Report No: ACS3733

Republic of Turkey
NATIONAL WATERSHED MANAGEMENT

NATIONAL BASIN MANAGEMENT STRATEGY
(2012-2023)

July 2012

ECSEN
EUROPE AND CENTRAL ASIA

PREAMBLE

The objective of National Basin Management Strategy (NBMS) is to provide guidance for the medium and long-term decisions and investment programs regarding the protection, improvement and sustainable use of the natural resources in our country's basins, as well as lead the way for the efforts to be undertaken to adequately and sustainably meet the needs and expectations of our society regarding ecological, economic, social and cultural benefits and services of the basins.

The NBMS will be a key component of a strong integrated natural resources management policy framework and strategy that prioritizes national actions, is aligned with the EU environmental and other global management standards, and supports the sustainable development agenda of Turkey.

The Strategy will contribute to the identification of priority investments and institutional arrangements by the Government, maximization of the social, economic and environmental benefits of public investments, and implementation of economic incentives and participatory measures as well as arrangements to build capacity among key stakeholders. It will also provide an opportunity for the assessment and development of roles and responsibilities for different institutions for the purposes of improving inter-sectoral co-ordination, reducing investment costs and streamlining the program planning, implementation and monitoring functions.

The key priorities of the NBMS include: stopping the process of natural resource and environmental degradation that has been ongoing in the catchment basins of our country for many years; conserving and improving the efficiency and quality of soil, water, vegetation and bio-diversity resources, and ensuring their appropriate and sustainable use; maximizing the services provided to users in lower basins; and contributing to raising the welfare of low-income rural population living in the basin areas.

The development of the vision, objectives, strategic targets, and priorities which give shape to the strategy document, with the involvement of all concerned agencies, institutions, and stakeholders, play a key role in facilitating ownership and implementation of the strategy, as well as in helping meet expectations from basin management.

The NBMS document identifies five strategic action areas to be followed for improving the management of the basins:

(i) institutional and legal arrangements to strengthen coordination and participation in watershed management;
(ii) reaching a consensus on using the hydrological-based basin definition involving the existing 25 river basins and their sub-basins and micro basins, for the basin

management planning and implementation processes executed by various institutions and agencies in watersheds;

(iii) prioritization of basin areas and investments on the basis of appropriate scientific criteria and methods;

(iv) strengthening the basin database, monitoring and evaluation capacities and creating a joint monitoring and evaluation system for basin management; and

(v) assessment of the ecological, economic and social costs and benefits (internal and external impacts) of alternative projects and practices.

The Strategy Document provides recommendations relating to institutional roles and responsibilities for monitoring, evaluating and supporting the implementation of the Strategy, and to this end, envisages the preparation of a "National Basin Management Action Plan" clearly setting out the actions required for achieving the defined goals of the NBMS as well as the responsibilities and timeframe for the realization of these actions in a detailed manner, through a joint work of related agencies, institutions and stakeholders in the shortest period of time possible.

All related public agencies and institutions, primarily including Ministry of Forestry and Water Works, Ministry of Environment and Urbanization, Ministry of Food, Agriculture and Livestock and Ministry of Development, as well as related stakeholders have made significant contributions during the preparatory process of the NBMS Document.

It is expected that the implementation, monitoring and evaluation of the National Basin Management Strategy, through coordinated and participatory efforts of related agencies, institutions and stakeholders, would make significant contributions to the achievement of our country's 2015 development goals and 2023 vision and goals.

Abbreviations

AFAD	Prime Ministry Disaster and Emergency Management Administration
AIS	Agricultural Infrastructure Services
ARDG	General Directorate of Agricultural Reform
AOS	Automatic Observation Station (Meteorological)
ARPDG	Agricultural Researches and Policies Directorate General
AWRP	Anatolia Watershed Rehabilitation Project
BC	Basin Committees
BDNSAP	Biodiversity National Strategy and Action Plan
BPAP	Basin Protection Action Plan
BU	Basin Unions
CC	Climate Change
CUFVC	Central Union of Forest Village Cooperatives
DEC	General Directorate for Combating Desertification and Erosion
DP-SCR	Development Plan Specialized Committee Report
EAWRP	Eastern Anatolia Watershed Rehabilitation Project
EIA DG	Environmental Impact Assessment, Permits and Inspection Directorate General
EMDG	Environmental Management Directorate General
EMRA	Energy Market Regulatory Authority
EU	European Union
F&AP DG	Fisheries and Aquatic Products Directorate General
HCBM	High Council of Basin Management
HEPP	Hydroelectric Power Plant
GDF	General Directorate of Forestry
GDLOAD	General Directorate of Local Administrations of the Ministy of Internal Affairs
GIS	Geographical Information System
GIS-IMIS	GIS Based Integrated Management Information System
GNP	Gross National Product
IA	Irrigation Associations
ISD	Information Systems Department
LA	Local Administrations
LP	Landscaping Plan

LUP	Land Use Plans
MDG	Meteorology Directorate General
MEWS	Meteorological Early Warning System
MFAL	Ministry of Food Agriculture and Livestock
MoD	Ministry of Development
MoFWA	Ministry of Forestry and Water Affairs
NACDG	General Directorate of Natural Assets Conservation
NAPCD	National Action Plan to Combat Desertification
NBMS	National Basin Management Strategy
NBMS-AP	National Basin Management Strategy Action Plan
NBMS-SC	National Basin Management Strategy Steering Committee
NBMS-TC	National Basin Management Strategy Technical Committee
NCCAP	National Climate Change Action Plan
NCNP	General Directorate of Nature Conservation and Natural Parks
NEAP	National Environmental Action Plan
NGO	Non-Governmental organization
OECD	Organization for Economic Cooperation and Development
PDED	Provincial Disaster and Emergency Directorates
PP DG	Plant Production Directorate General
RBMP	River Basin Management Plan
R&D	Research and Development
RI	Research Institutions
SDD	Strategy Development Department
SHW	State Hydraulic Works Directorate General
SPA	Special Provincial Administration
SUEN	Turkish Water Institute
SWOT	Strengths-Weaknesses-Opportunities-Threats
TUBİTAK	Turkish Scientific and Technologic Research Institution
WB	World Bank
WMCC	Water Management Coordination Committee
WMDG	General Directorate of Water Management

DEFINITIONS

Agricultural Basin: An area with similar ecological conditions (soil, topography, climate), suitable for the administrative structure of a country, and having a manageable size, to form the basis of agricultural production planning and agricultural subsidy practices.

Basin (watershed): The water drainage area from the boundary (divide) line of water till its point of flow into the sea in case of River Basins, and according to the final point where water drains in case of closed basins. It is an area of land where climate, geography, topography, soils, flora and fauna are in mutual interaction with waters.

Basin Committee: The committee comprised of the representatives of related key agencies/institutions and stakeholders (e.g. NGOs, scientific institutions, local administrations, etc.), to jointly take key basin management decisions at the basin level (river basin or sub-basin), to monitor and evaluate implementation results and ensure coordination.

Basin Master Plan: Plans involving studies of basin water potential and quality, soil resources, water use patterns and needs; priorities for using the identified potential as well as potential water need; the methods to be followed for meeting the needs; project formulations and reviews of their technical, economic and environmental feasibility.

Basin Protection Action Plan: A protection plan involving all works undertaken to conserve the potential of water resources for all purposes of use; ensure best use of water to maintain water quality and habitat in the basin; prevent pollution and improve the quality of polluted water resources.

Basin Management: Conservation and development of the soil, water, biological diversity and other natural resources and maintaining the hydrological functions and services of the basins, to contribute in the livelihood of the people in the basin areas and in the sustainable development of the country.

Basin Management Plan: An integrated plan prepared for sustainable management of the water, soil and biological diversity resources of a basin, by securing their protection and utilization balance.

Closed and Open Basin: Closed basin refers to rivers that dry up before reaching a sea or that end up at a lake. Closed basins are usually located in inlands and dry climatic areas. Open basin refers to basins with waters flowing into a sea. Open basins are usually located in coastal areas and humid climatic areas.

Lower Basin: The lower part of a river basin where the main river flows into the sea or lake.

Micro-catchment: Smallest hydrological unit that feeds a certain drainage system (river, stream or lake) with surface or sub-surface flows.

Protected area: A protected area is a clearly defined and officially declared geographical space, carrying natural, cultural, historical, biodiversity and landscape values of national and international significance, managed, through legal, technical, administrative social and economic measures, to achieve the conservation objectives and long term sustainability of nature with associated ecosystem services and cultural values.

Rehabilitation: The work undertaken by using site specific species and suitable methods for elimination of damages occurred, as a result of human interventions or natural causes, in the diversity, function and dinamics of the natural ecosystems and and for bringing them into their natural structures and conditions.

Sub-Basin: The water drainage area for smaller rivers or ponds in the basis that are connected to the main river that flows into the sea.

Upper Basin: The upper part and water drainage area of a river basin.

Water Divide Line: The line that divides two neighboring basins is called water divide line. This line passes through the highest parts of mountains. It is usually the same as peak line, however these two concepts differ as water divide line also passes through the valleys between peaks.

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1. INTRODUCTION

1.1 Objective and Scope of National Basin Management Strategy

The sustainable management of our system of basins which consists of 25 river basins and their sub-basins forms an important component of our country's sustainable development. Basin management aims at ensuring the sustainability of hydrological services in a geographically divided drainage area, integrated protection, development and utilization of land, vegetation, water and other natural resources in the interests of habitants in that area and thus contributing to the sustainable development of the country. Basin management may generally refer to management at river basin, sub-basin or micro-catchment levels.

In the light of the experiences gained in our country, the approach developed and appreciated in relation to basin management, is that all natural resources must be managed at basin level in an "integrated" manner, through coordinated work of related agencies and involvement of stakeholders. The environment-friendly and integrated management of basin resources, which are drivers of socioeconomic development in key sectors like energy, agriculture, health and environment, constitutes one of the basic components of sustainable development and fits within a broader landscape-based ecosystem approach.

This document aims at defining a set of policies for sustainable management of our country's basins, as supported by results focused and concrete objectives, and the targets to be attained to achieve the objectives together with the agencies responsible for attaining these goals; and encouraging and supporting the public sector, private sector–non-governmental organizations and scientific institutions to act in cooperation through a coordinated and participatory approach.

1.2 Analytical and Documentary Basis of the National Basin Management Strategy

- ✓ Public Financial Management and Control Law No. 5018, By-Law on the Principles and Procedures regarding Strategic Planning in Public Administrations.
- ✓ Existing legislation relating to basin management.
- ✓ National Development Plan, its experts committee reports (SCRs) prepared for the basin management related sectors (e.g. for Management and Utilization of Basins, Utilization of Soil and Water Resources, Agriculture, Forestry, Environment, Climate Change, etc.).
- ✓ National strategy and action plan documents prepared for the other related sectors (e.g. National Climate Change Strategy and Action Plan, National Rural Development Strategy, National Biodiversity Strategy and Action Plan, National Action Plan for Combating Desertification, Mountainous Area Management Strategy, Agricultural Strategy Document, Strategy and Action Plan for Combating Drought, etc.).
- ✓ Strategic Plans (SPs) of related public agencies and institutions (repealed Ministry of Environment and Forestry, General Directorate of Forestry, General Directorate of State

Hydraulic Works, Ministry of Food, Agriculture and Livestock strategic plans, National Afforestation Action Plan, etc.)

- ✓ Outputs of Basin Protection Action Plans (Marmara, Susurluk, North Aegean, Küçük Menderes, Büyük Menderes, Burdur, Konya, Ceyhan, Seyhan, Kızılırmak, Yeşilırmak).
- ✓ Büyük Menderes River Basin Management Plan project documents.
- ✓ Documents of the study for Developing Special Provisions for Drinking Water Basins.
- ✓ Eastern Anatolia Watershed Rehabilitation, Anatolia Watershed Rehabilitation, Çoruh River Integrated Watershed Rehabilitation project documents.
- ✓ Assessments, comments and suggestions of related agencies and stakeholders on the NBMS draft documents.

1.3 Preparatory Process of National Basin Management Strategy

NBMS document's preparation process included the following steps.

Coordination and secreteriat responsibility of the process has been carried by the General Directorate of Desertification and Erosion Combating (DEC) of the Ministry of Forestry and Water Affairs.

Drafting of the NBMS document has been undertaken by a Technical Committee (TC) composed of selected specialists of the related agencies, based on the: (i) key reports and documents studied; (ii) outcomes of the four workshops: (iii) visits and meetings with various agencies; (iv) comments and contributions received (by putting the draft staregy document on the Web page and by sending letters to around 180 stakeholder institutions) from large number of stakeholders (e.g. govenment agencies, NGOs, CBOs, professional associations, universities, provincial governors, municipalities, private sector, etc.).

Higher level assessments and critical decisions in connection with elaboration of the document have been undertaken by the Steering Committee (SC), composed of high level decision makers of the related agencies.

Wiews and support of the Ministry of Development (MoD) has been taken throughout the process. Upon submission of the NBMS document by the MoFWA, MoD has also undertaken its final revision and preparation for submission to the approval of the High Council of Planning.

The National Basin Management Strategy Document approved for implementation by the High Planning Council on ../../ 2012 (pending).

2. CURRENT STATE OF THE BASIN MANAGEMENT

2.1 Current State of Basins in Turkey

Overall context

Turkey has been divided into 25 hydrological basins (See Table 1, Figure 1) and total average annual flow from these basins amounts to 186 billion m^3. According to DSI data, the Euphrates-Tigris basin located in the east of the country accounts for approximately one third of this flow. While Kızılırmak and Sakarya basins follow in terms of area size, Eastern Black Sea, Eastern Mediterranean and Antalya Basins follow Euphrates-Tigris basin in terms of average annual flow.

The ecological, social and demographic conditions of basins and the use of basin resources may vary significantly by different basin regions as well as horizontal and vertical distribution of basin areas. While the basins in the Eastern, Northern and Southern regions have a higher and steep topography, the topography in Central and Western Anatolia is softer. While Alpine pastures and forests concentrate in upper basins and Black Sea and Mediterranean regions, agricultural areas are mostly located in lower middle basin areas.

While population rate is smaller in upper basins and Eastern regions, it is higher in lower basins and Western regions. Rural poverty and dependence on natural resources for livelihood are more common in upper basins, Eastern and Southeastern regions, relative to lower basins and other regions. While basin resources in upper basins are more commonly used for livestock grazing as well as agriculture on small fields for own needs, small irrigation, forestry products and employment in forestry works; agricultural activities and irrigation infrastructure for development of agricultural activities get more common in middle and lower basins.

Urban population and industrial facilities have clustered in the basins located in western regions of our country, and settlement areas, water and energy demands have concentrated in these regions accordingly. In this context, environmental pollution and uncontrolled urbanization and unplanned industrialization are threatening natural resources such as land, water and forests to a greater extent day by day. Industrial and services sectors are the main sources of employment and livelihood in the basins located in western regions and urban areas, whereas dependence on agriculture and agricultural employment are decreasing.

Soil and water pollution from the use of chemical fertilizers and pesticides in agriculture concentrate in lower basins and in the western and southern regions, whereas agricultural activities carried out in upper basin areas are more in the form of organic agriculture.

36% of the 112 billion m^3 available water resources in our country are utilized at present, of which 32 billion m^3 is used for irrigation, 7 billion m^3 for drinking and domestic purposes, and 5 billion m^3 for industrial purposes. Thus, approximately 74% of water resources is used for irrigation, 11% for industrial and 15% for urban consumption purposes, whereas these rates are 70%, 22%, 8% in the world, and 33%, 51% and 16% in Europe, respectively.

Table 1: Overview of River Basins in Turkey

Name of River Basin	Precipitation Area		Annual average flow		Annual average efficiency
	(km^2)	%	(km^3)	(%)	($l/s/km^2$)
(01) Meriç-Ergene Basin	14,560	1.9	1.33	0.7	2.9
(02) Marmara Basin	24,100	3.1	8.33	4.5	11.0
(03) Susurluk Basin	22,399	2.9	5.43	2.9	7.2
(04) Northern Aegean Basin	10,003	1.3	2.09	1.1	7.4
(05) Gediz Basin	18,000	2.3	1.95	1.1	3.6
(06) Küçük Menderes Basin	6,907	0.9	1.19	0.6	5.3
(07) Büyük Menderes Basin	24,976	3.2	3.03	1.6	3.9
(08) Western Mediterranean Basin	20,953	2.7	8.93	4.8	12.4
(09) Antalya Basin	19,577	2.5	11.06	5.9	24.2
(10) Lake Burdur Basin	6,374	0.8	0.50	0.3	1.8
(11) Akarçay Basin	7,605	1.0	0.49	0.3	1.9
(12) Sakarya Basin	58,160	7.5	6.40	3.4	3.6
(13) Western Black Sea Basin	29,598	3.8	9.93	5.3	10.6
(14) Yeşilırmak Basin	36,114	4.6	5.80	3.1	5.1
(15) Kızılırmak Basin	78,180	10.0	6.48	3.5	2.6
(16) Konya Closed Basin	53,850	6.9	4.52	2.4	2.5
(17) Eastern Mediterranean Basin	22,048	2.8	11.07	6.0	15.6
(18) Seyhan Basin	20,450	2.6	8.01	4.3	12.3
(19) Asi Basin	7,796	1.0	1.17	0.6	3.4
(20) Ceyhan Basin	21,982	2.8	7.18	3.9	10.7
(21) Euphrates-Tigris Basin	184,918	23.7	52.94	28.5	8.3
(22) Eastern Black Sea Basin	24,077	3.1	14.90	8.0	19.5
(23) Çoruh Basin	19,872	2.6	6.30	3.4	10.1
(24) Aras Basin	27,548	3.5	4.63	2.5	5.3
(25) Lake Van Basin	19,405	2.5	2.39	1.3	5.0
TOTAL	**779,452**	**100.0**	**186.05**	**100.0**	

Source: Ministry of Forestry and Water Works, Information Systems Department (2012)

<u>Figure 1:</u> Map of River Basins in Turkey

Source: DSI, 2012.

Land Use

One of the most important problems of our basins is the destruction of our pastures, agricultural and forest areas and resources due to overgrazing for many years, and the resulting soil erosion that is observed at very large scales and very extensively in almost all basin areas. Incorrect soil cultivation and irrigation applications in agricultural lands are among the factors aggravating the severity of erosion. In Turkey, 54% of forest lands, 59% of agricultural lands and 64% of pastures are exposed to erosion. Land degradation has substantially reduced the bearing capacity of rangelands and productivity of agricultural lands in upper catchment areas, and has thus negatively affected the livelihood of farmer families in uplands, leading to an increase in poverty rates in these areas. The reduction in vegetation has led to the reduction in soil humidity and raised the vulnerability of agricultural lands to drought to much higher levels. Land degradation has also resulted in more instable river flows, leading to recurring floods and the growing problem of sedimentation. Landslides have also become a growing issue.

In recent years, awareness and support have increased among the public regarding the importance of values added by sustainable management of natural resources in basins (soil conservation, water quantity and quality, carbon sequestration, biodiversity conservation, etc.), with the contribution of scientific institutions and NGOs. Parallel to this, there has been a significant increase in the programs and practices for rehabilitation of degraded lands, afforestation, soil conservation and biodiversity conservation. Considering that a significant part of forests and rangelands in our basin areas are still degraded as well as the magnitude of soil and water losses due to agricultural areas and the threats of sedimentation and natural disasters, it is clearly evident that the subjects of soil conservation, natural resource rehabilitation and increasing the amount and efficiency of efforts to take appropriate measures in our basins must hold a special place in the NBMS.

Water Management

The vital and social importance of water as a resource that forms the basis of basins is a voiced with greater emphasis today. Located in a semi-arid part of the world, Turkey's precipitation regime varies significantly by seasons and regions. In some river basins, water need has exceeded the potential resource. In addition to quantitative distribution, water quality also varies remarkably across the country.

Despite the rising water need due to rapid population growth, the problems faced as a result of scarcity of suitable resources and the excessive use and pollution caused by constantly growing industrial and agricultural activities have doubled the importance of water resources management especially at the basin level.

Accordingly, significant progress has been achieved as a result of the efforts for management of water resources together with socio-economic development in ensuring sustainable development. As a candidate country for EU membership, Turkey has started aligning its legislation with the EU legislation. The diversification and increase in elements of pressure on

water resources have required the management of river basins through an integrated approach. While studies concentrated on finding out where and how much water was available, today it has become imperative to jointly address the quantity and quality of water. It has become necessary to evaluate all factors affecting these two elements collectively.

Taking into consideration these facts, Turkey is developing its water management policy again, with due regard to her own needs and international standards. Because the water resources required for living are diminishing and facing pollution risk day by day, efficient management of water resources is essential in achieving sustainable development. Because water resources involve many factors with different characteristics, efforts exerted at the local level would not be sufficient to protect these resources alone. It has been scientifically proven that water resources can only be effectively used and protected if they are managed at basin level.

By international standards, Turkey is categorized as a water-stressed country with her technically and economically usable renewable water quantity of 1,500-1,700 m^3 per capita. It is estimated that Turkey will become a country water-scarce country by 2030. A majority of Turkey's territories are located in semi-arid climatic zone, with precipitation limited to only five our six months a year in some regions. Water management has become a crucial issue for Turkey, given the effect of climate change as well.

In water catchment basins of our country, DSI constructed 706 dams and ponds, built irrigation systems for 3.2 million ha of agricultural land, 5,930 flood protection facilities protecting 1.4 million ha of land from floods, and systems for supply of 3.31 billion m^3 of drinking, domestic and industrial water in the last 55 years.

Gross irrigated land increased by 2.4 times during the 40-year period between the 1970s and 2011, from 2.3 million ha to 5.5 million ha. According to DSI data, technically and economically irrigable land amounts to 8.5 million ha in total, and approximately 65% of this land is irrigated as of end-2011. Overall, 85% of irrigation is performed using surface waters, and approximately half of this water is supplied from multi-purpose dams. Furthermore, while gravity canal irrigation is still the prevalent technology, water-saving pressurized sprinkling and drip irrigation systems are also introduced rapidly.

The areas on which basin management should focus include agro-climatic conditions (drought and limited rainfall), persistence of traditional agricultural practices in many basin areas (in soil cultivation, irrigation, harvest, etc.), excessive use of agricultural chemicals, the need to make agricultural production planning with due regard to limited water resources, increasing the importance attached to hydrological impacts and needs in the selection of the objectives of forest resources management and forestry techniques, establishment of conservation areas in regions under threat and/or areas with specific importance in basins, and the formulation of a strategy that takes into consideration water resources in the determination of industrial areas and settlement areas in land use plans.

In the process of converting hydropower potential into energy, 17,180 MW installed power capacity has been built. Hydroelectric power plants (HEPPs) have made a significant contribution to the utilization of energy potential through the rapidly growing private sector investments in recent years (61 billion kWh of electricity generated at 290 HEPPs annually). It is particularly important to establish standards and address the deficiencies in institutional capacities for cumulative impact assessments regarding some potential problems and disputes that may arise from certain ecological and social reasons concerning HEPPs.

It is essential that the water potential of a basin be primarily evaluated within the basin itself. However, the quantity and timing of precipitation varies across regions in our country; e.g. while Eastern Black Sea region receives 2,500 mm of precipitation per annum, Central Anatolia region and particularly Konya and environs receive 250 mm of precipitation per annum. Low level of precipitation and the resulting drought affect almost all sectors and eventually lead to slowdown in regional growth, reduction in farmer income, shortages in supply of basic food products, serious losses in industries that are directly linked to agricultural production, and unemployment associated with reduced production. The elimination of these and similar undesired consequences require investment in water resources, careful use of existing resources and water transfer between basins as necessary. While transferring water between basins, the goals set out in basin management plans should be taken into consideration.

Institutional Responsibilities

Many institutions have duties and responsibilities regarding the protection and use of watersheds and water resources in our country, and they carry out activities under they own mandate in basins. However, the work carried out by different institutions in different parts (upper and lower basins) and areas of basins (forest rehabilitation, afforestation, soil conservation, pasture rehabilitation, dam and pond construction, agricultural irrigation, energy generation, drinking, domestic, industrial water supply, biodiversity resources conservation and rehabilitation, rural development, etc.) result in lack of coordination, integrity, stakeholder ownership and participation in the programs and projects implemented. This leads to waste of resources as well as complementary nature, efficiency and sustainability of investments. However, a broad consensus has been reached on the idea that coordination, integrity and participation are top priority requirements for improvement of basin management, and efforts have been undertaken for institutional and legal arrangements and strengthening of integrated projects and practices to this end.

Recently, some new institutional arrangements have been made, including the establishment of Waster Management Coordination Committee (WMCC) and Turkish Water Institute (SUEN), in order to identify the measures required for conservation of water resources within the framework of an integrated basin management understanding, ensure inter-sectoral coordination and cooperation for effective water management, and speed up water investments.

Information regarding the institutions and stakeholders carrying out activities in basins, affecting basin management and affected from these activities is provided in Section 2.2 below.

Fundemantal plans directly related with the basins' management include "basin protection action Plans", "basin management plans" and "basin master plans". Landscape plans, land use plans and protected area plans are also among the important plans related to basin management, particularly for elimination of mis-landuse initiatives and practices.

Changes in land use patterns and land degradation are also contributing to greenhouse gas emissions and affecting local climatic conditions. While Turkey's net emissions originating from land use and land use changes are not too high, land use changes are reducing topsoil and soil carbon, and this reduction in organic substance is leading to physical, chemical and biological impacts that negatively affect soil fertility, biodiversity and ecological functions. In addition to these negative impacts of climate change on basins, its potential positive impacts must also be evaluated.

Basin management is globally recognized as a very crucial "no regret" approach for adaptation to climate change. Basin management establishes a linkage between potential climate change impacts on hydrological regime and diverse uses of resources, and thus would help planners and decision-makers identify investments that are resilient to potential climate impacts.

2.2 Stakeholders relating to basin management

Summary information regarding the main public institutions (ministries and their primary units dealing with basins) and other stakeholders involved in management of basins in our country is provided below.

Public agencies and institutions

Ministry of Forestry and Water Works (MoFWW)

(Directorate General (DG) of Desertification and Erosion Combating (DGDEC); DG of Forestry (GDF); DG of State Hydraulic Works (SHW); DG of Water Management (WMDG); DG of Nature Conservation and National Parks (NCNPDDG); DG of Meteorology (DGM); Information Systems Department (ISD); Strategy Development Department (SDD); Turkish Water Institute (SUEN).

Ministry of Food, Agriculture and Livestock

DG of Agricultural (ARDG); DG of Plant Production (PPDG); DG of Agricultural Researches and Policies General (ARPDG), GD of Fisheries and Aquatic Products (FAPDG), Training, Publications and Broadcasts Department, GIS Department.

Ministry of Environment and Urbanization

(DG of Spatial Planning; DG of Environmental Impact Assessment, Permits and Inspection; DG of Environmental Management; DG of Natural Assets Conservation, DG of Provinces Bank, DG of Infrastructure Services).

Ministry of Energy and Natural Resources

Ministries of Culture and Tourism, Interior, National Education, and Health

Prime Ministry

(Undersecretariat of Treasury; Disaster and Emergency Management Administration)

Ministry of Development

Local Administrations

(Provincial Governorates, District Governorates, Special Provincial Administrations, Municipalities, other units)

Other stakeholders

Non-Governmental Organizations (NGOs)

(NGOs dealing mainly with soil and water resources, biodiversity, rural development; farmers'/villagers' associations, etc.).

Professional Organizations

Basin Unions (BU)

Rural communities living in basins

Urban communities

Universities, Research Institutes, Academic Institutions

Related private sector institutions and organizations

Different stakeholders have different expectations from the various economic, ecological, social and cultural products and services of basins, and different demands and priorities in basin management (energy generation, drinking, domestic, agricultural irrigation, industrial water supply, benefiting from forests and rangelands, increasing productivity in agricultural lands, ensuring income and livelihood from basin resources, biodiversity conservation, prevention of air pollution, recreation, natural landscape, ecological tourism, hunting, protection of culture in basin areas, generation of national income and income for budgets of institutions, generation of earnings for private sector, etc.)

Furthermore, significant variations are occurring in time in the expectations of our society, which is urbanizing rapidly and demographically evolving, from the basin and basin management. All these considerations have been taken into account during the NBMS process.

2.3 Strengths, weaknesses, opportunities and threats in basin management

During the NBMS process, the related agencies and stakeholders have identified the main strengths, weaknesses, opportunities and threats in basin management as follows.

Strengths:

a) The long background of institutions regarding basin projects and practices, and their concentration on investments and plans based on basin integrity recently.

b) Basin protection action plans and river basin management plans being prepared.

c) Increased financing resources provided for basin investments.

d) Increased soil conservation and watershed rehabilitation activities.

e) Knowledge and experiences of the other stakeholders (e.g. NGOs, scientific institutions) in connection with integrated basin management projects.

f) Significant increase in the number and area of protected areas (% 62 in last five years).

g) Existence of Biodiversity Monitoring Unit and data basis.

Weaknesses:

a) Inadequacies in the basin management policies and strategies and establishment of coordination between them.

b) Inadequacies in coordination and cooperation among institutions; overlaps, gaps and uncertainties regarding duties and powers of agencies; gaps in legislation on this matter.

c) Inadequacies in ensuring stakeholder participation and local ownership.

d) Inadequacies in informing the public about the projects and activities being executed, lack of transparency.

e) Inadequacy of knowledge and experience among institutions regarding the monitoring and evaluation techniques and methodologies using modern information technologies.

f) Inadequacy of national database for basin-level planning

g) Inadequacies in criteria and methodologies for prioritizing basin projects and activities.

h) Inadequacies in completing and updating the high-level plans to form the basis for coordinated execution of basin activities.

e) Inadequacies in methodologies, data and institutional capacity for the measurement and assessment of the social and ecological services and externalities of basin projects and implementations.

j) Inadequacies in the calculation of the benefits and costs of basin projects and investments, and in their sharing among the affected stakeholders and beneficiaries.

k) Lack of scientific approach and R&D regarding basins, and lack of dialogue and cooperation between the researchers and practitioners.

l) Staff inadequacies at the agencies working in the basins.

m) Lack of up-to-date and systematic soil surveys and land classification.

Opportunities

a) Reduced human-sourced pressures in upper basins due to migration.

b) Possibilities of access to information and benefiting from advanced information technologies (GIS, remote sensing, etc.).

c) Rich natural resources, a significant potential of basin resources that is still untapped.

d) Increased public awareness related to protection of natural resources and environment.

e) Increased contributions and engagement of non-governmental organizations.

f) Increased political interest and support.

g) Developing participatory approach among institutions.

h) Creation of employment for local people in watershed rehabilitation activities.

i) Place and importance of watershed management in EU harmonization process.

j) Increased importance of watershed management at the global level.

k) Increased capacity in scientific research and development.

Threats

a) Rapid degradation process threatening limited natural resource basis of the basins.

b) Impaired balance of population between lower and upper basins.

c) *I*ncrease in the demand and expectations for products and services (water, energy, agricultural production, etc.) of basins in line with rapid population growth.

d) Low income level of people, particularly living in mountainous areas in upper basins (rural poverty).

e) Reduction in young population who would offer labor force in rural areas due to migration.

f) Inadequacies observed in sensitivity and education among the public regarding the value of basin resources, dimensions of destruction in basins and their consequences.

g) Ownership and usage right problems.

h) Increased industrial pollution.

i) Increased use of chemical pesticides and fertilizers in agriculture.

j) Pressures on biodiversity.

k) Lack of adequate sanctions for approriate implementations.

l) Negative impacts of climate change.

m) Expansion of industry and mining in the basin areas.

3. VISION, PRINCIPLES, OBJECTIVES, TARGETS

3.1 VISION

The Vision of NBMS is "to conserve, improve and sustainably use the basin resources and biological diversity through their coordinated, participatory and ecosystem-based management, thereby to meet the society's need for the environmental, economic and socio-cultural services and benefits of basins, and to contribute to the improvement of quality of living and level of welfare as well as to national development"

3.2 PRINCIPLES

- **Sustainability**: *Securing today's and tomorrow's life and development by establishing a balance between human and nature, without depleting natural resources, and by taking into consideration the social, ecological, economic, cultural and spatial aspects of development.*
- **Participation**: *Participation of stakeholders in decision making, implementation, utilization and responsibility.*
- **Coordination**: *Ensuring coordination among the policies and strategies, plans, projects, implementation, monitoring and evaluation activities of related agencies.*
- **Efficiency**: *Producing by making best use of resources.*
- **Effectiveness**: *Achieving the intended goal at the desired level.*
- **Environmental sensitivity**: *Paying due care for avoiding practices that would harm the natural environment*.
- **Transparency**: *Making public all activities during the process and conclusion phases*.
- **Accountability**: *Being accountable for the results of all activities.*
- **Scientific Basis**: *Basing decision making, implementation and evaluation on scientific criteria and methodologies.*
- **Quality**: *Level attained in meeting the expectations of the beneficiaries of goods or services or of the related parties.*
- **Accessibility:** *Effectively ensuring the accessibility of services and benefits by citizens*.
- **Compliance with national development policies and other national strategy papers**
- **Fulfillment of obligations arising from international conventions**
- **Fair sharing of costs and benefits.**

3.3 OBJECTIVES

Objective 1: Strengthening legal and institutional capacities, participation, coordination and cooperation among institutions and stakeholders for sustainable management of the basins *(an objective serving all other objectives as well).*

Objective 2: Sustainable management and use of the basins' water resources.

Sub-Objective 2.1: Making legal arrangements, preparation/renewal of the plans, programs and strategies to establish a common basis for the basin-level activities for protection, improvement and sustainable use of water resources.

Sub-Objective 2.2: Increasing water use efficiency.

Sub-Objective 2.3: Meeting the drinking, domestic and industrial water needs of urban and rural settlement areas at the sufficient quality and quantity.

Sub-Objective 2.4: Expanding agricultural irrigation areas by taking climate, soil and water conditions into account improving irrigation systems and efficiency.

Sub-Objective 2.5: Improving level of utilization of hydropower potential in the basins, carrying out HEPP investments based on appropriate assessments of their environmental, social and economic impacts within and outside of basin areas.

Objective 3: Prevention of degradation and erosion in the basin areas, rehabilitation and sustainable use of degraded basin areas.

Sub-Objective 3.1: Protection, improvement and sustainable use of agricultural areas.

Sub-Objective 3.2: Protection, rehabilitation and sustainable use of rangelands.

Sub-Objective 3.3: Protection, rehabilitation, improvement and sustainable use of forests.

Sub-Objective 3.4: Preventing intensive urban expansion in the basin areas around the urban settlements and the consequent degradation of soil, vegetation, water resources and natural balance.

Objective 4: Sustaining ecosystem services, through conservation and sustainable management of the biological diversity, natural and cultural resource values in the basin areas.

Objective 5: Raising awareness and improving quality of living and level of welfare of the people living in basin areas, leading to reduction in their pressures on the basin's natural resources.

Objective 6: Integration into basin management and strengthening of the prevention and combating measures and mechanisms against natural disasters and their damages in the basin areas.

Objective 7: Incorporation of potential climate change impacts and adaptation into basin management, development of adaptation and mitigation mechanisms.

3.4 TARGETS (by objectives and sub-objectives)

The indicators for the goals listed below by individual objectives and sub-objectives are provided in the table in Annex-2.

Objective 1: Strengthening legal and institutional capacities, participation, coordination and cooperation among institutions and stakeholders for sustainable management of the basins *(an objective serving all other objectives as well).*

T-1.1 Develop a national basin classification system agreed by the related institutions, showing the boundaries and areas of basins, sub-basins and micro-catchments, to establish the fundamental basis for basin activities *(2012).*

T-1.2 Make institutional arrangements at national and basin levels (High Council of Basin Management in the headquarters, 25 basin management committees at the field level) to ensure that policy decisions relating to basin management are taken and implementation results are monitored and evaluated in a coordinated manner with participation of the authorized representatives of related institutions and stakeholders *(2013).*

T-1.3 Prioritize the basin investments and activities executed by related agencies and institutions in line with development needs and potentials so that they can be carried out according to appropriate priorities *(2013).*

T-1.4: Create a GIS-based "National Integrated Basin Management Information System" to streamline the monitoring and evaluation of the impacts and results of basin investments and practices *(2015).*

Objective 2: Sustainable management and use of the basins' water resources.

Sub-Objective 2.1: ***Making legal arrangements, preparing/renewing plans, programs and strategies to establish a comment basis for the basin-level activities for protection, improvement and sustainable use of water resources.***

T-2.1.1 Prepare National Water Plan (2015)

T-2.1.2 Complete Protection Action Plans for all (25) river basins *(2013).*

T-2.1.3 Prepare and put into implementation of the Integrated River Basin Management Plans for 4 river basins by *2015*, and for all (25) river basins by *2020*.

T-2.1.4 Update basin master plans for 10 basins by *2014*, and all (25) basins by *2020*.

T-2.1.5 Complete the planning of sectoral water allocations at basin level *(2020).*

T-2.1.6 Prepare the "Short-term measures stratagy document" for the basins of which Basin Protection Action Plan is completed (2013).

T-2.1.7 Prepare, put into effect the Water Quality Management Strategy Document" (2012)

Sub-Objective 2.2: Increasing water use efficiency.

T-2.2.1 Increase efficient use of water potential by undertaking relevant water conservation and development works.

T-2.2.2 Achieve the feed-discharge balance taking as a basis the ground water operation reserve at basin level by *2023*.

T-2.2.3 Develop relevant measures to support ecological integrity in the basin areas by promoting rational use of water (2015).

Sub-Objective 2.3: Meeting the drinking, domestic and industrial water needs of urban and rural settlement areas at the sufficient quality and quantity.

T-2.3.1 Meet (fully) the drinking and domestic water needs of settlement areas (*2023).*

T-2.3.2 Ensure that wastewater collection and treatment systems are installed and operated in compliance with the standards in all settlement areas across the country *(2023).* (for 75% of the population in 2015 and 85% in 2023).

T-2.3.3 Complete the Special Provisions Development Work for the surface waters, of which quality deteriorated in spite of protection measures undertaken (completing 20 special provisions development works by 2015 and 35 works by the end of 2023).

T-2.3.4 Complete the Special Planning work for the underground waters, of which quality deteriorated in spite of the protection measures undertaken (completing 1 special provisions development works by 2015 and 5 works by the end of 2023).

Sub-Objective 2.4: Expanding agricultural irrigation areas, by taking climate, soil and water conditions into account improving irrigation systems and irrigation efficiency.

T-2.4.1 Raise the technically and economically irrigable land to 8.5 million ha by *2023 (currently* 5.6 million).

T-2.4.2 Identify the potential agricultural lands where modern irrigation methods (sprinkling, drip) can be applied *(2015)* and ensure the transformation of existing irrigation facilities that are suitable for modern irrigation methods within the framework of technical and economic possibilities.

T-2.4.3 Undertake relevant measures to utilize treated waste water in agricultural irrigation.

Sub-Objective 2.5: Improve the level of utilization of hydropower potential in the basins, and carry out HEPP investments based on appropriate assessments of their environmental, social and economic impacts.

T-2.5.1 Develop the methodologies and legislation for the identification and assessment of cumulative impacts of HEPP projects (economic, social and ecological impacts within and outside the project area, and their costs and benefits), strengthen institutional capacities.

T-2.5.2 Increase total hydropower potential's utilization to 47,000 MW by *2023*.

Objective 3: Prevention of natural resources' degradation and erosion, rehabilitation and sustainable use of degraded basin areas.

Sub-Objective 3.1*: *Protection, improvement and sustainable use of agricultural lands.

T-3.1.1 Complete the land consolidation work by 2023.

T-3.1.2 Prevent allocation of agricultural lands to inappropriate uses, soil and water pollution, promote expansion of good farming practices.

Sub-Objective 3.2*: *Protection, rehabilitation and sustainable use of rangelands.

T-3.2.1 Ensure that rehabilitation and erosion prevention measures are taken for 564,000 ha of degraded rangeland by 2015, and 844,000 ha of degraded rangeland by 2023.

Sub-Objective 3.3*: *Protection, rehabilitation, improvement and sustainable use of forests.

T-3.3.1 Implement erosion control, afforestation, and in-forest rangeland rehabilitation activities and measures for 500,000 ha of land by *2015*, and 1,620,000 ha by *2023*.

T-3.3.2 Increase the share of normal/productive forest areas in total forest areas in basins to 75% by 2023 from the current level of 50%, through rehabilitation and afforestation activities to be carried out in degraded forest areas.

T-3.3.3 Ensure that the amount of deposits carried by erosion is reduced to 150 million tons/year by 2023, from the current amount of 250 million tons/year, through erosion control activities to be carried out.

Sub-Objective 3.4*: *Preventing intensive urban expansion in the basin areas around urban settlements, and the consequent degradation of soil, vegetation, water resources and natural balance.

T-3.4.1 Complete Landscaping Plans (LP) and Land Use Plans (LUP) under Law No. 5403, and ensure that their implementations are streamlined.

T-3.4.2 Completing construction of the solid waste and hazardous waste storage and treatment plants for pollution prevention in the basin areas (construction of 100 plants until 2015 and 130 plants until 2023 by the municipalities and municipalities' unions).

Objective 4: **Sustaining ecosystem services, through conservation and sustainable management of the biological diversity, natural and cultural resource values in the basin areas.**

T-4.1 Identify specific and sensitive ecosystems, wetlands, important biological diversity sites, important natural and cultural landscapes, and protected areas by basins, prepare their data basis and make available for utilization of the institutions operating in the basin areas (2015).

T-4.2 **S**ustainable management of the protected areas and sensitive sites in the basins (2023).

T-4.3 Develop and apply the research and inventory methodologies and programs to monitor the changes occurring in the ecosystem, species and genetic diversities in the basin areas (2023).

T-4.4 Identification of ecosystem services (2023).

Objective 5: Raising of awareness, improving quality of living and level of welfare of the people living in basin areas, leading to reduction in their pressures on the basin's natural resources.

T-5.1 Prepare and implement large-scale integrated and participatory basin rehabilitation projects for the execution of basin protection and rehabilitation activities together with activities for improving the living conditions and income levels of low-income people who create a pressure on natural resources (minimum 2 projects by 2015, and minimum 5 projects by 2023).

T-5.2 Increase the level of employment for the forest villagers who receive the smallest share

from national income in rural areas from the current level of 300,000 people/6 month/ year to 350,000 people/6 month/year by 2015 and 500,000 people/6 month/year by 2023.

H-5.3 Increase production non wood forest products as well as revenues of local villagers from them at least 25% (2023).

Objective 6: Integration into basin management and strengthening of the prevention and combating measures and mechanisms against natural disasters and their damages in the basin areas.

T-6.1 Complete integrated disaster hazard and risk maps for natural and human-caused disasters at basin level (2023).

T-6.2 Complete basin-level "Flood Risk Maps and Management Plans" in cooperation with related agencies and institutions (2023).

T-6.3 Establish disaster (flood, inundation, avalanche, etc.) forecast and early warning systems in basins (*2023)*

T-6.4 Increase the number of water structures for stream rehabilitation, flood and other natural disasters prevention purposes (up to 10,000 by *2023)*.

Objective 7: Incorporation of the potential climate change impacts and adaptation into basin management, development of adaptation and mitigation mechanisms.

H-7.1 With scientific research and modelling studies, develop climatic change projections and identify the most sensitive areas to climate change.

T-7.2 Identify, through scientific research and assessments, the potential impacts of climate change on water, agricultural lands, rangelands, forests, protected areas and other basin areas and activities, develop adaptation and mitigation strategies and put them into practice *(2015)*.

T-7.3 Increase the sink capacity in forest areas in basins (increase the carbon sink capacity from the current level of 15.5 million tons/year to 16.7 million tons/year by 2015 and 20 million tons/year by 2023).

4. STRATEGIES

4.1 Strategies

The following common strategies which serve all or most of the goals will be followed.

1. Improve the existing legislation such that it will support the execution of basin management practices in a coordinated, integrated and participatory manner, as well as compliance with the EU legislation and the international conventions to which Turkey is a party. To this end;

1.1 Identify the need for developing legislation to eliminate the overlaps, gaps and inadequacies among the duties and powers of institutions involved in basin activities and support integrated and participatory basin management practices, and make appropriate legal arrangements.

1.2 Identify the need for developing legislation to support compliance with the EU legislation and international conventions to which Turkey is a party, and make appropriate legal arrangements.

1.3 Enact the Water Law and relevant regulations.

1.4 Make necessary improvements in the existing legislation to prevent the use of agricultural lands for other purposes, and strengthen inspection measures and capacities.

1.5 Review and improve the legislation relating to natural disasters.

1.6 Make and enforce legal arrangements to support the fair sharing of economic, social and ecological costs and benefits of investments and activities executed in basins on lower and upper basins, the principle of "User Pays" and the financing of basin development programs.

2. Strengthen institutional capacities for sustainable management of basins through an integrated and participatory approach, and establish legally-supported coordination mechanisms at national and basin levels.

3. Support the participation of non-governmental organizations, scientific institutions and other stakeholders in basin management and rehabilitation at national and local levels.

4. Strengthen the farmer training and dissemination activities to create necessary awareness among the local people living in basins regarding the prevention of the destruction of natural resources and erosion.

5. Prepare the program of measures for basin-level protection and utilization in basin protection and management plans, by taking as a basis the integration of lower and upper basins.

6. Make utmost use of information technologies in planning, monitoring and evaluation activities.

7. Execute the interventions and investments in basin areas according to a prioritization to be made on the basis of scientific criteria and methodologies.

8. Strengthen dialogue and cooperation with universities and research institutions for the solution of problems in basins and improvement of basin management.

5. COORDINATION, MONITORING AND EVALUATION OF THE IMPLEMENTATION OF NATIONAL BASIN MANAGEMENT STRATEGY

Monitoring is the systematic follow-up and reporting of the implementation of Strategy Document; and evaluation is the measurement of implementation results against objectives and goals as well as the analysis of the consistency and relevance of these objectives and goals.

5.1 Reporting the monitoring and evaluation results of the strategy implementation

Regular reporting of progress achieved in objectives, sub-objectives and targets would contribute to the ability of related parties and authorities within and outside institutions to monitor and evaluate the process. Reports based on performance indicators are the basic instrument of monitoring activity and must be prepared objectively. The reporting system will involve the comments and evaluation reports of universities and research institutions based on research findings, in addition to the progress and assessment reports of related institutions. As a synthesis of all these reports, a *"National Basin Management Progress and Evaluation Report"* will be prepared and made available for the public every year. Details regarding the reporting system (reporting periods, responsibilities, contents, duty of preparing synthesis report, etc.) will be determined by the Technical Committee, Steering Committee and National Water Management Steering Committee, under the coordination of Ministry of Forestry and Water Works.

5.2 Institutional arrangements and responsibilities

Following the approval and effectiveness of the NBMS, responsibility for monitoring and coordinating its implementations will be borne by the GDWM of the MFWA. The coordination and support functions at high level for the NBMS implementation will be undertaken by the High Council of Basin Management (HCBM), comprising of high level decision makers from the relevant government institutions and other stakeholders (NGOs, scientific institutions, etc.).

In the relevant key institutions, a unit and a senior expert staff will be commissioned for monitoring, evaluation, and coordination of contacts and exchange of information within and outside the institution. The Technical Committee to consist of these expert staff members will be responsible for monitoring and supporting Strategy Document implementation activities at the experts level. Experts will be invited from universities, research institutions, non-governmental institutions and private sector to participate in this Committee. With this purpose, workshops will also be organized.

At the local level, Basin Committees, consisting of representatives from relevant agencies, institutions and other stakeholders, will be commissioned for monitoring and evaluation.

The agencies and units with primary responsibility in the monitoring, coordinating and supporting the achievement of goals set out in the Strategy Document, and other cooperating institutions are shown in Table 3 in Annex-2 below.

5.3 Performance indicators

The performance indicators for the goals specified in the National Basin Management Strategy Document are shown in Table-3 in Annex-2 below. These indicators would be reviewed and improved during the preparation of Action Plan.

5.4 Preparation of National Basin Management Strategy Action Plan

National Basin Management Strategy Action Plan (NBMS-AP), which clearly lays down the actions required to be taken to achieve the NBMS objectives and goals (strategic goals) as well as the responsibilities and timeframe for the realization of these actions in detail, must be prepared as soon as possible (within one year). To this end, each institution involved in basin activities will identify the actions required for goals with primarily responsibility assigned to them, and will prepare an action plan for these goals These action plans prepared by various institutions involved in basin activities will be compiled under National Basin Management Strategy Action Plan under the coordination of MoFWA. Benefit-cost analysis will be applied to the extent possible for the activities to be included in the Action Plan.

ANNEX 1

Table 2: Summary of National Basin Management Strategy

Description		No. of Goals
Vision	To conserve, improve and sustainably use the basin resources and biological diversity through coordinated, participatory and ecosystem-based management of the basins, thereby meet the society's need for the environmental, economic and socio-cultural services and benefits of the basins, and to contribute to the improvement of quality of living and level of welfare as well as to national development.	
Principles	(i) Sustainability; (ii) Participation; (iii) Coordination; (iv) Efficiency; (v) Effectiveness; (vi) Environmental Sensitivity; (vi) Transparency; (vii) Accountability; (viii) Scientific Basis; (ix) Quality; (x) Accessibility; (xi) Compliance with national development policies and other national strategy documents; (xii) Fulfillment of obligations arising from international conventions; (xiii) Fair sharing of costs and benefits.	
Objectives, Sub-Objectives (7 objectives, 9 sub-objectives)		**45**
Objective 1	**Strengthening legal and institutional capacities, participation, coordination and cooperation among institutions and stakeholders for sustainable management of the basins.** *(an objective serving all other objectives as well).*	**4**
Objective 2	**Sustainable management and use of the basins' water resources.**	**19**
Sub-Objective 2.1	*Making legal arrangements, preparation/renewal of the plans, programs and strategies to establish a common basis for the basin-level activities for protection, improvement and sustainable use of water resources.*	*7*
Sub-Objective 2.2	*Increasing water use efficiency.*	*3*
Sub-Objective 2.3	*Meeting the drinking, domestic and industrial water needs of urban and rural settlement areas at the sufficient quality and quantity.*	*4*
Sub-Objective 2.4	*Expanding agricultural irrigation areas, by taking climate, soil and water conditions into account improving irrigation systems and irrigation efficiency.*	*3*
Sub-Objective 2.5	*Improving level of utilization of hydropower potential in the basins, carrying out HEPP investments based on appropriate assessments of their environmental, social and economic impacts within and outside of basin areas.*	*2*
Objective 3	**Prevention of degradation and erosion in the basin areas, rehabilitation and sustainable use of degraded basin areas.**	**8**
Sub-Objective 3.1	*Protection, improvement and sustainable use of agricultural areas.*	*2*
Sub-Objective 3.2	*Protection, rehabilitation and sustainably use of rangelands.*	*1*
Sub-Objective 3.3	*Protection, rehabilitation, improvement and sustainable use of forests.*	*3*
Sub-Objective 3.4	*Preventing intensive urban expansion in the basin areas around the urban settlements, and the consequent degradation of soil, vegetation, water resources and natural balance.*	*2*
Objective 4	**Sustaining ecosystem services, through conservation and sustainable management of the biological diversity, natural and cultural resource values in the basin areas.**	**4**
Objective 5	**Raising of awareness, improving quality of living and level of welfare of the people living in basin areas, leading to reduction in their pressures on the basin's natural resources.**	**3**
Objective 6	**Integration into basin management and strengthening of prevention and combating measures and mechanisms against natural disasters and their damages in the basin areas.**	**4**
Objective 7	**Incorporation of the potential climate change impacts and adaptation into basin management, development of adaptation and mitigation mechanisms.**	**3**

ANNEX 2

Table 3: Performance Indicators and Institutional Responsibilities for National Basin Management Strategy Goals

Objective	Sub-Objective	Target (T)	Performance Indicator (PI)	Descriptions of Objectives, Sub-Objectives, Goals, Indicators	Indicator Unit, Year, Value						Institutional Resp.	
					Unit	2012-2015		2016-2023		Value (qty) to be reached by end-2023	Institution with Primary Resp.	Cooperating and Contributing Institutions and Stakeholders
						Year	Quantity	Year	Quantity			
1.	**Strengthen the legal and institutional capacities for the sustainable management of basins, and ensure coordination and cooperation among institutions and stakeholders.**											
		T-1.1		Develop a national basin classification system agreed by the related institutions, showing the boundaries and areas of basins, sub-basins and micro-catchments, to form the basis for basin activities.							**ISD**	*SHW, WMDG, DEC, GDF, NCNP, MDG, MoEU, MoFAL, Other Ministries, NGOs, SPAs, LA, Universities, RI*
			PI-1.1.1	*Map of basin system agreed by institutions, showing the boundaries and areas of basin, sub-basin and micro-catchment.*	*No.*	*2012*	*1*					
		T-1.2		Make institutional arrangements at national and basin levels to ensure that policy decisions relating to basin management are taken and implementation results are monitored and evaluated at the high level in a coordinated manner with the participation of the authorized representatives of related institutions and stakeholders.							**WMDG**	*SHW, GDF, DEC, NCNP, MDG, ISD, MoEU, MoD, MoFAL ,Other Ministries, NGOs, LA, Universities*
			PI-1.2.1	*Establishment of High Council for Basin Management.*	*No.*	*2013*	*1*					
			PI-1.2.2	*Number of BCs established at basin level.*	*No.*	*2013*	*25*					
		T-1.3		Prioritize the basin investments and activities executed by related agencies and institutions in line with development needs and potentials so that they can be carried out according to appropriate priorities.							**WMDG**	*SHW, DEC,GDF, NCNP, MDG, ISD, MoEU, MoFAL, MoD, Other Ministries, LA, NGOs, RI*
			PI-1.3.1	*Number of river basins with prioritization completed.*	*No.*	*2013*	*25*					

		T-1.4	Create a GIS-based "National Integrated Basin Management Information System (NBMIS)" to streamline the monitoring and evaluation of the impacts and results of basin investments and practices.								
			PI-1.4.1	*NBMIS linked Water Information System.*	*No.*	*2014*	*1*				**WMDG**	*SHW*
			PI-1.4.2	*NBMIS linked Forest Information System.*	*No.*	*2013*	*1*				**GDF**	
			PI-1.4.3	*NBMIS linked Agriculture Information System.*	*No.*	*2015*	*1*				**MoFAL**	
			PI-1.4.4	*NBMIS linked Environmental Information System*	*No.*	*2015*	*1*				**MoEU**	
			PI-1.4.5	*NBMIS linked Natural Disaster Database and Monitoring System*	*No.*	*2015*	*1*				**AFAD**	*MDG, DEC, SHW*
			PI-.1.4.6	*NBMIS linked Land Cover Database and Monitoring System*	*No.*	*2013*	*1*				**ISD**	*GDF, MoFAL*
			PI-1.4.7	*NBMIS linked Erosion&Desertification Database-Monitoring System*	*No.*	*2014*	*1*				**DEC**	*GTHB, GDF*
			PI-1.4.8	*NBMIS linked Conservation Areas Database and Monitoring System.*	*No.*	*2015*	*1*				**NCNP**	*MoEU*
			PI-1.4.9	*Basin-level demographic, social and economic database.*	*No.*	*2015*	*1*				**DEC**	*ISD, MoFAL*
			PI-1.4.10	*NBMIS linked Meteorological Information System.*	*No.*	*2014*	*1*				**MGM**	
			PI-1.4.11	*Number of meteorological automatic observation and monitoring stations. (at present 519 stations)*	*No.*	*2015*	*1500*				**MGM**	
			PI-1.4.12	*NBMIS linked National Soil Data Base.*	*No.*	*2015*	*1*				**MoFAL**	*BİD*
			PI-1.4.13	*NBMIS linked Drought Monitoring System.*	*No.*	*2015*	*1*				**MoFAL**	*DEC, BID*
			PI-1.4.14	*NBMIS linked Landscape Plans Information System.*	*No.*	*2015*	*1*				**MoEU**	*BİD*
			PI-1.4.15	*NBMIS linked Land-use Plans System.*	*No.*	*2015*	*1*				**MoFAL**	*BİD*

2	**Sustainable management and use of the basins' water resources.**											
	2.1	**Making legal arrangements, preparation/renewal of the plans, programs and strategies to establish a common basis for the basin-level activities for protection, improvement and sustainable use of water resources.**										
		T-2.1.1	Prepare National Water Plan								**WMDG**	*SHW, DEC, GDF, AFAD, MoEU, BU, MoFAL, Municipalities, Ministry of Industry, SPA, Ministry of Health, TÜİK, Universities, RI*
			PI-2.1.1.1	*Number of plans prepared*	*No.*	*2015*	*1*					
		T-2.1.2	Complete Basin Protection Action Plans for all (25) river basins.								**WMDG**	*SHW, DEC, GDF, AFAD, Municipalities, BU, Ministry of Industry, SPAs, MoEU, MoFAL, Ministry of Health, TUİK,RI,Univers.*
			PI-2.1.2.1	*Number of BPAPs prepared.*	*No.*	*2013*	*25*					
		T-2.1.3	Prepare and implement Integrated River Basin Management Plans for all (25) river basins.								**WMDG**	*SHW, DEC, GDF, AFAD, Municipalities, BU, Ministry of Industry, SPAs, MoEU, MoFAL, Ministry of Health, TUİK,RI,Univers.*
			PI-2.1.3.1	*Number of RBMPs completed.*	*No.*	*2015*	*4*	*2020*	*21*	*25*		
		T-2.1.4	Update basin master plans									*WMDG, DEC, GDF, NCNP, ISD, MDG, MoFAL, MoEU, NGOs*
			PI-2.1.4.1	*Number of river master plans updated.*	*No.*	*2014*	*10*	*2020*	*15*	*25*		
		T-2.1.5	Complete the planning of sectoral water allocations at basin level.									*SHW, Ministry of Industry, MoFAL, Municipalities*
			PI-2.1.5.1	*Number of basins with water allocations completed.*	*No.*	*2015*	*5*	*2020*	*20*	*25*		
		T-2.1.6	Prepare a short-term measures strategy document for basins with Basin Protection Action Plans completed.								**WMDG**	*SHW, DEC, GDF, MoEU, MoFAL, Municipalities,*

		PI-2.1.7.1	*Strategy documents completed*	*No.*	*2013*	*2*					*Ministry of Industry, SPAs,Ministry of Health, MoD*
	T-2.1.7	Prepare Water Quality Management Strategy Paper.								**WMDG**	*SHW, DEC, MoEU, GDF, MoFAL, Municipalities, Ministry of Industry, SPA, MoH, TUIK, MoD, RI, Universities*
		PI-2.1.8.1	*Strategy document prepared*	*No.*	2012	*1*					
2.2	**Increasing water use efficiency.**										
	T-2.2.1	Increase efficient use of water potential by undertaking relevant water conservation and development works.								**SHW**	*MoEU, Municipalities*
		PI-2.2.1.1	*Total amount of water used.*	*Billion m3*	*2015*	*45*	*2023*	*112*	*112*		
	T-2.2.2	Achieve the feed-discharge balance taking as a basis the ground water operation reserve at basin level by 2023.								**SHW**	
		PI-2.2.2.1	*Rate of progress in achieving feed-discharge balance taking as a basis the ground water operation reserve.*	*%*	*2015*	*-*	*2023*	*100*	*100*		
	T-2.2.3	Develop relevant measures to support ecological integrity in the basin areas by promoting rational use of water.								**WMDG**	*MoFAL, Ministry of Industry, MoEU, SHW, MDG, NGOs, Municipalities*
		PI-2.2.3.1	*Water Saving Action Plan prepared and implemented.*	*No.*	*2015*	*1*					
2.3	**Meeting the drinking, domestic and industrial water needs of urban and rural settlement areas at the sufficient quality and quantity.**										
	T-2.3.1	Fully meet the drinking and domestic water needs of settlement areas.								**SHW MoEU**	*SPA, Municipalities, İller Bank, Ministry of Industry*
		PI-2.3.1.1	*Rate of population with water needs supplied.*	*%*	*2015*		*2023*		*100*		
	T-2.3.2	Ensure that wastewater collection and treatment systems are installed and operated in compliance with standards in all settlement areas across the country.								**SHW MoEU**	*Municipalities, Universities,RI*

		PI-2.3.2.2	*Ratio of municipality population served by wastewater treatment plant to total population of the country.*	*%*	*2015*	*75*	*2017*	*80*	*100*		
	T-2.3.3	Complete the Special Provisions Development studies for the surface waters, of which quality deteriorated in spite of protection measures undertaken.								**WMDG**	*SHW, Municipalities, Ministry of Health, MoEU, SPAs, MoFAL, RI, universities*
		PI-2.3.3.1	*Number of studies for Development of Special Provisions.*	*No.*	*2015*	*20*	*2023*	*15*	*35*		
	T-2.3.4	Complete the Special Provisions Development Planning for the underground waters, of which quality deteriorated in spite of protection measures undertaken.								**WMDG**	*SHW, Municipalities, Ministry of Health, MoEU, SPAs, MoFAL, RI, universities*
		PI-2.3.4.1	*Number of special plans completed.*	*No.*	*2015*	*1*	*2023*	*4*	*5*		
2.4	**Expanding agricultural irrigation areas, by taking climate, soil and water conditions into account improving irrigation systems and irrigation efficiency.**										
	T-2.4.1	Increase the 5.6 million ha irrigable land as of end-2011, and raise the technically and economically irrigable land to 8.5 million ha by 2023.								**MoFAL**	*SHW, Irrigation Unions, SPA*
		PI-2.4.1.1	*Total agricultural land irrigated.*	*mil.ha*	*2015*	*6.5*	*2023*	*2.0*	*8.5*		
	T-2.4.2	Identify the potential agricultural lands where modern irrigation methods (sprinkling, drip) and ensure the transformation of existing irrigation facilities that are suitable for modern irrigation methods within the framework of technical and economic possibilities.								**MoFAL**	*SHW, Irrigation Unions, SPA*
		PI-2.4.2.1	*Percentage of basin areas with identified potential of sprinkling and drip irrigation.*	*%*	*2015*	*100*			*100*		
		PI-2.4.2.2	*Areas where sprinkling and drip irrigation systems have been established and are in use.*	*Ha*	*2015*		*2023*		*1.000.000*		
	T-2.4.3	Undertake relevant measures to utilize treated waste water in agricultural irrigation.								……..	…….…….……
		PI-2.4.2.3	……	…….	….	…….	….	…….	…….		
2.5	**Improving level of utilization of hydropower potential in the basins, carrying out HEPP investments based on appropriate assessments of their environmental, social and economic impacts within and outside of basin areas.**										
	T-2.5.1	Develop the methodologies and legislation for the identification and assessment of cumulative impacts of HEPP projects, strengthen institutional capacities.								**MoEU**	*SHW, WMDG, NCNP, RI,*

			PI-2.5.2.1	*Number of guidelines developed for cumulative impact assessment.*	*No.*	*2015*	*1*					*Universities*
		T-2.5.2	Increase total hydropower production 47,000 MW by 2023 (currently 17180 MW.								**SHW**	*Ministry of Energy and Nat. Resources, EMRA*
			PI-2.5.1.1	*Installed power of HEPPs constructed by public and private sectors.*	*MW*	*2015*	*26.700*	*2023*	*20.300*	*47.000*		
3.	**Prevention of natural resources' degradation and erosion, rehabilitation and sustainable use of degraded basin areas.**											
	3.1	***Protection, improvement and sustainable use of agricultural lands.***										
		T-3.1.1	Complete the land consolidation work.								**MoFAL (ARDG)**	*SHW, SPAs, Local People*
			PI-3.1.1.1	*Agricultural land with aggregation completed as of end-2015 and end-2023.(area with aggregation completed as of end-2011 =1.741.000 ha*	*Ha*	*2015*	*5.541.000*	*2023*	*6.500.000*	*14.000.000*		
		T-3.1.2	Prevent allocation of agricultural lands to mis-uses, soil and water pollution, promote expansion of good farming practices.								**MoFAL**	*MoFWA, localpeople*
			PI-3.1.2.1	*Number of households implementing good farming practices.*	*No.*	*2015*	*4.450*	*2023*	*5.120*	*9.570*		
	3.2	***Protection, rehabilitation and sustainable use of pastures and rangelands.***										
		T-3.2.2	Rehabilitation and erosion prevention measures are taken for 564,000 ha of degraded rangeland by 2015, and 844,000 ha of degraded rangeland by 2023.								**MoFAL**	*GDF, Local People, NGOs*
			PI-3.2.1.1	*Area of pastures with rehabilitation work completed.*	*Ha*	*2015*	*564.000*	*2023*	*280.000*	*844.0000*		
	3.3	***Protection, rehabilitation, improvement and sustainable use of forests.***										
		T-3.3.1	Implement erosion control, afforestation, and in-forest rangeland rehabilitation activities and measures for 500,000 ha of land by 2015, and 1,620,000 ha by 2023.								**GDF**	*DEC, SHW, NGOs, LA*
			PI-3.3.1.1	*Area with erosion control measures implemented.*	*Ha*	*2015*	*310.000*	*2023*	*690.000*	*1.000.000*		
			PI-3.3.1.2	*Afforestation area.*	*Ha*	*2015*	*155.000*	*2023*	*345.000*	*500.000*		
			PI-3.3.1.3	*Area of in-forest pastures rehabilitated.*	*Ha*	*2015*	*40.000*	*2023*	*80.000*	*120.000*		
		T-3.3.2	Increase the share of normal/productive forest areas in total forest areas in basins to 75% by 2023 from the current level of 50%, through rehabilitation and afforestation activities to be carried out in degraded forest areas.								**GDF**	*DEC, SHW, NGOs, LA*

			PI-3.3.2.1	*Rate of normal/productive forests in total forest area.*	*%*	*2015*	*-*	*2023*	*-*	75		
		T-3.3.3	Ensure that the amount of deposits carried by erosion is reduced to 150 million tons/year by 2023, from the current amount of 250 million tons/year, through erosion control activities to be carried out.								**GDF**	*DEC, SHW, MoFAL, NGOs, LA*
			PI-3.3.3.1	*Amount of deposits carried with erosion.*	*Million tons/y*	*2015*	*-*	*2023*	*-*	*150*		
	3.4	**Preventing intensive urban expansion in the basin areas around the urban settlements, and consequent degradation of soil, vegetation, water resources and natural balance.**										
		T-3.4.1	Complete Landscaping Plans (LP) and Land Use Plans (LUP) under Law No. 5403, and ensure that their implementation is streamlined.								**MoEU MoFAL**	*MoFWA, Other Related Ministries, LA, NGOs, General Directorate of Mining Works.*
			PI-3.4.1.1	*Rate of the basins with Landscaping Plans completed.*	*No.*	*2013*	*100*					
			PI-3.4.1.2	*Rate of the basins with Land Use Plans completed.*	*No.*	*2015*	*100*					
		T-3.4.2	Completing construction of solid waste and hazardous waste storage and treatment plants for preventing pollution in the basin areas (2023).								**MoEU**	*Municipalities*
			G-3.4.2.1	Number of solid waste storage and treatment plants constructed by the municipalities and unions of municipalities.	*Adet*	*2015*	*100*	*2023*	*130*	*130*		
4.	**Sustaining ecosystem services, through conservation and sustainable management of the biological diversity, natural and cultural resource values in the basin areas.**											
		T-4.1	Identify specific and sensitive ecosystems, wetlands, important biological diversity sites, important natural and cultural landscapes, and protected areas by basins, prepare their data basis and make available for utilization of the institutions operating in the basin areas (2015).								**NCNP**	*MoEU, MoFAL, Ministry of Culture and Tourism, Ministry of Transport, ISD, Mapping General Command , SHW, WMDG,*
			PI-4.1.1	*Number of basins for which the important biological diversity sites and protected areas identified and the data basis completed.*	*No.*	*2015*	*25*					
			PI-4.1.2	*Number of basins for which the important natural and cultural landscape sites identified and the data basis completed.*	*No*	*2015*	*25*					

			PI-4.1.3	*Guidelines prepared for assessment of biological diversity and landscape impacts of the projects of the agencies working in the basins.*	*No*	*2015*	*1*					*MoEU, GDF, MDG, LA, Universities, RI*
			PI-4.1.4	*Number of documents, forms and systems produced for identification of the sensitive biological diversity sites and protected areas.*	*No*	*2015*	*8*					
		T-4.2	Sustainable management of the protected areas and sensitive sites in the basins.								**NCNP**	*MoEU, Ministry of Culture and Tourism., GDF, MoFAL, RI, Universities*
			PI-4.2.1	*Number of plans prepare for the protected areas.*	*No*	*2015*	*100*	*2023*	*300*			
			PI-4.2.2	*Number of actions accomplished for supporting conservation and sustainable use of biological diversity (ecotorurism and site guidance implementations,etc.).*	*No*	*2015*	*10*	*2023*	*20*			
			PI-4.2.3	*Rate of landscape restoration accomplished in the protected areas.*	*%*	*2015*	*1*	*2023*	*5*			
		T-4.3	Develop and apply the reseach and inventory methodologies and programs to monitor the changes occurring in the ecosystems, species and genetic diversities in the basin areas.								**NCNP**	*MoEU, MoFAL, GDF, RI, Universities*
			PI-4.3.1	*Number of research reports.publications related to sustainable management of biological diversity resources of basin areas.*	*No*	*2015*	*7*	*2023*	*23*			
			PI-4.3.2	*Ecosystem based biological diversity monitoring program.*	*No*	*2015*	*1*					
		T-4.4	Identification of ecosystem services**.**								**NCNP**	*MoEU, MoFAL, GDF, RI, universities*
			PI-4.4.1	Number of areas for which ecosystem services work completed.	*No*	*2015*	*10*	*2023*	*50*			
5.	**Raising awareness and improving quality of living and level of welfare of the people living in basin areas, leading to reduction in their pressures on the basin's natural resources.**											
		T-5.1	Prepare and implement large-scale integrated and participatory basin rehabilitation projects for the execution of basin protection and rehabilitation activities together with activities for improving the living conditions and income levels of low-income people who create a pressure on natural resources.								**DEC, GDF**	*MoFAL, MoEU, LA, NGOs, RI, Universities*

			PI-5.1.1	*Number of large-scale integrated-participatory basin rehabilitation projects prepared and implemented.*	*No.*	*2015*	*2*	*2023*	*3*	***5***		
		T-5.2	Increase the level of employment for the forest villagers who receive the smallest share from national income in rural areas from the current level of 300,000 people/6 month/year to 350,000 people/6 month/year by 2015 and 500,000 people/6 month/year by 2023.								**GDF**	*NCNP-DG, DEC, LAs, NGOs*
			PI-5.2.1	*Number of employment to be reached at the end of period.*	*person/ 6 m/y*	*2015*	*350.000*	*2023*	*500.000*	*500.000*		
		T-5.3	Odun dışı orman ürünlerinin kullanımı, pazarlanabilir ürün üretim miktarını ve çeşidini 2015 yılı sonuna kadar en az %25 artırmak.								***GDF***	CUFVC *MoFAL*
			PI-5.3.1	*Increase in the production and income generated from non timber products*	*%*	*2015*	*25*					
6.	**Integration into basin management and strengthening of the prevention and combating measures and mechanisms against natural disasters and their damages in the basin areas.**											
		T-6.1	Complete integrated disaster hazard and risk maps for natural and human-caused disasters at basin level.								**AFAD**	*SHW, DEC, GDF, WMDG, MDG, LA, BU, NGOs, Municipalities, RI, Universities*
			PI-6.1.1	*Number of brochures prepared for disaster hazard and risk maps*	*No.*	*2015*	*10*					
			PI-6.1.2	*Number of provinces with disaster hazard and risk maps completed.*	*No.*	*2015*	*-*	*2023*	*81*	*81*		
		T-6.2	Complete basin-level “Flood Risk Maps and Management Plans” in cooperation with related agencies and institutions.								**WMDG AFAD**	*SHW, DEC, GDF, WMDG, MDG, LA, BU, NGOs, Municipalities, RI, Universities*
			PI-6.2.1	*Number of basins with completed flood risk maps and management plans.*	*No.*	*2015*	*3*	*2023*	*22*	*25*		
		T-6.3	Establish disaster (flood, inundation, avalanche, etc.) forecast and early warning systems in basins.								**AFAD MDG SHW**	*WMDG, DEC, GDF, LA, BU, NGOs,RI, Universities*
			PI-6.3.1	*Number of basins with disaster warning system installed.*	*No.*	*2015*	*16*	*2023*	*9*	*25*		

		T-6.4	Construction of the flood protection structures (increasing their numbers to 10.000 by 2023).								**SHW**	*GDF, DEC, MDG, AFAD, LA, BU, Municipalities*
			PI-6.4.1	*Total number of flood protection facilities constructed.*	*No.*	*2015*	*7.100*	*2023*	*2.900*	*10.000*		
7.	**Incorporation of the potential climate change impacts and adaptation into basin management, development of adaptation and mitigation mechanisms.**											
		T-7.1	Identify the basins that are most vulnerable to climate change and unexpected climatic events through modeling studies.								**MoEU MDG**	*MDG, RI, MoFAL, SHW, GDF, DEC, WMDG, AFAD, LA, BU*
			PI-7.1.1	*Number of basins with modeling studies conducted.*	No.	2015	7	2023	18	*25*		
		T-7.2	Identify the potential impacts of climate change on water, agricultural land, rangeland, forest and other basin areas and activities through scientific researches and assessments, develop adaptation strategies and put them into practice.								**MoEU**	*MDG, RI, MoFAL, SHW, GDF, DEC, WMDG, AFAD, LA, BU*
			PI-7.2.1	*Number of basins with adaptation strategy prepared.*	No.	2015	1					
		T-7.3	Increase the sink capacity in forest areas in basins (increase the carbon sink capacity from the current level of 15.5 million tons/year to 16.7 million tons/year by 2015 and 20 million tons/year by 2023).								***MoFAL, GDF***	*DEC, MoEU, RI, Universities*
			PI-7.3.1	*Annual amount of carbon sinks to be reached in forest areas.*	million Ton/y	2015	16.7	2023	20.0	20.0		

Annex 3

Main Criteria to be Used for Prioritization of Basins

No.	Criteria	Evaluation Indicator		Unit		Institution/source of information/data
				Qty	Rate	
1	**CRITERIA REGARDING STATUS AND DEGRADATION OF NATURAL RESOURCES**					
1.1	Basin Size	1.1.1	Basin area, and its share in total area of basins	Ha	%	SHW, ISD
		1.1.2	Area of dam and dam basins	Ha	%	SHW
1.2	Current utilization status of basin area	1.2.1	Agricultural area, and its share in basin area	Ha	%	MoFAL, LUPs, LPs
		1.2.2	Forest area, and its share in basin area	Ha	%	GDF, ISD
		1.2.3	Pasture area, and its share in basin area	Ha	%	MoFAL, LUPs
		1.2.4	Urban area, and its share in basin area	Ha	%	LUPs
		1.2.5	Wetlands	Ha	%	SHW, WMDG
		1.2.6	Other areas	Ha	%	ISD
1.3	Agricultural basins included in the basin	1.3.1	*No. and area of agricultural basins in the Basin*	Ha	%	MoFAL, LUPs
			Agr. Basin No: ...	Ha	%	
			Agr. Basin No: ...	Ha	%	
			Agr. Basin No: ...	Ha	%	
			Agr. Basin No: ...	Ha	%	
1.4	Erosion degree and risk status	1.4.1	Distribution of basin area by severity of erosion			ISD erosion risk database. DEC, GDF
			Very severe > 400.1	Ha	%	
			Severe 200.1 - 400	Ha	%	
			Strong 100.1 – 200	Ha	%	
			Moderate 50.1 – 100	Ha	%	
			Light 10.1 - 50	Ha	%	

			Very light 0 - 10	Ha	*%*	
		1.4.2	Amount of soil carried in the basin (average)	Ton/Year		ISD, DGCDE, SHW
		1.4.3	Average amount of soil carried in unit area	Ton/Ha/ Year		
1.5	Annual Average Sediment Amounts by Basins	1.5.1	Total sediment quantity (average)	Ton/ Year		ISD, DGCDE, SHW
		1.5.2	Amount of sediments reaching seas	Ton/ Year		
		1.5.3	Amount of sediments retained by Dams and Lakes	Ton/ Year		
1.6	Disaster (natural and human-caused) threat/risk and damages (inundation, flood, avalanche, earthquake, landslide, fire, etc.)	1.6.1	Average value of material loss.	TL/ Year		AFAD, SHW, Governorates, PDEDs (Provincial Disaster and Emergency Directorates)
		1.6.2	Average loss of life, etc.	person/year		AFAD, SHW, Governorates, (PDEDs)
		1.6.3	Value of buildings and infrastructure affected.	TL/year		AFAD, SHW, Governorates, (PDEDs)
		1.6.4	Size of affected area	Ha		AFAD
1.7	Agricultural, pasture and forest areas de-graded and in need of rehabilitation	1.7.1	Amount and rate of agriculture area to be rehabilitated	Ha	%	MoFAL
		1.7.2	Amount and rate of pasture area to be rehabilitated.	Ha	%	MoFAL
		1.7.3	Amount and rate of forest area to be rehabilitated.	Ha	%	GDF
2	**CRITERIA REGARDING WATER RESOURCES**					
2.1	Water resources potential of basin	2.1.1	Annual average flow	km3	%	SHW, WMDG
		2.1.2	Annual average yield (water yield)	l/h/km²		
		2.1.3	Total ground water potential of basin	l/h/km²		
		2.1.3	Total surface water potential of basin	million m3		
2.2	Climate	2.2.1	Average precipitation in the basin	Mm		MDG
		2.2.2	Average temperature in the basin	^{0}C		MDG
		2.2.3	Evaporation	Mm		MDG

2.3	Distribution of waster usage in the basin	2.3.1	Amount and rate of drinking and domestic water	million m3	%	SHW, SPAs, Iller Bank
		2.3.2	Amount and rate of agricultural irrigation water	million m3	%	SHW, SPAs, MoFAL-ARDG
		2.3.3	Amount and rate of industrial water	million m3	%	SHW
2.4	State of drinking, domestic and industrial water	2.4.1	Rate of population with drinking and domestic water needs supplied	-	~~%~~	SHW, SPAs, Iller Bank
2.5	Agricultural irrigation area	2.5.1	Existing irrigated agricultural area	Ha		MoFAL, SHW
		2.5.2	Potential irrigable agricultural area	Ha		
2.6	Hydroelectric energy generation status and potential	2.6.1	Total hydroelectric energy installed power of the basin	MW		SHW
2.7	Quality of water resources	2.7.1	Distribution of water quality categories:		%	WMDG, SHW
			1st quality category		*%*	
			2nd quality category		*%*	
			3rd quality category		*%*	
			4th quality category		*%*	
2.8	Water resources pollution degree and threat	2.8.1	Amount of domestic wastewater	m3		WMDG, MoEU
		2.8.2	Amount of industrial wastewater	m3		WMDG, MoEU
		2.8.3	Pollution from agricultural activities	?		MoFAL to notify the unit
3	**SOCIOECONOMIC CRITERIA**					
3.1	Population in the basin	3.1.1	Share of the basin's population in total population	1000 people	%	TUIK,
		2.1.2	Rural population and its rate to basin population	1000 people	%	TUIK, MoFAL, GDF
		3.1.3	Female population and its rate to basin population	1000 people	%	TUIK,
3.2	Development level of provinces in the basin	3.2.1	Development category/rank of the province	Number		TUIK

4	**BASIN BIODIVERSITY AND CONSERVATION AREA CRITERIA**					
4.1	Wetlands and other conservation areas in the basin		Wetlands	Ha	no.	NCNP-DG, SHW
			Nature conservation areas	Ha	no.	
			Historical and cultural conservation areas	Ha	no.	NAC-DG