities and other public institutions; and according to that plan priorities and projects are to be constituted.
- For conserving water resources, underground and surface water resources; Provincial Directorate of Environment and Forestry is to develop principles for preventing water pollution and use of them.

Moreover, despite the already existing Beyşehir and Kızıldağ National Parks Long-Term Development Plans, it is mentioned that Beyşehir Lake Long Term

Development Plan is to be developed through the participation of related municipalities and governorates based on the 1/100.000 scaled Sub-Regional Land-Use Plan (Implementation Principles, IV.2.3.2, 12). Nevertheless, this plan recognizes the principles and decisions of the Beyşehir Lake National Park Long Term Development Plan.

The most important inputs for planning decisions are indicated as population projections. The 2025 population projections of the districts in the Beyşehir Lake Basin are projected as follows:

Table 17. 2025 population projections

	Urban	Rural	Total
Şarkikaraağaç	47.500	28.000	75.500
Yenişarbademli	12.500	2.500	15.000
Beyşehir	80.000	60.000	140.000
Derbent	17.500	12.500	30.000
Hüyük	20.000	80.000	100.000

Another significant principle is the promotion of organic agriculture in strict and short range conservation zones (Implementation Principles, VI. 4, 21).

Existing Urban Development Plans of the settlements of that region, which are not contrary with this Long Term Development Plan, will be maintained. The growth areas for the Beyşehir settlement will be determined in the Long Term Development Plan (Implementation Principles, VI.28.3, 31). For other districts and villages, those areas will be determined at 1/5000 and 1/1000 scaled plans respectively (Beyşehir Lake Natural Park LTDP, Plan Notes, 16).

As mentioned at “IV.2.1. Legal Framework” Chapter, different from Sub-Regional Land Use Plans, “Provincial Land-Use Plans” has been defined on legislation. However, since the scope, content and scale of those plans are not clear in the law and the place of the Plans is unclear in the planning hierarchy, public institutions have difficulties in development and implementation of those plans.

Implementation/ Evaluation:

1/100.000 scaled Konya-Isparta Sub-Regional Land-Use Plan can be seen as a “Vision Plan” for the region, since it is supposed to guide to lower scale plans. The plan is aimed to be

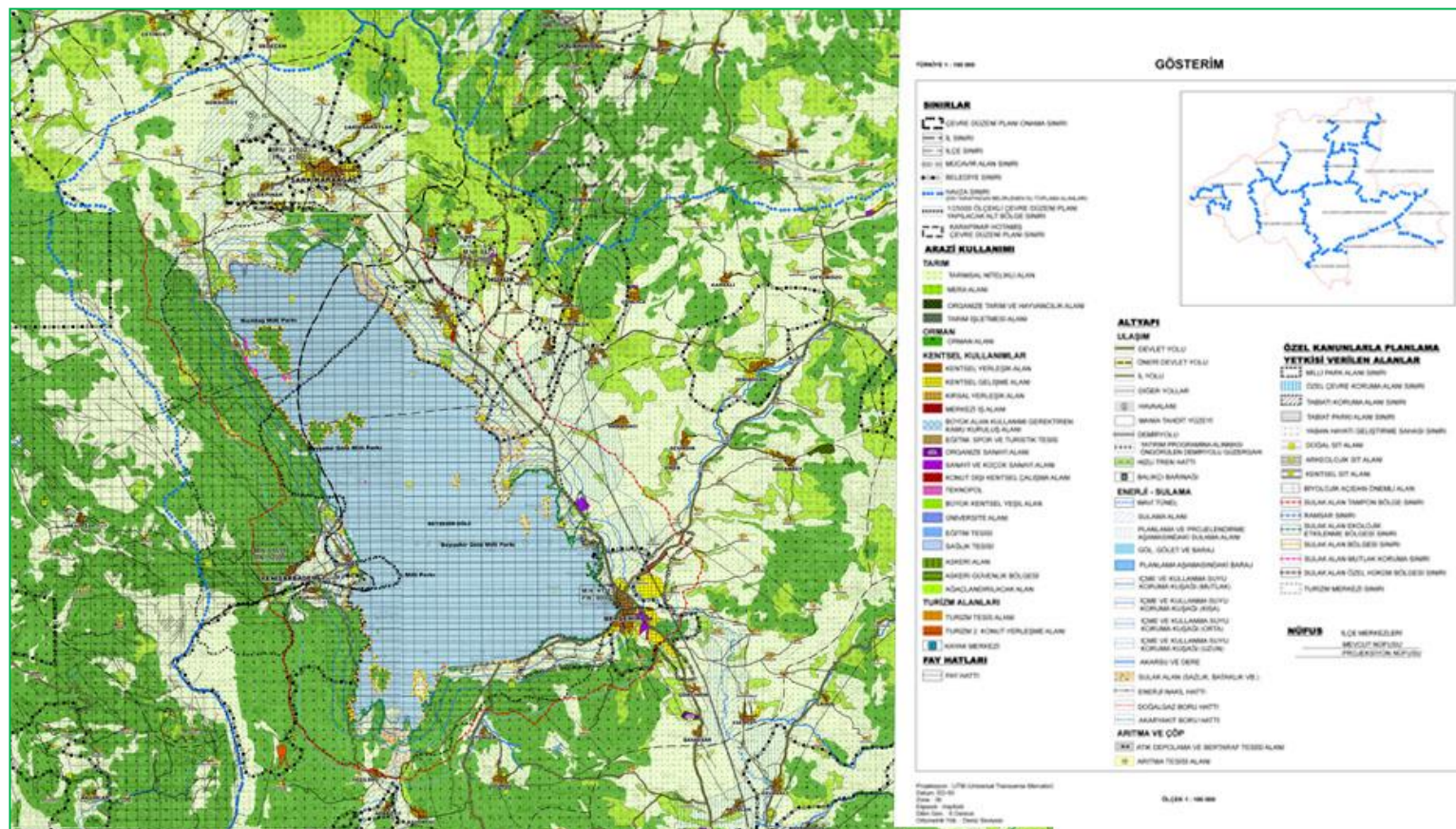
- In harmony with general planning principles in the context of sustainability
- Environmentally friendly
- Determining special qualities, locations, size and functions of sub regions
- Sensitive to socio-economic developments that are not known in planning process and external data
- In harmony with existing legislation and administrative structure
- Supporting development of existing legislation, administrative structure and supervision organization
- Guiding sub scaled plans and implementations
- Enabling solutions for the possible problems in implementation process
- Providing updated information through GIS.
- Participatory, transparent, flexible (Research Report 2006, 1157)

According to these principles, it could be said that the plan contains participation, ecosystem based, sound science and flexibility approaches of ILBM. Moreover, the pillars of ILBM as institutions, policies, participation, technology and information are integrated in the planning process. However, the funding options are not pointed.

The Research Report points that, to attain a comprehensive framework for the Region and organize data from settlement to regional scale, first of all the two provinces should be analyzed separately and then evaluated in the regional context. Separately realized SWOT (Strengths, Weaknesses, Opportunities and Threats) analyses should then be compared. Analysis and evaluation stage will be followed by identification of mission, vision, principles, strategic aims and targets. The comparison of SWOT analyses in the previous stage will allow developing common principles and decisions for same uses, or different principles and decisions for

different uses. For the basins like Beyşehir Lake that lies on two provinces, planning decisions should be based on a common management approach (Research Report 2006, 7). The realization of the planning process and the content of the plan reflect a strategic planning approach.

The implementation will be performed by various institutions. The institutions are to develop Sub Region's Plans based on conservation, development and planning principles in 3 years. Except from the areas where construction activities are started, all the urban development plans are to be re-prepared or changed with regard to the Sub-Regional Land-Use Plan.



Map 3. The Beyşehir Lake Basin in Konya-Isparta Sub-Regional Land-Use Plan

E. Beyşehir Lake Conservation Action Plan

A research project²⁶ (2004), jointly developed by Scientific and Technological Research Council of Turkey²⁷, Selçuk University, Beyşehir Municipality and Beyşehir Lake Basin Municipalities Union, displays the water quality, pollution and pollution potential of surface water which were analyzed through remote sensing techniques. Taking care of this research, former Ministry of Environment and Forestry-General Directorate of Environmental Management proposes to develop “Beyşehir Lake Conservation Action Plan” (Nas et al. 2008). The first part portrays general information about the Beyşehir Lake Basin (Beyşehir Lake, Water Resources, Precipitation Data, Problems of the lake and basin, Point pollution sources, Non-point pollution sources and Usage of pesticides and fertilizers in the basin). Following that, the main themes of the Plan are explained and visualized at 1/350.000 scaled maps.

Objective of the Plan:

This conservation plan aims at rehabilitation of damaged flora and fauna through preventing eutrophication, ultimate erosion and pollution. The objective of the Plan is development of integrated and practicable waste management plans and projects that contain all settlements in the National Park boundaries.

Planning Decisions:

The Plan has three main themes; Waste Water Infrastructure Management, Regional Solid Waste Management Infrastructure, and Spread Source Pollution Management and Control.

For Waste Water Infrastructure Management three alternatives are determined for the region. First alternative recommends building of a common Waste Water Treatment Plant. Second one evaluates settlements separately and proposes refining waste

²⁶ Coğrafi Bilgi Sistemleri, Jeostatistik ve Aster Verileri Kullanılarak Beyşehir Gölü Su Kalitesi Dağılımının Belirlenmesi (Determination of Beyşehir Lake Water Quality Distribution by using Geographic Information Systems, Geostatistics and Aster Data)

²⁷ TÜBİTAK

waters separately with less efficient systems. Third one proposes collection of all settlements' waste water by a collector and refining it in Waste Water Treatment Plant in Beyşehir District. The second one is the most economic alternative, but the refinement efficiency is very low. Therefore, first alternative is defined as the most suitable solution.

For Regional Solid Waste Management Infrastructure, it is mentioned that by the completion of the ongoing projects --Beyşehir, GEYAŞA and Hüyük solid waste storages-- regular solid waste discharge will be succeed. The implementation program of the Plan defines related activities, time span, financing, institutions and stakeholders.

The Spread Sources that cause pollution are defined as agricultural activities and husbandry. To manage and control pollution, some precautions are determined in the Plan. These are afforestation in lake basin; controlling husbandry activities; determination of special areas for agricultural activities; development of organic agriculture; transition to organic agriculture in an organized manner; development of organic agriculture fair area and promotion of eco-tourism.

Implementation/ Evaluation:

The literature defines four types of plans for lake basins with different purposes, scopes and schemes (See Chapter III.4 above). This plan is in the category of action plans and intervention plans. As an action plan, the planning process satisfies the so-called six pillars of ILBM:

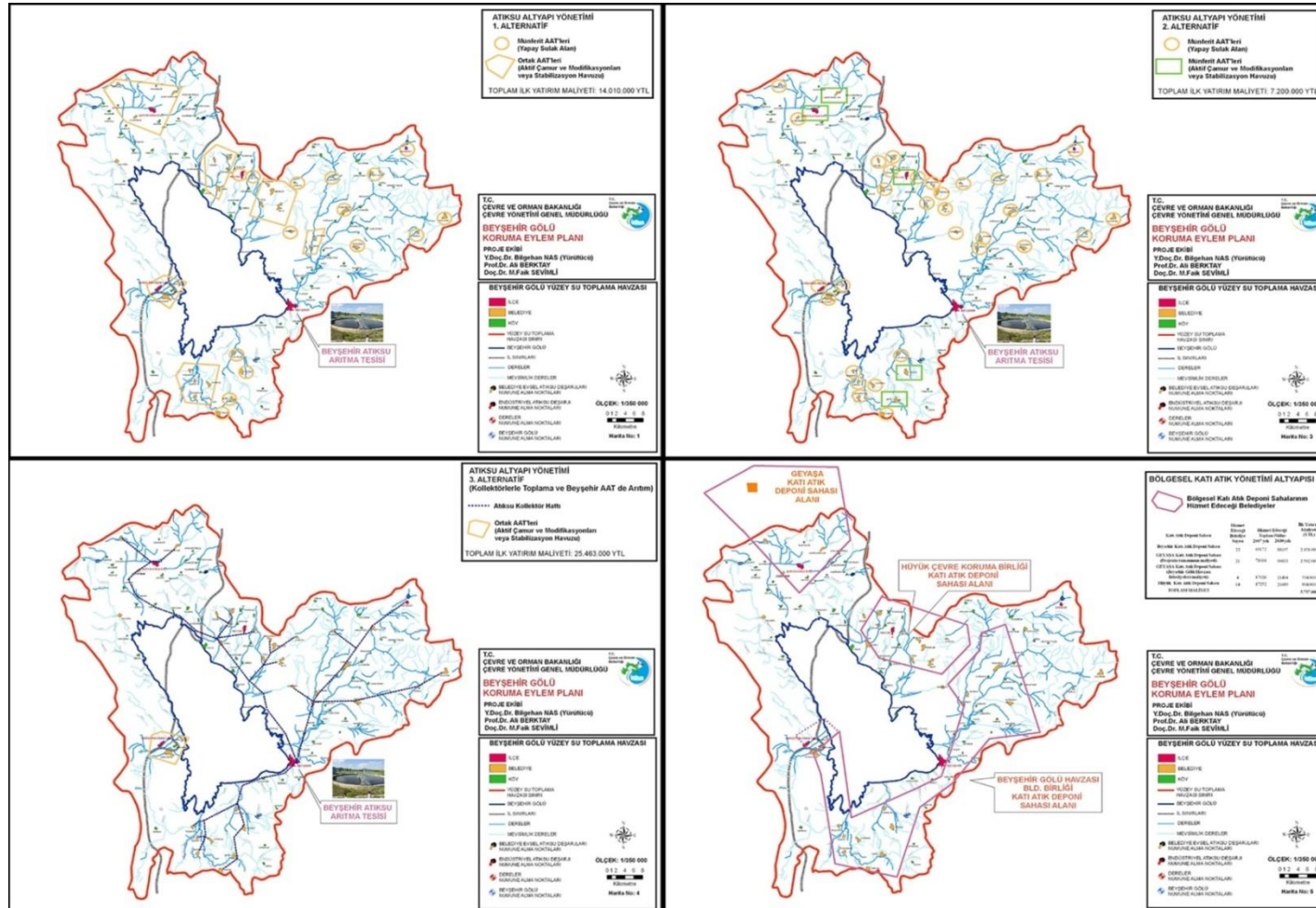
- The plan is developed through the **participation** and reinforcement of different institutions and individuals from various professional groups.
- In order to determine water quality, pollution, potential of pollution and trophic level of Beyşehir Lake, remote sensing method is used besides the traditional methods. Moreover, for analyzing, modeling and monitoring the data, GIS is used. Therefore planning process includes **reliable and timely information** and needed **technology**.

- After defining problems, **policies**, interventions and actions are identified for the management of waste water, solid waste and for controlling spread sources. The actions are displayed with different alternatives, and **financing options** are defined in the plan.

The planning process follows the general steps clarifying goals, gathering information, evaluating the alternatives, making a formal decision, defining measurable objectives. However, the further steps –namely implementing, evaluating the results, repeating the process-- are not yet realized.

Since the plan is developed based on Beyşehir Lake LTDP, it has consistency and integration with that upper scale plan. The plan satisfies the participation approach; sound science and available information approach; lake drainage basin approach and preventative approach. Nevertheless, it does not satisfy the governance approach, since it is developed without informing local people. The flexibility approach, which is necessary for adapting to changes and sustainability, is also not adequately defined in the Plan.

Briefly saying, the planning process and the content of the plan satisfy most of the principles of ILBM. However since the implementation process is continuing it is not possible to evaluate the plan for its achievements and performance.



It can be concluded that, the developed plans are mainly aim the conservation and resource development of the Beyşehir Lake. The ILBM criteria are partially satisfied at the plans. However, there are problems at the implementation process since the participation and institution pillars are not well established at the Plans. Moreover, the basin was handled firstly with Wetland Catchment Basin Management Plan between the years 1998-2000 which is late according to world examples. This plan was the most comprehensive plan but could not be implemented and the next plans (Natural Park Long Term Development Plans) were developed in 2005-2007. There are approximately 10 years (between those plans) to deal with Basin problems. This shows that determining problems of the Lake and developing plans for Beyşehir Lake Basin is a bit late. Additionally there are problems at the implementation of the developed plans because of authority conflicts and in coordination of institutions. The relations of the developed plans are shown at the following scheme.

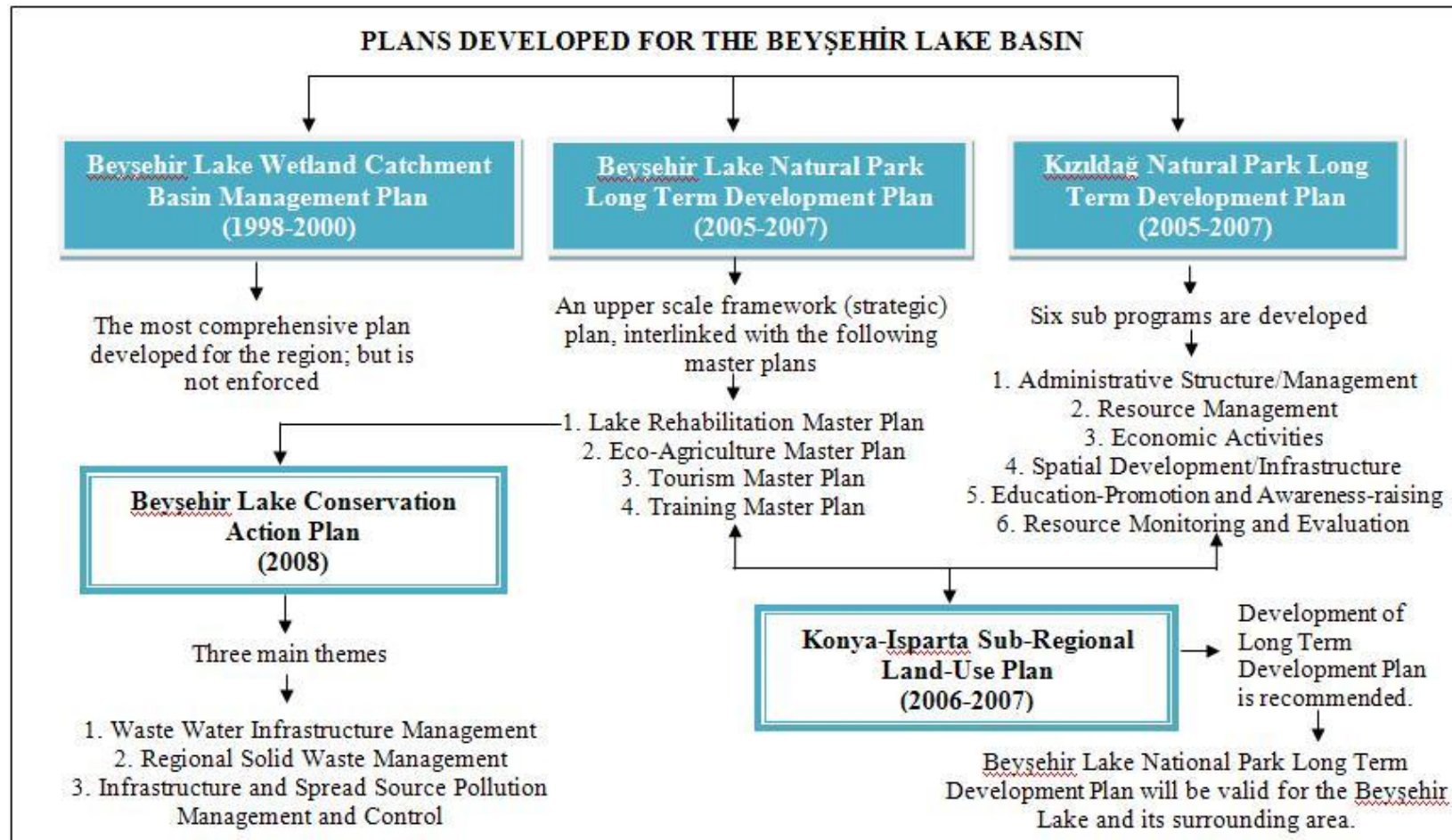


Figure 26. Developed Plans for the Beyşehir Lake Basin

V.3.1.2.3. Evaluation of the Plans by ILBM Planning Principles and Criteria

Table 18. Evaluation of the Developed Plans of Beyşehir Lake Basin

Plans	Years	Positive sides	Deficiencies
Beyşehir Lake Wetland Catchment Basin Management Plan	1998-2000	1. The plan is developed with regard to the lake drainage basin. 2. It aims both environmental sustainability and economic development. 3. The planning process is composed of the stages of Clarifying goals, Gathering information, Evaluating the alternatives, Making a formal decision, Defining measurable objectives. 4. The two pillars, policies and information, are integrated in planning process. 5. A wide range of analysis is performed about natural characteristics of the basin; historical development of settlements; socio economic and demographic structures of settlements; and existing activities. 6. An ecosystem based approach, ensuring harmony between natural ecosystem and urban life, is aimed. 7. It assumes a preventative approach for pollution control. 8. It has a strategic approach.	1. The pillars of institutions, participation, technology and finance are not well defined. 2. Although the plan is the most comprehensive work for the Beyşehir Lake Basin, it cannot be implemented because of lack of cooperation between partners. 4. Since the plan is not implemented, it is not possible to evaluate its flexibility, adaptability and sensitivity to changing conditions; its achievements and performances. 5. There is not a consensus based approach that enables involvement of partners, collaboration between partners and resolution of conflicts between competing groups. 6. The planning process does not benefit from the knowledge and experiences of local people.

Table 18 (continued)

Beyşehir Lake Natural Park Long Term Development Plan	2005- 2007	1. The planning process includes the pillars of institutions, policies, participation. 2. The planning process does not entirely follow the eight general steps, but it still has a systematic order. 3. The Plan is interlinked with regional plans in defining main programs. 4. It aims both sustainability of natural resources and promoting socio-economic activities. 5. It assumes a preventative approach for pollution control. 6. It assumes a participatory approach both in decision-making and implementation.	1. The pillars of technology and finance are not well integrated in the planning process. 2. Involvement and responsibilities of partners are defined, but no solutions are defined to overcome conflicts. 3. The Plan is not interconnected with the Beyşehir Lake drainage basin since the National Park area does not cover the whole basin. 4. Since the adaptability of the Plan is not defined, there is no flexibility approach. 5. Only a few programs have been implemented yet. 6. The objectives and decisions are well defined, but required funding is not pointed. 7. The governance and partnership approaches are not well developed.
Kızıldağ Natural Park Long Term Development Plan	2005- 2007	1. The pillars of participation, policies, institutions and information are included. 2. The plan is developed strategically. 3. The planning process is dynamic. 4. It has a participation approach.	1. The pillars of technology and finance are not included. 2. The implementation of the Plan is mostly left to lower scale plans.

Table 18 (continued)

		5. Its aim and strategies satisfy the ecosystem-based approach, consensus-based approach, sound science and available information approach, preventative approach. 6. With the sub programs, governance and flexibility approaches are tried to be developed	
Konya-Isparta Sub-Regional Land-Use Plan	2006-2007	1. The pillars of institutions, policies, participation, technology and information are included. 2. The planning process assumes participatory, ecosystem based, sound science and flexibility approaches 3. There is a dynamic planning process. 4. The plan has a strategic approach. 5. The plan is integrated to national plans	1. The pillar of “finance” is not mentioned. 2. Although it contains flexibility approach at the planning process, the adaptability to changes is not integrated to principles. 3. How the achievements and performance of the plan are to be evaluated is not mentioned. 4. Implementation is highly left to lower scale plans and projects.
Beyşehir Lake Conservation Action Plan	2008	1. The planning process includes the six pillars of ILBM. 2. The plan has integration to the upper scale plan. 3. The plan is developed for the whole basin area, so it has a “lake drainage basin approach” 4. The plan aims at determining problems and measures for pollution, so it has a preventative approach. 5. The plan has a strategic approach.	1. The planning process follows the general steps, but the implementation step lacks. 2. The planning process does not include experiences of local people and does not inform them. 3. The flexibility approach is not included.

V.3.2. PARTICIPATORY PLANNING IN THE BEYŞEHİR BASIN: INFERENCES FROM THE QUESTIONNAIRES CONDUCTED WITH STAKEHOLDERS

In order to understand the applicability of ILBM in the Beyşehir Lake Basin Planning, the institutional structure and readiness for a participatory process should be known. Therefore, a questionnaire was conducted in May, 2011 with the stakeholders of the Basin²⁸. The stakeholder groups are defined as decision making institutions and decision-supporting institutions at international, national, regional and local levels.

Table 19. Stakeholder groups at local, regional, national and international levels

	Decision Making Institutions	Decision Supporting Institutions
Local Level	1-Şarkikaraağaç Municipality, 2-Beyşehir Municipality, 3-Hüyük Municipality, 4-Derbent Municipality, 5-Derebucak Municipality, 6-Yenişarbademli Municipality, 7-Derbent District Governorship, 8-Derebucak District Governorship, 9-Beyşehir District Governorship, 10-Hüyük District Governorship, 11-Beyşehir District Directorate of Agriculture, 12-Hüyük District Directorate of Agriculture, 13-Derbent District Directorate of Agriculture, 14-Şarkikaraağaç District Directorate of Agriculture, 15-Konya Local Health Authority, 16-Isparta Local Health Authority, 17-Culture and Tourism Directorate of Konya, 18-Konya Special Provincial Administration, 19-Isparta Special Provincial Administration,	23-Beyşehir Chamber Of Commerce, 24-Konya Chamber of Industry, 25-Selcuk University- City Planning Department, 26-Pankobirlik

²⁸The questionnaire was conducted within the context of BAP-08-11-DPT.2010K121500-2 numbered “Tatlısu Ekosistemleri Araştırma Birimi-TEAB (Freshwater Ecosystems Research Unit)” project.

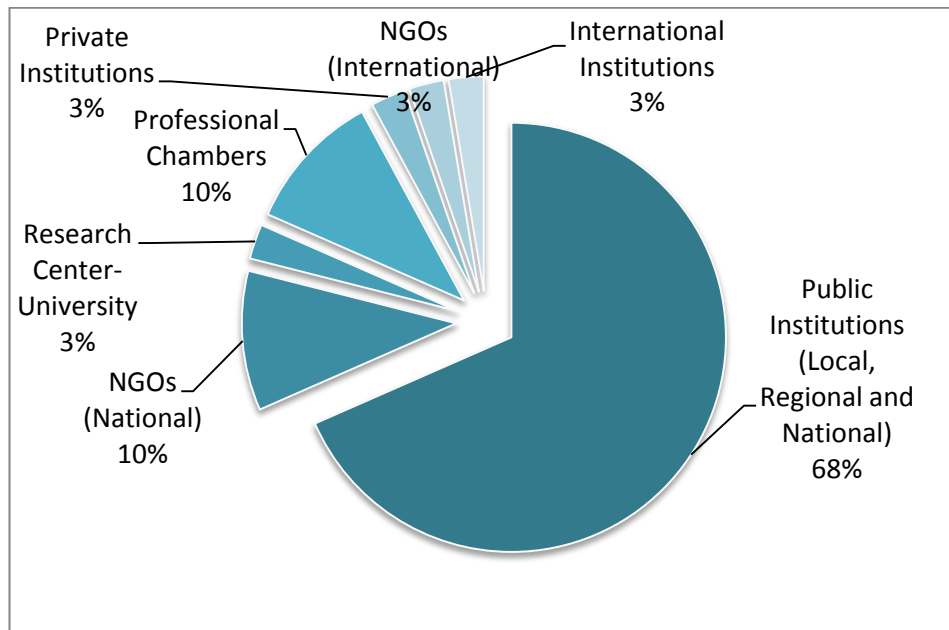
Table 19 (continued)

	20-Konya Public Works And Settlement Directorate, 21-Isparta Public Works And Settlement Directorate, 22-Isparta Provincial Department of Environment And Forestry	
Regional Level	27-Konya Branch of the General Directorate of State Hydraulic Works, 28-Isparta Branch of the General Directorate of State Hydraulic Works	29-Mevlana Development Agency
National Level	30-Directorate of Nature Conservation And National Parks	31-Association of Young Industrialists And Businessmen 32-Chamber of Forest Engineers, 33-Chamber of Agriculture Engineers 34-TEMA 35-Çekül 36-WWF-TR 37-Doğa Derneği
International Level		38-United Nations Development Programme (UNDP)

Table 20. The number of participants

Public Institutions (local, regional and national)	26
NGOs (National)	4
Professional Chambers	4
Research Center- University	1
Private Institutions	1
NGOs (International)	1
International Institutions	1

The majority of the interviewees are composed of public institutions at national and local levels. The other part is composed of NGOs (national and international), Professional Chambers, Research Center-University, Private Institutions and International Institutions.



Graph 1. Interviewee Groups

Questionnaires will be analyzed under five topics:

- Level of awareness among stakeholders about the problems of the Beyşehir Lake
- The existing roles of stakeholders regarding the conservation/use of the Beyşehir Lake and its basin
- Existing projects/implementations/researches of stakeholders about Beyşehir Lake Basin
- Stakeholder approach to the Beyşehir Lake Basin planning
- Stakeholder evaluation regarding legislative structure

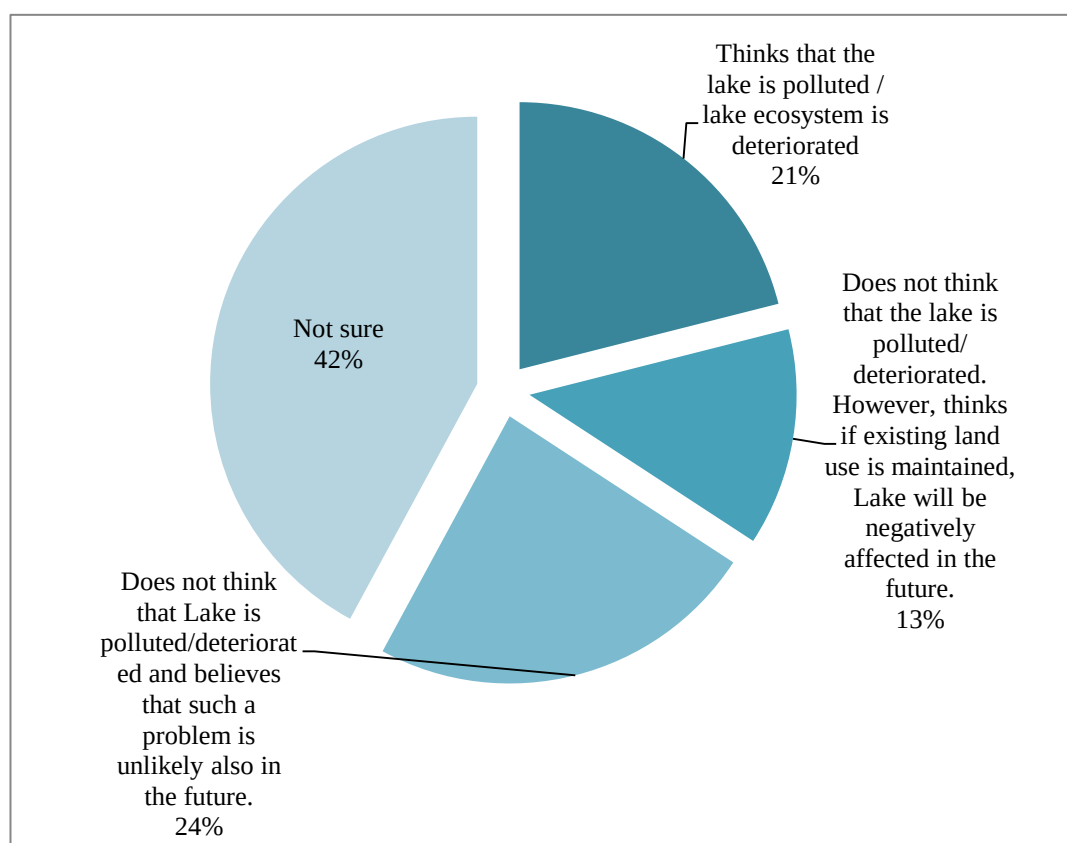
V.3.2.1. Level of Awareness among Stakeholders about the problems in the Beyşehir Lake

The questionnaire survey puts forward that only 21% of the respondents believe that the Beyşehir Lake has a pollution/deterioration problem. 13 % of them do not think that the Lake is polluted/ deteriorated; but believe that if the existing land-use approach is maintained, it will be negatively affected in the future. 24% of the respondents think that the Lake is not polluted, and such a problem is unlikely also in

the future. These figures altogether suggest that **40% of the interviewees** do not believe that there is a pollution problem in the Beyşehir Lake. This is a remarkable outcome implying the lack of a proactive approach of institutions towards conserving it. Meanwhile, 42% of the institutions are not sure about this issue.

Thinks that the lake is polluted / lake ecosystem is deteriorated	8
Does not think that the lake is polluted/ deteriorated. However, thinks if existing land use is maintained, Lake will be negatively affected in the future.	5
Does not think that Lake is polluted/deteriorated and believes that such a problem is unlikely also in the future.	9
Not sure	16

Table 21. Thoughts about Lake pollution/deterioration



Graph 2. Thoughts regarding pollution/deterioration in the Beyşehir Lake

The following table shows the answers of different type of institutions. It is seen that the ones that do not think that the lake is polluted are mostly from public institutions which are grouped as decision making institutions. However, almost all of the decision supporting institutions thinks that the Lake is polluted.

Table 22. Opinions about pollution / type of institution

Do you think that Lake is polluted/deteriorated ? Or do you think this will appear in the future?	Type of institutions						
	Public	Private	NGOs	Uni.	Internat.	Prof. Chambers	Total
Thinks that the lake is polluted / lake ecosystem is deteriorated	1	0	4	1	1	1	8
	2,6%	0,0%	10,5%	2,6%	2,6%	2,6%	21%
Does not think that the lake is polluted/ deteriorated. However, thinks if existing land use is maintained, Lake will be negatively affected in the future.	5	0	0	0	0	0	5
	13,2%	0,0%	0,0%	0,0%	0,0%	0,0%	13,2%
Does not think that Lake is polluted/ deteriorated and believes that such a problem is unlikely also in the future.	8	0	1	0	0	0	9
	21,1%	0,0%	2,6%	0,0%	0,0%	0,0%	23,7%
Not sure	12	1	0	0	0	3	16
	31,6%	2,6%	0,0%	0,0%	0,0%	7,9%	42,1%
							38
							100%

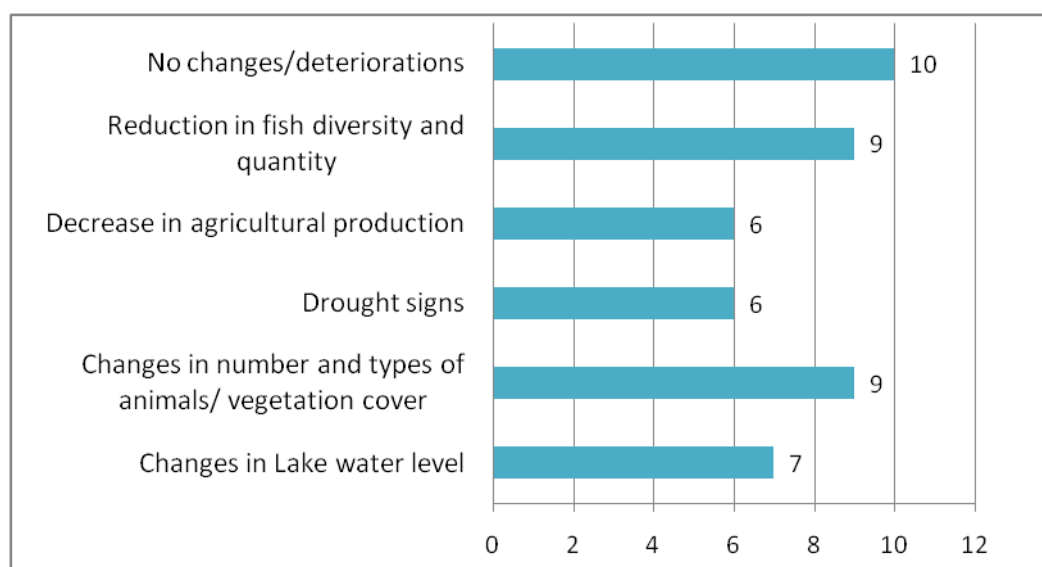
One of the questions posed to the respondents is the impacts of different land-uses on the Beyşehir Lake. It is interesting to note that only 10 out of 38 stakeholders (26%) think that there are ecosystem changes/deteriorations in the Beyşehir Lake. Approximately 63% of them are decision supporting institutions. On the other hand 74% of the participants (28 respondents) which are mostly from decision making institutions do not think that there are ecosystem changes/deteriorations in the Beyşehir Lake. A Likert-type evaluation scala (1: lowest impact; 7: highest impact)

is utilized to define the impact of different land-uses on **type and density** of deterioration according to the stakeholders. The results display that deterioration is mostly related to “urban development processes in the region”, “applications of industrial facilities that did not take enough care of the natural environment”, and “agricultural activities that did not take enough care of the natural environment”. Additionally the reasons “site selection of highways in the region”, “site selection of industrial facilities in the region” and “number of industrial facilities in the region” get average scores for that question. Evaluations of the stakeholders basically imply that **type and density** of industrial and agricultural activities are not sensitive to the ecosystem within which they are performed (Table 23).

Table 23. Reasons of the ecosystem change/deterioration according to the respondents

	1	2	3	4	5	6	7
Urban development processes in the region	0	0	0	1	3	5	1
Site selection of highway in the region	0	2	1	5	2	0	0
Types of industry in the region	0	1	4	3	1	1	0
Site selection of industrial facilities in the region	0	0	3	4	0	2	1
Number of industrial facilities in the region	0	2	2	4	1	1	0
Applications of industrial facilities in the region that did not take enough care of the natural environment (treatment plant problem, infrastructure problem, etc.)	0	0	0	2	2	1	5
Agricultural product pattern in the region	0	0	1	1	3	2	3
Agricultural activities that did not take enough care of natural environment (digging a pit without permission, etc.)	0	0	0	0	2	2	6
Other	0	0	0	0	2	0	5

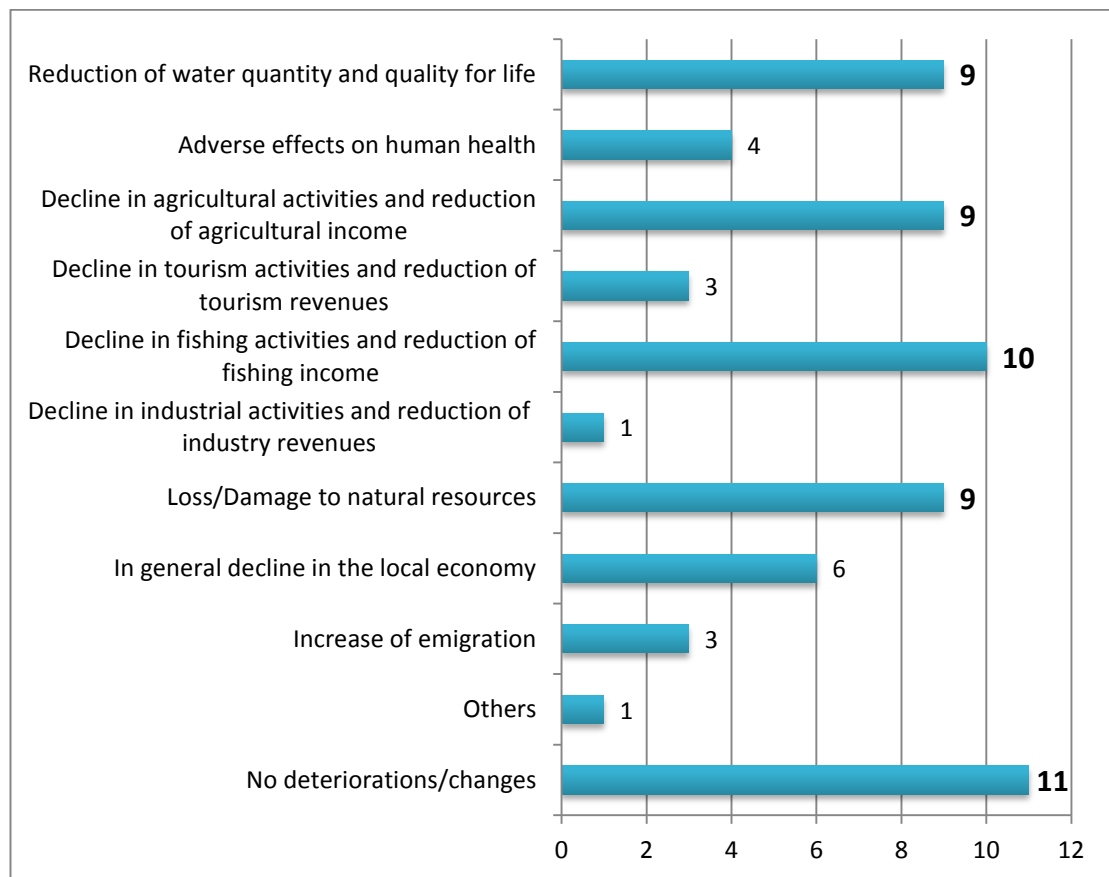
The respondents, who believe that there are deteriorations in the Lake, describe the symptoms of deteriorations mostly as “Changes in number and types of animals/vegetation in the area” and “Reduction in fish diversity and quantity”.



Graph 3. Signs of the changes/deteriorations in the Beyşehir Lake

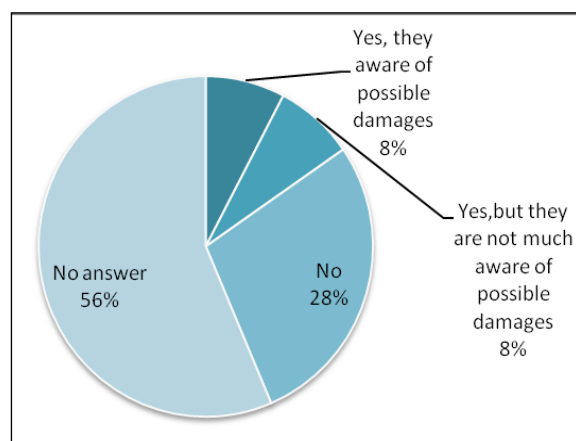
Similarly, the studies of Biology group of the project “Tatlısu Ekosistemleri Araştırma Birimi-TEAB (Freshwater Ecosystems Research Unit)” show that there are decreasing in the number of fish species. The introduced species (sander *luciooperca*, tinca tinca, carassius gibelio and atherina boyeri) have threatened the endemic species like *acanthorutilus anatolicus*.

Furthermore, they are asked to define possible effects of those changes/deteriorations in the Lake in future. The respondents are mostly concerned about “Decline in fishing activities and reduction of fishing income”, “Reduction of water quantity and quality for life”, “Decline in agricultural activities and reduction of agricultural income” and “Loss/Damage of natural resources” (Graph 4).



Graph 4. Possible effects of ecosystem deterioration on the Lake Basin according to the Respondents

28 % of the participants point that people living in the settlements around the



Beyşehir Lake are not aware of pollution/ ecosystem deterioration in the Lake. Meanwhile, 8 % state that they are aware of pollution/deterioration, but not that much aware of possible damages; and another 8 % mention that they are aware of both pollution/deterioration and possible damages.

Graph 5. The awareness level of people living around Beyşehir Lake according to participants

V.3.2.2. The existing roles of stakeholders regarding the conservation/use of the Beyşehir Lake and its basin

55 % of the interviewed institutions have active roles at local scale (24 % at regional and 21% at national scales). As their institutional missions require, they mostly provide services in different fields; carry out implementation and management; and lobbying (Table 24). Their responsibilities and implementations in spatial planning are indicated by the respondents mostly as Developing and approving urban scale spatial plans; Organizing awareness-raising meetings for related institutions via inviting experts of spatial development; and Organizing meetings to have opinions of professional chambers and NGOs about spatial development (Table 25).

Table 24. Mission of institutions about natural environment

	Public Inst.			NGOs		Prof. Chambers		Uni.	Private Inst.	Internat. Inst.	TOTAL
	Local	Reg.	Nat.	Nat.	Internat.	Local	Nat.	Local	Local		
Decision making/policy development	9	1	1	-	-	-	-	-	-	1	12
Developing plans	10	2	1	-	-	-	-	-	-	-	13
Providing service in different fields	17	3	1	3	-	2	2	-	1	-	29
Implementation and management	18	2	1	-	-	-	1	-	-	-	22
Lobbying	4	-	1	4	1	2	2	-	1	1	16
Other	-	-	-	-	1	-	-	1	-	-	2

Table 25. Responsibilities and Implementations of the Institutions in spatial planning

	Public Inst.			NGOs		Prof. Chambers		Uni.	Private Inst.	Internat. Inst.	TOT.
	Local	Reg.	Nat.	Nat.	Internat.	Local	Nat.	Local	Local		
Developing/Making developed and approving upper scale spatial plans (1/100 000, 1/25 000)	2	1	1	-	-	-	-	-	-	-	4
Developing/Making developed and approving urban scale spatial plans (1/5000, 1/1000)	8	-	-	-	-	-	-	-	-	-	8
Organizing awareness-raising meetings for related institutions via inviting experts in spatial development	6	1	-	-	1	-	-	-	-	-	8
Making surveys for taking opinions of local people about spatial development	4	1	-	-	-	-	-	-	-	-	5
Organizing meetings for taking opinions of professional chambers and NGOs about spatial development	7	1	-	-	-	-	-	-	-	-	8
Other	-	-	-	-	-	-	-	1	-	1	2

Meanwhile, Table 26 shows the projects of institutions that are directly or indirectly related with natural environment, and distribution of these projects among institutions. In total 20 institutions (55 % of the participants) have Plans/Projects directly related with natural environment. Among these institutions, most of the projects belong to public institutions (60%). They are followed by NGOs (25%), professional chambers (10%) and international institutions (5%) respectively.

The major plans and projects of the institutions are related to natural environment, social issues, awareness raising and pollution prevention. 72 % of the societal projects are carried out by public institutions, 16 % by NGOs, 6 % by international institutions and 6 % by trade associations. Meanwhile, 58% of the awareness raising projects about environmental issues is done by public institutions, 5 % by private institutions, 21 % by NGOs, 5 % by international institutions and 11 % by trade associations. Finally, as far as pollution prevention projects are concerned, most of them are performed by public institutions (63%), 4 % by private institutions, 17 % by NGOs, 4 % by university and 12 % by trade associations. It can be inferred that public institutions and NGOs are the most active participants in the region. Considering the legal duties of public institutions, it is just normal to expect them to realize such duties. However NGOs, being voluntary organizations, do not have such an obligation, and perform these activities through their own will. They are active almost in every field expect urban regeneration/ design and infrastructure projects. It is also interesting to note the remarkable share of trade associations in carrying out natural environment related activities. This outcome can be attributed to the campaigns carried out by NGOs in the region.

Table 26. Directly or indirectly related projects of institutions with natural environment and dispersion between institutions

(The cells showing the majority of the project types are painted green.)

		Types of Institutions													
		Public Inst.		Private Inst.		NGOs		Uni.		Internat.Inst.		Prof.Chamb ers			
		No. of prjcts	%		%		%		%		%		%		
Plans and Projects of institutions related directly or indirectly with natural environment	Plans/Projects related with natural environment	12	60	0	0	5	25	0	0	1	5	2	10	20	100
	Social plans/projects	13	72	0	0	3	16	0	0	1	6	1	6	18	100
	Plans/projects related with tourism	7	64	0	0	1	9	2	18	1	9	0	0	11	100
	Urban regeneration/ design projects	7	87,5	0	0	0	0	1	12,5	0	0	0	0	8	100
	Tourism promotion projects/studies	6	75	0	0	1	12,5	0	0	1	12,5	0	0	8	100
	Awareness raising projects/studies about environmental issues	11	58	1	5	4	21	0	0	1	5	2	11	19	100
	Energy efficiency/clean energy projects/studies	5	56	0	0	2	22	0	0	1	11	1	11	9	100
	Prevention of pollution projects/studies	15	63	1	4	4	17	1	4	0	0	3	12	24	100
	Infrastructure Projects	10	91	0	0	0	0	0	0	0	0	1	9	11	100
	Biological variety and conservation of ground surface studies	4	33	0	0	5	41	0	0	1	8	2	17	12	100
Other	1	100	0	0	0	0	0	0	0	0	0	0	1	100	

V.3.2.3. Existing projects/implementations/researches of stakeholders about Beyşehir Lake Basin

Respondents are asked whether their plans/projects are directly or indirectly related with the Beyşehir Lake Basin. Only 36,8 % of them say that they have related projects. The distribution of the answers between institutions is shown in the following table. It is understood that over half of the decision making institutions do not have any related projects. This shows that the Lake Basin is not handled by the institutions adequately.

Table 27. Relationship of projects with Beyşehir Lake in different institutions

	Type of participants							Total
	Public Inst.	Private Inst.	NGOs (Nat.)	NGOs (Internat.)	Uni.	Internat. Inst.	Prof. Chambers	
No answer	1	0	0	0	0	0	0	
	2,6%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	2,6%
Yes	6	0	3	1	2	1	1	
	15,8%	0,0%	7,9%	2,6%	5,3%	2,6%	2,6%	36,8%
No	18	1	2	0	0	0	2	
	47,4%	2,6%	5,3%	0,0%	0,0%	0,0%	5,3%	60,5%
Total	65,8%	2,6%	13,2%	2,6%	5,3%	2,6%	7,9%	100,0%

Those projects in general cover promotion of tourism activities, awareness-raising, and supervision in agricultural spraying. Additionally, the local university (Selçuk University) conducted projects for participatory basin management. The Beyşehir Lake related projects of the institutions are as follow;

Table 28. Projects of the institutions

Beyşehir Municipality	Coastal Arrangement Project between Taş Köprü and Teacherage
Beyşehir District Directorate of Agriculture	- Controlling agricultural spraying - Giving certificates for disinfection - Preventing inconvenient disinfection

Table 28 (continued)

Beyşehir District Governorship	Awareness raising for natural environment usage Promotion of tourism
Culture and Tourism Directorate of Konya	Developing tourism in Beyşehir
Derbent District Directorate of Agriculture	Increasing tourism potential
Şarkikarağaç Municipality	Infrastructure, tourism and awareness raising

Table 29. The relationship with the opinions of institutions and their action-taking

	Is there any relationship (direct or indirect) between your plans/ projects with Beyşehir Lake Basin?		
Do you think that Lake is polluted/deteriorated? Or do you think this will appear in the future?	No answer	Yes	No
Thinks that the lake is polluted / lake ecosystem is deteriorated	0	7	1
	0,0%	18,4%	2,6%
Not thinking that the lake is polluted/deteriorated. However, thinking if existing land use is maintained, Lake will be negatively affected in the future	0	4	2
	0,0%	10,5%	5,3%
Not thinking that Lake is polluted/deteriorated and such a problem is unlikely also in the future	0	2	7
	0,0%	5,3%	18,4%
Not sure	1	1	13
	2,6%	2,6%	34,2%

It is seen from the Table 29 the participants that have no projects for the Beyşehir Lake Basin are mostly the ones that do not think that the Lake is polluted/deteriorated and do not believe that such a problem is likely also in the future; and are not sure about pollution/deterioration problem. The stakeholders that

have projects on the Lake mostly think that the lake is polluted/lake ecosystem is deteriorated.

5 institutions (18 % of stakeholders; namely Şarkikaraağaç Municipality, Selçuk University-City Planning Department, Beyşehir Municipality, Hüyük District Governorship and WWF-TR) are planning to develop projects for the **conservation** of Beyşehir Lake and its Basin. Beyşehir Municipality has a Conservation Project for tourism purposes, and there is a recycling project by the Beyşehir Lake Basin Union. In Selçuk University, the Environmental Engineering Department is currently working on the Beyşehir Lake Special Principles Determination project in cooperation with the Ministry of Forestry and Hydraulic Works and TÜBİTAK. Moreover, Hüyük District Governorship has projects for clean environment and prevention of pollution. Although these organizations do have concerns and projects for the Basin, they do not seem to have come together and collaborated with one another for an integrated plan that cover all of these projects.

V.3.2.4. Stakeholder approach to the Beyşehir Lake Basin planning

The question asking if land use plans of the settlements at the region are compatible with conservation principles of the Beyşehir Lake is responded positively by 8 respondents, all from public institutions. Only 1 participant considers that the Beyşehir Land Use Plan (Nazım İmar Planı) is not compatible with conservation principles. The following table shows the answers according to representatives of institutions.

Table 30. Opinions of institutions about land use plans

	Type of institutions						Total
	Public Inst.	Private Inst.	NGOs	Uni.	Internat. Inst.	Prof. Chambers	
No	18	1	5	1	1	4	30
answer	47,4%	2,6%	13,2%	2,6%	2,6%	10,5%	78,9%
Yes	8	0	0	0	0	0	8
	21,1%	0,0%	0,0%	0,0%	0,0%	0,0%	21,1%
No	0	0	0	0	0	0	0
	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%

According to Table 30, public institutions that giving answers to the question, between 26 public institutions while 18 of them (47,4 %) are giving no answer, the rest (21,1%) finds plans land use plans compatible with conservation principles of Beyşehir Lake. In total 30 institutions (78,9 %) give no answer to this question and the other 8 institutions (21,1%) think that landuse plans of the settlements at the region are compatible with conservation principles of Beyşehir Lake. Moreover, the decision supporting institutions do not have any idea about compatibility of land use plans with conservation principles. Approximately 30% of the decision making institutions find land use plans compatible with conservation principles.

Another question asks whether they know other existing plans for conservation of the Beyşehir Lake and the surrounding area. While 39,5 % of the representatives of the institutions say yes, 7,9 % of them respond negatively, 52,6 % of the participants do not give an answer at all. This result shows that the institutions are not well aware of the planning studies for Beyşehir Lake Basin. The reason for this may be insufficient collaboration between stakeholders or lack of interests to conservation of lake basin.

According to Table 31, the participants, who are aware of other existing plans, work at public institutions, NGOs (national) and Professional Chambers. One respondent

from decision-supporting institutions states that even if plans include affirmative decisions, implementation gets late because of bureaucratic reasons.

Table 31. Knowledge about existing plans

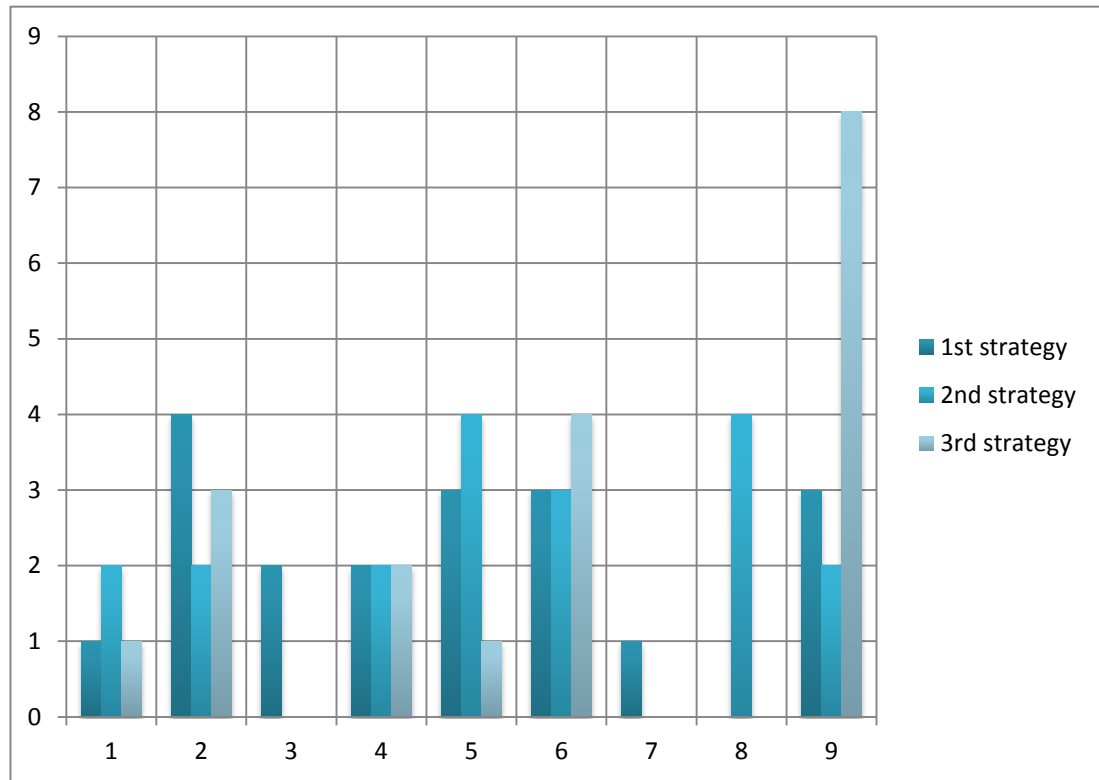
	Type of institutions							TOTAL
	Public Inst.	Private Inst.	NGOs (Nat.)	NGOs (Internat.)	Uni.	Internat. Inst.	Prof. Chambers	
No answer	14	1	3	0	1	1	0	20
	36,8%	2,6%	7,9%	0,0%	2,6%	2,6%	0,0%	52,6%
Yes	10	0	2	0	0	0	3	15
	26,3%	0,0%	5,3%	0,0%	0,0%	0,0%	7,9%	39,5%
No	1	0	0	1	1	0	0	3
	2,6%	0,0%	0,0%	2,6%	2,6%	0,0%	0,0%	7,9%

In the questionnaire, nine strategic fields are indicated and the respondents are asked to prioritize the first three for the Beyşehir Lake Basin. The nine strategies/subjects are:

1. A Lake Basin Management Initiative should be established and given a legal status.
2. Financial opportunities for basin and lake management should be diversified.
3. For efficient planning and management, roles of institutions in cooperation and coordination should be defined clearly in the legislation.
4. Strategic planning approach should be adopted in lake basin planning; vision and strategies should be determined through a participatory process.
5. Awareness raising workshops should be organized for local people about the importance of conservation.
6. Types of industry, agriculture, etc. activities within the basin conservation boundaries should be decided in a way not to impact on the Lake adversely; the contrary uses should be removed from the basin gradually.
7. Conservation of basin biodiversity should be a priority issue in conservation planning.
8. Sustainable fishery should be a priority issue in conservation planning.

9. Sustainable agriculture should be taught to farmers and policies to promote it should be developed.

Their priorities for the management and planning of Beyşehir Lake Basin are shown in the following graph.



Graph 6. The prior strategic fields defined by the respondents

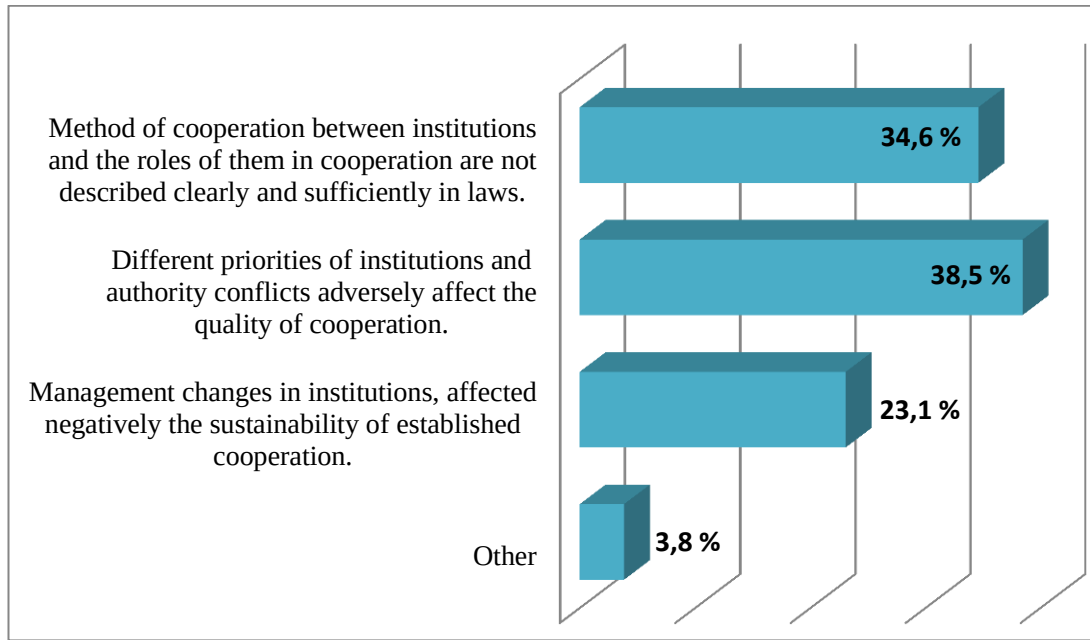
The graph above suggests that stakeholders regard the **sustainable agriculture** as a very significant strategic field for the planning of the Beyşehir Basin. Choosing of sustainable agriculture is not surprising, because excessive water pumping for irrigation purposes (Isparta, Kireli, Çumra plains) in agriculture is one of the important problems of the Lake as explained in Chapter V.3.1.2.1.

Following the improvement of sustainable agriculture, the other most significant strategic fields are “Financial opportunities for basin and lake management should be diversified”, “Awareness raising workshops should be organized for local people about the importance of conservation”, “Types of industry, agriculture, etc. activities

within the basin conservation boundaries should be decided in a way not to impact on the Lake adversely; the contrary uses should be removed from the basin gradually” .

Evaluating with the secondary and tertiary priority fields shown in the graph, it can be inferred that for the management and planning of the Lake Basin, improvement of financial options, awareness raising about conservation, environmentally sensitive activities, and promoting sustainable agriculture are considered significant by the representatives of decision making and decision supporting institutions.

As mentioned in Chapter III, one of the pillars of ILBM is a well established institutional structure that enables collaboration of institutions. In order to decrease conflicts and increase local government capacity, it is important to have strong collaboration. As far as the quality of collaboration is concerned; 71% of the respondents believe that there are not any situations complicating the cooperation between institutions. Other 29% say that there are conflicting situations for an efficient cooperation; they believe that “Different priorities of institutions and authority conflicts adversely affect the quality of cooperation” and “Method of cooperation between institutions and the roles of them in cooperation are not described clearly and sufficiently in laws”. One respondent from the decision supporting institutions points that very same actions are performed by more than one institution repeatedly which cause waste of time and money. Therefore, it can be concluded that clarification of the roles and responsibilities of institutions is needed for an efficient cooperation and for avoiding conflicts between them.



Graph 7. The conflicts preventing efficient cooperation according to the respondents

For most of the respondents from the institutions that have direct or indirect plans/projects for the Beyşehir Lake Basin, “Method of cooperation between institutions and the roles of them in cooperation are not described clearly and sufficiently in laws” and “Different priorities of institutions and authority conflicts adversely affect the quality of cooperation” are the most significant issues (Table 32).

The institutions that have direct or indirect plans/projects for Beyşehir Lake Basin are;

- Şarkikaraağaç Municipality
- Selcuk Uni-City Planning Dept.
- Beyşehir Municipality
- Hüyük District Governorship
- Beyşehir District Governorship
- Beyşehir District Directorate of Agriculture
- Culture and Tourism Directorate of Konya
- Beyşehir Chamber Of Commerce
- Çekül

- Mevlana Development Agency
- Chamber of Agriculture Engineers
- WWF-TR
- UNDP
- Doğa Derneği

Table 32. Complicating factors according to institutions that have projects for Beyşehir Lake Basin

		The institutions that have direct or indirect plans/projects for Beyşehir Lake Basin					
		Pub. Inst.	NGOs	Prof. Chamb.	Uni.	Inter nat. Inst.	TOT.
Situations complicating the cooperation between institutions in existing situation	Method of cooperation between institutions and the roles of them in cooperation are not described clearly and sufficiently in laws	5,3 %	15,8%	5,3%	5,3 %	5,3%	37,0 %
	Different priorities of institutions and authority conflicts adversely affect the quality of cooperation	5,3 %	15,8%	5,3%	5,3 %	5,3%	37,0 %
	The sustainability of developed cooperation is adversely affected when managers change in the institutions	10,1 %	5,3%	0,0%	0,0 %	5,3%	20,7 %
	Time and financial losses due to carrying out same actions repeatedly by more than one institutions	0,0 %	0,0%	0,0%	5,3 %	0,0%	5,3%
TOTAL		20,7 %	36,9 %	10,6%	15,9%	15,9 %	100,0 %

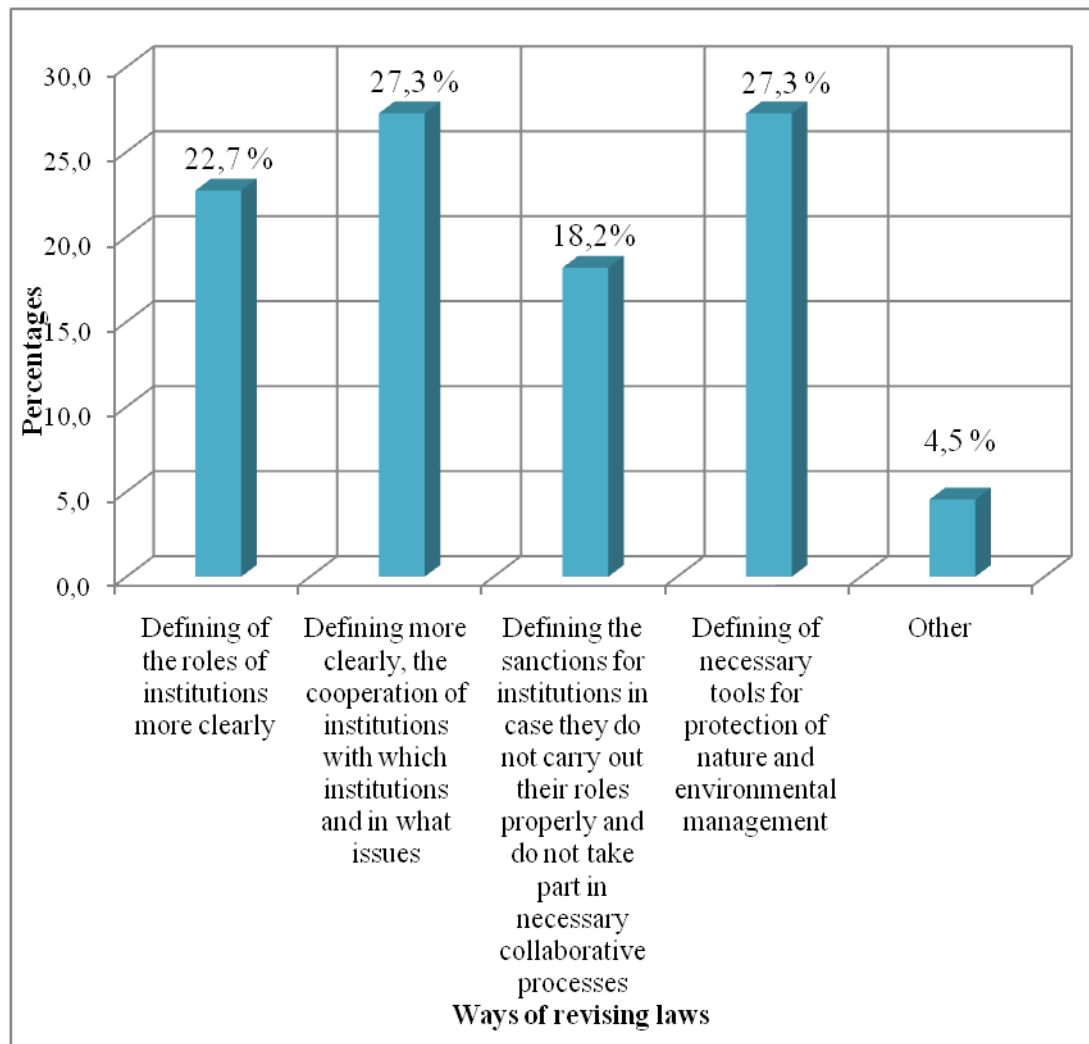
V.3.2.5. Stakeholder evaluation regarding legislative structure

There are many different laws according to which public institutions have to operate. The following table shows the laws bounding the institutions.

Table 33. The laws bounding public institutions

Municipality Law	6	15,4 %
Metropolitan Municipality Law	0	0,0 %
Environmental Law	2	5,1 %
Tourism Promotion Law	2	5,1 %
Special Provincial Administration Law	2	5,1 %
Forestry Law	1	2,6 %
Code of Protection of Cultural and Natural Properties	3	7,7 %
Organization and Duties of the Ministry of Environment and Forestry Law	2	5,1 %
Urban Renewal Law	2	5,1 %
Coastal Law	1	2,6 %

74% of the respondents think that the existing laws are sufficient for nature protection and environmental management. On the other hand, 26% of them find the laws insufficient, and believe that they should be revised to be more effective in nature protection and environmental management. The graph below indicates the priorities of respondents for such a revision, among which “Defining more clearly, the cooperation of institutions with which institutions and in what issues” and “Defining of necessary tools for protection of nature and environmental management” come forefront (Graph 8).



Graph 8. The proposed ways of revising laws to make them more effective

V.4. INFERENCES FROM THE FIELD SURVEY FOR AN EFFICIENT ILBM PLANNING IN THE BEYŞEHİR LAKE BASIN

The Research Questions have been organized in two groups; **first group** having the evaluations of representatives of stakeholder institutions on past planning studies for the Beyşehir Lake Basin; and **second group** having their views on the collaborative capacity of the stakeholders of the Basin for an effective ILBM in the area.

V.4.1.PAST PLANNING STUDIES FOR THE BEYŞEHİR LAKE BASIN

The plans produced for the Beyşehir Lake Basin have been evaluated with respect to the ILBM Planning criteria in Section “V.3.1. ILBM Planning For the Beyşehir Lake Basin”. The results are as follows:

- Five plans were produced for the Beyşehir Lake Basin until date. Although the Beyşehir Lake Wetland Catchment Basin Management Plan was the most comprehensive one among them, it could not be implemented because of lack of cooperation. Therefore, there is not an operative Management Plan for the Basin.
 - The ILBM pillars of participation, technology and finance were not adequately defined in the Plans.
 - The plans comprised dynamic planning processes. Meanwhile, they had integration with one another except for the Beyşehir Lake Wetland Catchment Basin Management Plan.
 - The planning processes did not sufficiently follow consensus-based; sound science and available information; flexibility; and governance approaches due to
 - The deficiencies in collaboration and involvement of partners
 - The negligence of lake people’s experiences and knowledge
 - The deficiencies in integrating general public in implementation
- However, they all followed a strategic planning approach; and except for the Wetland Catchment Basin Management Plan, they all assumed a participatory approach.
- In ILBM Plans, there are four types of plans for lake basins as vision plans; action plans and intervention plans; comprehensive plans and statutory plans. However, the Beyşehir Lake Basin has only had a Conservation Action Plan and a vision plan (Konya-Isparta Sub-Regional Land-Use Plan).

Meanwhile, the multiplicity of administrations with often confusing authorities makes the implementation of an efficient ILBM almost impossible. This research

infers that the existing administrative structure bounding to multiple laws and responsible for similar (and often confusing) authorities is not suitable to realize the two ILBM pillars -participation and institutions- in the Beyşehir Lake Basin effectively. Even if the responsibilities of the stakeholders have been defined in these plans, it is not possible for them to adequately perform these responsibilities because of their differentiating priorities. Moreover, there is not a strong institutional capacity with a long-established collaborative culture to ease the implementation process. There are various stakeholders working at different scales, but not working together unless there is a legal obligation.

V.4.2. COLLABORATIVE CAPACITY OF THE STAKEHOLDERS OF THE BEYŞEHİR LAKE BASIN

According to the questionnaire results, it can be inferred that the *level of awareness* of stakeholders about pollution/deterioration in the Beyşehir Lake Basin is low. Although researches show that there are environmental problems in the Lake (see Section V.3.1.2.1.), 40% of the participants think that there is not a pollution problem in the Lake at all, and 74% of the participants do not believe that there are ecosystem deteriorations in the Lake. 55% of the stakeholders (mostly composed of public institutions and NGOs) have active roles in the Basin. 13 out of the 25 respondents from public institutions with active roles in the region do not think that the Lake is polluted/ deteriorated, and 11 of them are not sure about this subject.

In addition to the low awareness level about environmental problems of the Lake, the stakeholders also do not have much awareness about *previous planning studies*. Because, 76,3 % of the participants do not give any answer whether the land use plans are compatible plans with conservation principles of the Beyşehir Lake. Moreover, most of them (52,6 %) are not aware of the existing plans. This shows that the cooperation between stakeholders are weak and they have insufficient interests on conservation of lake basin.

55 % of the institutions have Plans/Projects related to natural environment. Beside public institutions and NGOs, Professional Chambers also have various types of

projects. Stakeholders define their *roles on spatial planning* as Developing and approving urban scale spatial plans; Organizing awareness-raising meetings for related institutions via inviting experts in spatial development; and Organizing meetings to take opinions of professional chambers and NGOs about spatial development. Only 36,8% of the institutions have projects/plans directly related with the Beyşehir Lake Basin, which are mostly on tourism activities, awareness-raising, and supervision in agricultural spraying. With the cross-tabulation technique, it is also seen that, the respondents that do not think that the Lake has pollution/deterioration problem or are not sure about it are the staff of organizations with no projects on the Beyşehir Lake Basin.

For a possible ILBM planning, the participants mostly point to the significance of strategies for “diversification of financial opportunities”, “awareness raising”, “choosing proper type of industry, agriculture, etc. activities” and “sustainable agriculture”. The first three prior strategic topics, according to the participants, for management and planning of the Beyşehir Lake are shown in the following table (Repetition of strategies in each of the columns means that they are mentioned at these ranks by different respondents):

Table 34. The first three prior strategies defined by the participants

1 st Strategy	2 nd Strategy	3 rd Strategy
1. Financial opportunities for basin and lake management should be diversified	1. Awareness raising studies for local people about the importance of conservation should be organized	1. Sustainable agriculture should be taught to farmers and policies for promoting it should be developed

Table34. (continued)

2. Awareness raising studies for local people about the importance of conservation should be organized	2. Types of industry, agriculture,...etc. activities within the basin conservation boundaries should be chosen in a way not to affect on the Lake adversely; the contrary uses should be removed from the basin gradually	
3. Types of industry, agriculture...etc. activities within the basin conservation boundaries should be chosen in a way not to affect on the Lake adversely; the contrary uses should be removed from the basin gradually	3. Sustainable fishery should be a priority issue in conservation planning	2. Types of industry, agriculture...etc. activities within the basin conservation boundaries should be chosen in a way not to affect on the Lake adversely; the contrary uses should be removed from the basin gradually
4. Sustainable agriculture should be taught to farmers and policies for promoting it should be developed		

Analyzing the above table, the most significant issues according to the representatives of institutions are 1) selecting **suitable types** of industry and agriculture that would not affect on the Basin adversely, and removing contrasting ones gradually; 2) awareness raising on **sustainable agriculture** to the farmers and promoting related activities; 3) awareness raising for local people on the **necessity for conservation**.

71 % of the participants do not think that there are situations complicating **their cooperation**. Meanwhile rest of them (29 %) believe that there exist such situations, and explain them as follows:

- Different priorities of institutions and authority conflicts adversely affect on the quality of cooperation
- Method of cooperation between institutions and their respective roles in cooperation are not described clearly and sufficiently in laws

Therefore, for strong collaboration, the roles of the institutions should be defined clearly in laws, and conflicts between them should be avoided for implementing the ILBM effectively. However, in **current legislative structure**, there are approximately 20 different laws that are related with the institutions. 26 % of the participants find those laws insufficient for nature protection and environmental management. They underline that the laws should define the way and subject of cooperation among institutions more clearly, and define necessary tools for protection of nature and environmental management.

CHAPTER VI

CONCLUSION

This thesis has mainly aimed at displaying the Integrated Lake Basin Management Planning (ILBM) as a sustainable management planning approach for lake basins, and elaborated its applicability in Turkey via the case study on the Beyşehir Lake Basin. The study has been organized in two main parts as 1) the literature review (Chapter II-III and IV) and 2) analysis of past planning efforts for the Beyşehir Lake Basin together with the stakeholder approach (Chapter V).

Chapter I introduces the structure of the study as follows:

- The recognition of an *integrated* approach for water resource management planning: i.e. Integrated Water Resource Management Planning (IWRM),
- The worldwide recognition of the ILBM as an operative management planning model for lake basins,
- Water resource management planning in Turkey,
- Understanding the applicability of the ILBM in Turkey via a case study research conducted in the Beyşehir Lake Basin.

Chapter II explains the evolution of water resource management; the emergence of Integrated Water Resource Management; its definition and principles. It was not until the 1990s that the IWRM was introduced as a different model than the traditional management models in that it assumed an “integrated” approach that considered both natural and human systems together. Three requirements to implement IWRM were defined as follows:

- 1) an enabling environment,
- 2) institutional development and

3) management instruments.

Chapter III describes the Integrated Lake Basin Management Planning as a component of the IWRM. The Chapter elaborates the planning process of ILBM together with its principles, international conferences on ILBM, and successful world experiences.

Generally speaking, the ILBM can be defined as the application of the IWRM within the lake basins. It has six pillars (components) as institutions, policies, participation, technology, information and finance; which altogether compose the “basin governance”. The 6-pillar model suggests that the following are essential in an ILBM process (ILEC 2007b)

- a strong **institutional** capacity that enables cooperation of participants,
- formal/ informal **policies** at national and local level,
- **involvement** of people to increase knowledge and finance options,
- **technological** investment to access lake’s resources and solve problems,
- reliable and up-to-date **information** for efficient management,
- sustainable **finance** to regularly fund the activities.

An ILBM Plan should

- include those six pillars,
- comply with regional and national plans,
- be comprehensive, i.e. should refer to the entire basin,
- be developed and implemented strategically,
- be responsive to changing social needs and external factors,
- be evaluated for its achievements and performance,
- be implemented through time and space as a dynamic process.

ILBM planning process needs to include eight general steps as clarifying goals, gathering information, evaluating alternatives, making a formal decision, defining measurable objectives, implementing, evaluating the results and repeating the

process. Meanwhile, it follows a multiplicity of approaches in harmony with one another (Chapter III.4):

- participation approach: involvement of all stakeholders; awareness of ownership and having access to resources by stakeholders
- consensus-based approach: involvement of stakeholders in decision making and implementation, collaboration between stakeholders and resolution of conflicts
- ecosystem-based approach: evaluation of the Lake with its drainage basin, development of projects according to watershed boundaries and utilization water with natural capacity of lake ecosystems
- sound-science and available information approach: evaluation of wide range of factors by current and accurate information in policy development and decision-making, and sharing knowledge and experiences of lake people
- integration of environmental and economic goals approach: sustain of economic development and ecological quality enhancement at the same time
- preventative approach: find out lake degradation causes initially and prevent them before they emerged
- flexibility approach: responsiveness to public needs and adaptability to changes
- governance approach: integration of participation, equation, accountability, responsiveness, consensus and transparency approaches in management

The introduction of the World Lake Vision in 2003 further fostered the ILBM, putting the emphasis on the following seven principles:

1. Harmonious relationship between human beings and nature
2. A lake drainage basin approach
3. A long-term, preventative approach

4. Sound-science and best available information for policy development and decision making
5. Resolution of conflicts among users of lake
6. Encouragement of citizens and stakeholders to participate
7. Good governance including fairness, transparency and empowerment of stakeholders (ILEC, 2003)

Having reviewed the related literature, Chapter III gathers the principles and criteria for an efficient ILBM Planning as below:

A. Planning process needs to

1. include six pillars of ILBM
 - institutions, policies, participation, technology, information and finance
2. include eight general steps
 - Clarifying goals, Gathering information, Evaluating the alternatives, Making a formal decision, Defining measurable objectives, Implementing, Evaluating the results, and Repeating the process
3. have a dynamic structure
 - Implementation through time and space and integration of developed plans
4. follow multiplicity of approaches in harmony
 - Participation, Consensus-Based, Ecosystem- based, Sound science and available information, Integration of environmental and economic goals, preventative, flexibility and governance approaches

B. Management Plans

5. are four types with different purposes, scopes and schemes
 - Vision plans, action plans and intervention plans, comprehensive plans and statutory plans.

6. should have a strategic approach
 - Clearly defining of targets and priorities
7. should be adaptive to changes
 - Monitoring of data and sensitivity to external factors
8. should be evaluated for their achievements and performances.
 - Including resource development, environmental protection and social benefit in an effective way, evaluating stress reduction indicators, enabling environment creation
9. should correspond to other developed plans
 - Integration between different level of plans

In **Chapter IV**, the lake management in Turkish legislative and planning system has been analyzed. The ILBM approach has not been included in the Turkish legislation yet. Still, it should be noted that a basin scale water resources management planning has been started in the recent past.

The main problems in water resources management in Turkey can be summarized as follows (Karadağ, 2008)

- Management of water resources according to administrative boundaries rather than the basin/drainage boundaries.
- The overlapping of jurisdictions of various institutions on water resources, and insufficient coordination/cooperation/communication between institutions.
- Insufficient monitoring for water quality and point/non-point pollution sources.
- Presence of many different laws and regulations for water resources and unclear/overlapping roles of related institutions.

In Turkey, basin management planning came into the picture with the harmonization efforts with the Acquis Communautaire of the EU in order to implement Water Framework Directive (WFD). The WFD brings about the concept of Integrated River Basin Management, thus, the accession countries have defined their River Basin

Regions. Correspondingly, 26 river basins of Turkey are grouped in 6 river basin regions with the MATRA project. The aims of the project are facilitating cooperation between responsible groups for integrated and participatory water management planning.

Following the literature review in Chapters II-III and the discussion on water resource management planning in Turkey in Chapter IV, Chapter V is composed of the case study research. It first and foremost explains the methodology and research design (Research questions, units of analysis and field survey). Then, after describing the profile of the Beyşehir Lake Basin, it portrays the findings of the survey.

Research Questions are organized in two groups; former related to the past planning efforts and latter related to the collaboration among stakeholders. Accordingly, the previous plans of the Beyşehir Lake Basin have been explained and evaluated according to principles and criteria of ILBM planning that were explained in Chapter III.4. In this way, the suitability of Beyşehir Lake Basin to apply ILBM Planning with its existing profile has been understood. Following that, the findings of the questionnaire --which was conducted to understand awareness level of stakeholders; the roles of actors in planning process; their roles in past planning studies; their views on effective collaboration—have been displayed.

So far, five plans were developed for the Beyşehir Lake Basin. The thesis has evaluated them with respect to the ILBM principles and criteria and concluded in the following inferences:

- The most comprehensive plan developed for the Basin is the Beyşehir Lake Wetland Catchment Basin Management Plan, which was developed in 1998-2000. Nevertheless, it has not been implemented because of the conflicts between institutions.
- None of the plans included the six pillars of the ILBM fully; but partially included them. Knowledge and experiences of local people could not have been referred in the planning processes, nor were they included in implementation.

- The cross-border administrative structure of the Basin seems to have complicated the achievement of participation and institution pillars of ILBM.
- Due to their differentiated priorities, even if the responsibilities of the institutions were defined in the plans, it was not easy to realize those responsibilities.

As far as the questionnaire is concerned, it was conducted to understand stakeholders' awareness on the problems/potentials of the Basin and their attitudes towards collaboration. The questionnaire included public institutions, national/local NGOs, university, private institutions, international institutions and professional chambers. The analyses of the questionnaire reveal that

- The level of awareness of stakeholders about change in the Beyşehir Lake Basin is low. 40% of the participants think that there is not a pollution problem in the Lake at all, and 74% of the participants do not believe that there are ecosystem deteriorations in the Lake
- Stakeholders do not have much awareness about past planning studies. 52,6 % of the participants do not know the existing plans.
- Stakeholders define their roles on spatial planning as “developing and approving urban scale spatial plans”; “awareness-raising for related parties via inviting experts in spatial development”; and “organizing meetings to take opinions of professional chambers and NGOs about spatial development”.
- For a potential ILBM process in the Basin, majority of them underline the “diversification of financial opportunities”, “awareness raising”, “sustainable fishery” and “sustainable agriculture” as the most significant issues to be included in the plan.
- Following these priority issues they also emphasize the significance of
 - selecting suitable types of industry and agriculture that would not affect on the Basin adversely, and removing contrasting ones gradually;
 - awareness raising on sustainable agriculture to the farmers and promoting related activities;

- awareness raising for local people on the necessity for conservation.
- Most of the stakeholders (71 %) think that there are not any situations that complicate inter-institutional cooperation.
- 26 % of the participants find the legislation insufficient for environmental management. They propose that laws should define the way and subject of cooperation among institutions more clearly, and identify the necessary tools for environmental management.

In conclusion, this study has aimed at underlining the indisputable need for the sustainable management planning for lakes and their basins, which are vulnerable water resources. The ILBM approach has been recognized worldwide as the answer to that need. The study, having elaborated the related literature and conducted a case study, concludes with the following inferences which should be considered in lake basin management planning processes:

- As successful world and national practices prove, in order to have a strong institutional structure and improve collaboration, **a coordinating body** that brings different groups together can be established. This body should include cross-border stakeholders with different responsibilities together.
- A strong coordination and cooperation of institutions can improve their level of awareness about each others' priorities, encourage coherent action, and prevent waste of time and resources.
- Strong coordination and interinstitutional cooperation, secured by legislation, can allow the implementation of an efficient ILBM process.
- All stakeholders should be informed about a potential basin planning project beforehand, so that they can actively participate in the planning and implementation processes. The coordinating body can conduct workshops where the project is introduced to local stakeholders, and participatory planning methodology is taught.
- Awareness raising activities for stakeholders (both institutions and local people) should be conducted on a regular basis to show them possible threats on the lake basin under concern. In order to increase participation and raise

awareness, visual and written media can be applied. Meanwhile, locally organized workshops can also help achieving that. They also enable local people share their knowledge and experiences.

- The coordinating body can also develop projects based on reliable information and technology to detect and respond to problems; and to monitor lake. In order to realize this, a funding program is also needed to be developed.
- In the cross-boundary cases, to solve administrative jurisdictions problems, an agreement/protocol can be signed between administrations that define responsibilities and targets of stakeholders clearly.

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