



# Water Management in Turkey

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(DG Water Management, Ministry of  
Forestry and Water Affairs)**

# GENERAL INFORMATION ABOUT TURKEY

- ✓ Surface area ~ 784,000 km<sup>2</sup>
- ✓ Population ~ 74,000,000 people



- ✓ 7 geographical region
- ✓ 81 provinces
- ✓ Capital City → Ankara

# **WATER POTENTIAL IN TURKEY**

|                                       |   |
|---------------------------------------|---|
| <b>Annual Precipitation</b>           | <b>: 501 billion m<sup>3</sup></b>        |
| <b>Annual Usable Surface Water</b>    | <b>: 98 billion m<sup>3</sup></b>         |
| <b>Annual Usable Ground Water</b>     | <b>: 14 billion m<sup>3</sup></b>         |
| <b>Annual Total Usable Water</b>      | <b>: 112 billion m<sup>3</sup></b>        |
| <b>Population of Turkey (2010)</b>    | <b>: 74 million</b>                       |
| <b>Annual Water Amount per person</b> | <b>: 1500 (m<sup>3</sup>/person-year)</b> |



# WATER POTENTIAL IN TURKEY

Irrigation: **32 billion m<sup>3</sup> (%73)**

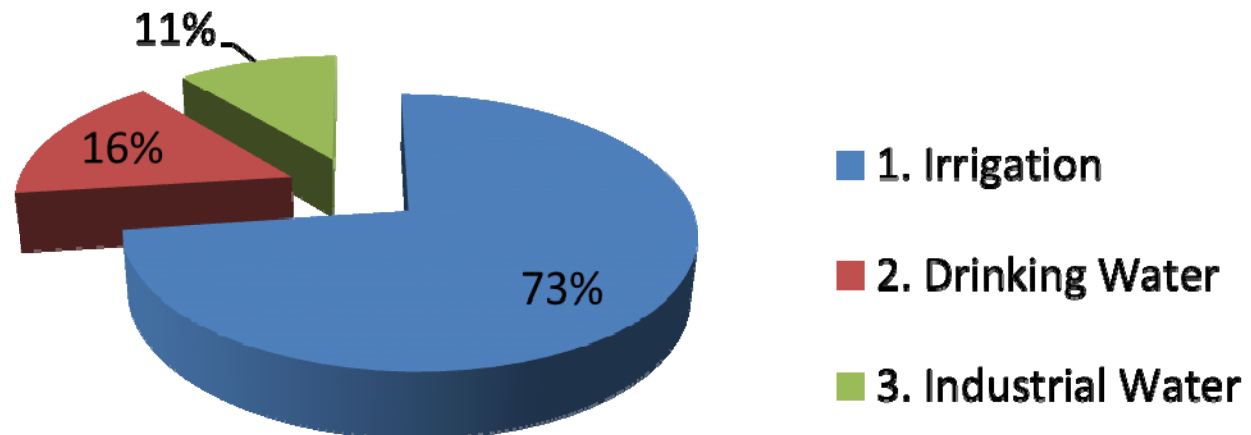
Drinking Water: **7 billion m<sup>3</sup> (%16)**

Industrial Water: **5 billion m<sup>3</sup> (%11)**

Total Used Water: **44 billion m<sup>3</sup>**

Usage Ratio of Water Potential: **(%40)**

Annual Water Amount per person : **1500 (m<sup>3</sup>/person-year)**



# **TURKEY:** **Not a WATER-RICH Country**

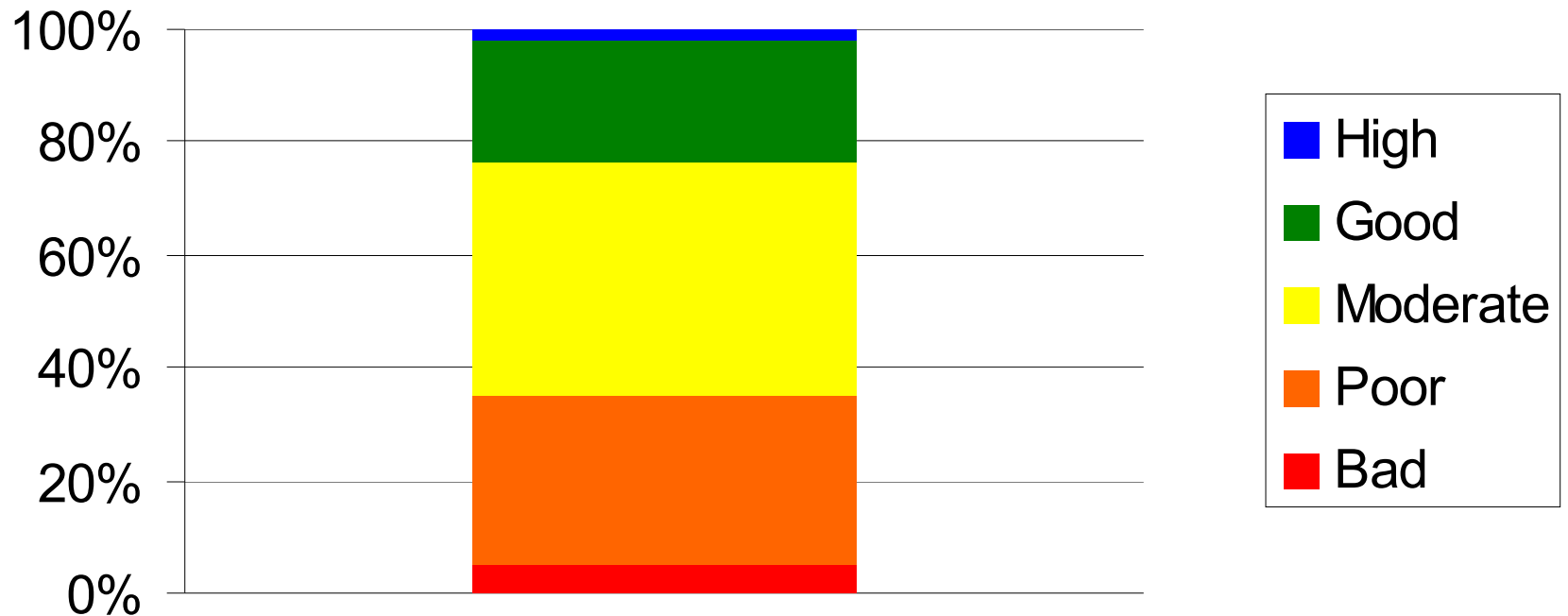
## **Annual Water Amount per person (m<sup>3</sup>/year)**

| <b><u>COUNTRIES</u></b>  | <b><u>2005</u></b> | <b><u>2023</u></b> |
|--|--------------------|--------------------|
| <b>Water-Rich Countries</b><br><br>(Canada, ABD, North and<br>West European Countries) | <b>10.000+</b>     | <b>8.000+</b>      |
| <b>Iraq</b>  | <b>2.110</b>       | <b>1.400</b>       |
| <b>Turkey</b>  | <b>1.600</b>       | <b>1.300*</b>      |
| <b>Syria</b>   | <b>1.420</b>       | <b>950</b>         |
| <b>Israel</b>  | <b>300</b>         | <b>150</b>         |
| <b>Jordan</b>  | <b>250</b>         | <b>90</b>          |
| <b>Palestine</b>   | <b>100</b>         | <b>40</b>          |

\* Estimated calculation made as population of Turkey will be approximately 85 million in 2023.

# Turkey's water challenge

## Estimated national water body status, 2009



# Opening of Turkish – EU negotiations on the Environment chapter on 21 December, 2009,



# **Turkey as EU candidate member**

**Opening negotiations on the Environment  
Chapter on 21 December 2009**

**Two closing benchmarks for water:**

- **Transposition of WFD**
- **River basin management plans for 25 river basins**



# Transposition of Water Framework Directive

**Revising the existing  
legislation**

**Environmental Law/By-Law  
on Water Pollution Control**

**By-Law on River Basin  
Protection (Draft)**

• **Water Law\***

• **By-law on River Basin  
protection**

# STUDIES ON WATER LAW

- 1. A meeting was held in Sapanca with Water and Sewerage Administrations**
- 2. A meeting was held with University representatives**
- 3. Laws of 10 countries were reviewed**
- 4. Comparisons between laws was made with foreign experts**
- 5. 2-days workshop was held with the participation of 150 representatives**

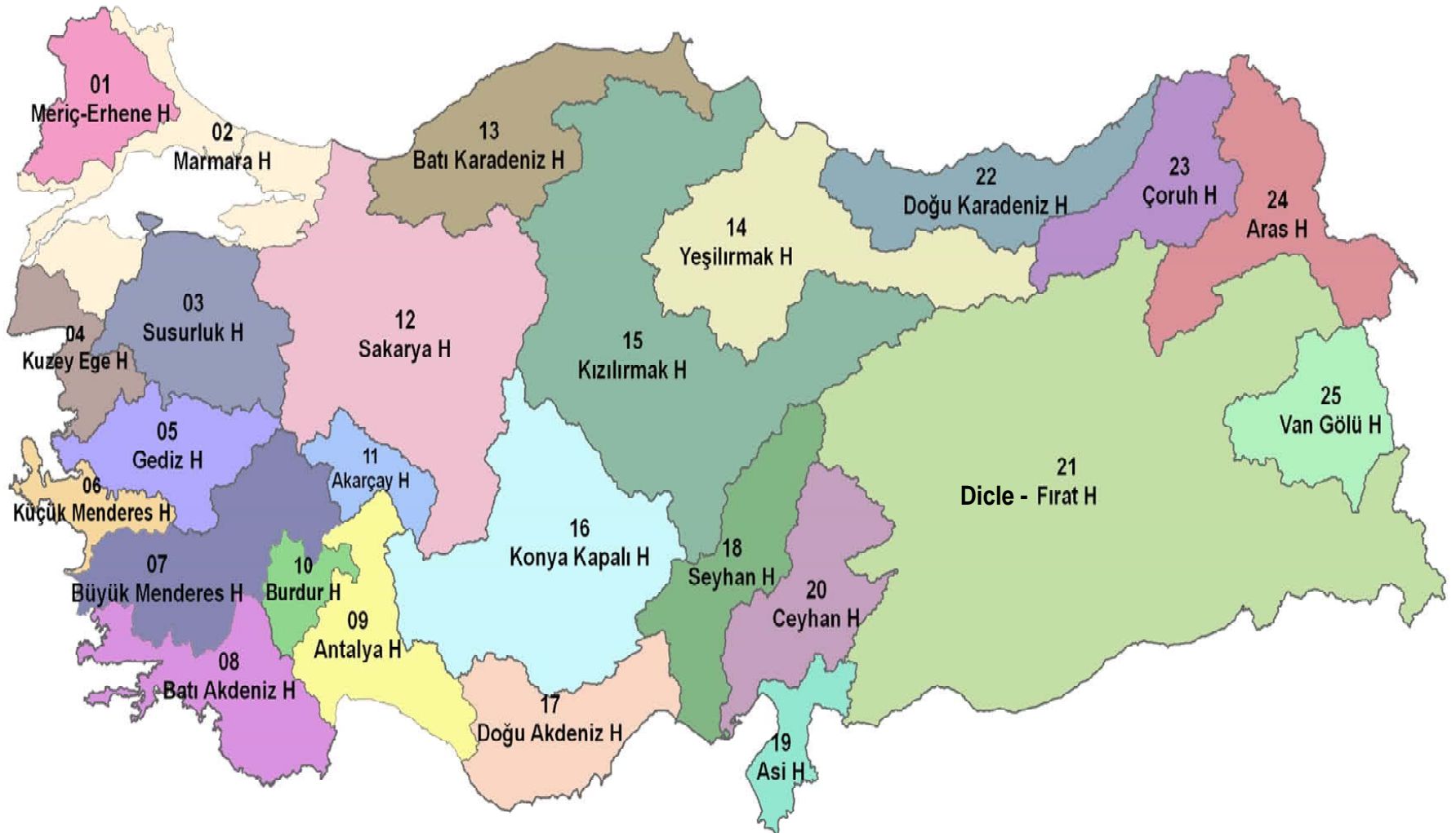


# STUDIES ON WATER LAW

- 6. Draft law was presented to 73 agencies and institutions, university, NGOs and municipalities for evaluation.**
- 7. Senior representatives of agencies and institutions, NGOs and industrialist (YÖNETDER) were come together**
- 8- Received comments are being evaluated.**
- 9- DEA has been drafted.**



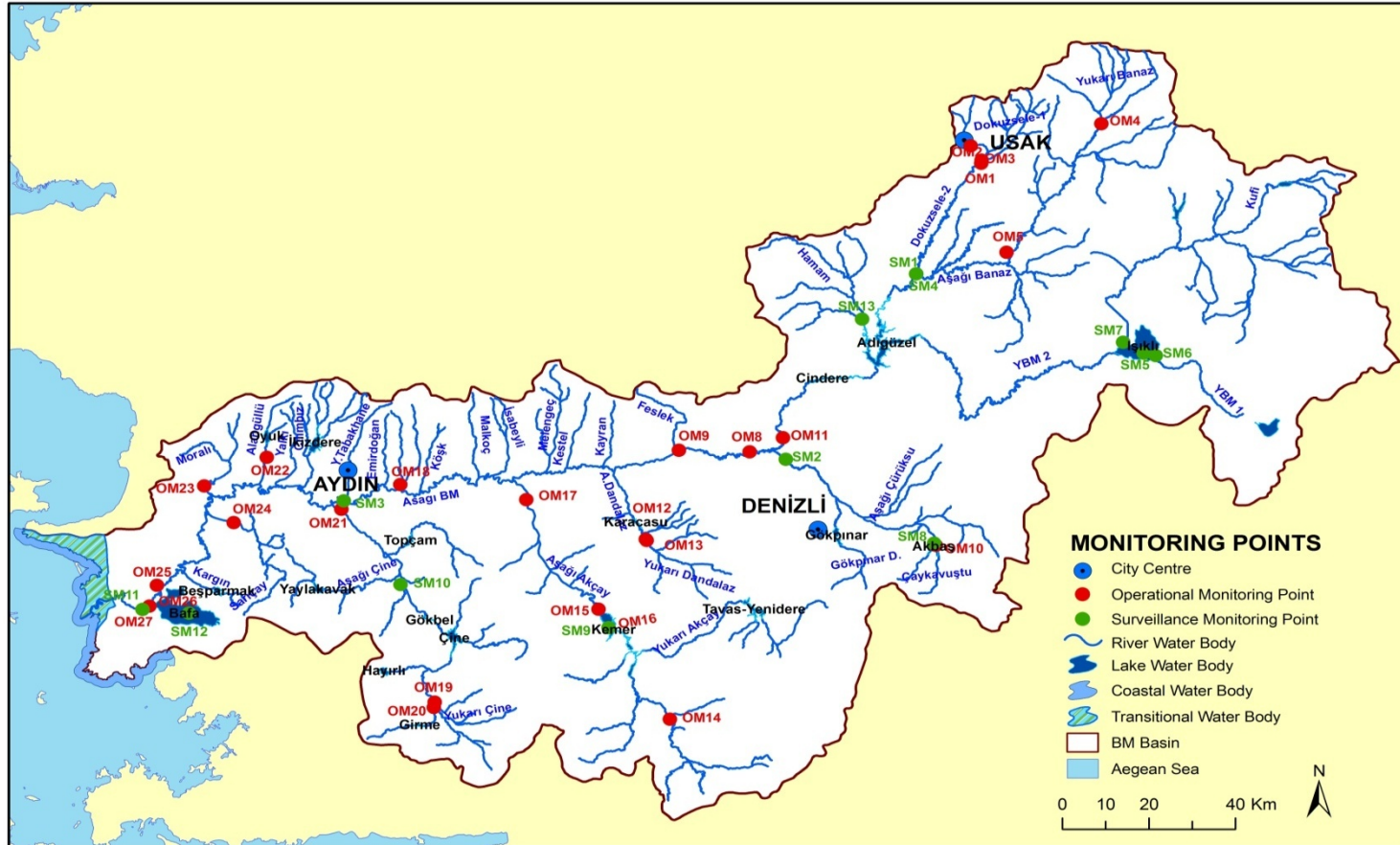
# River basins in Turkey



# Büyük Menderes River basin

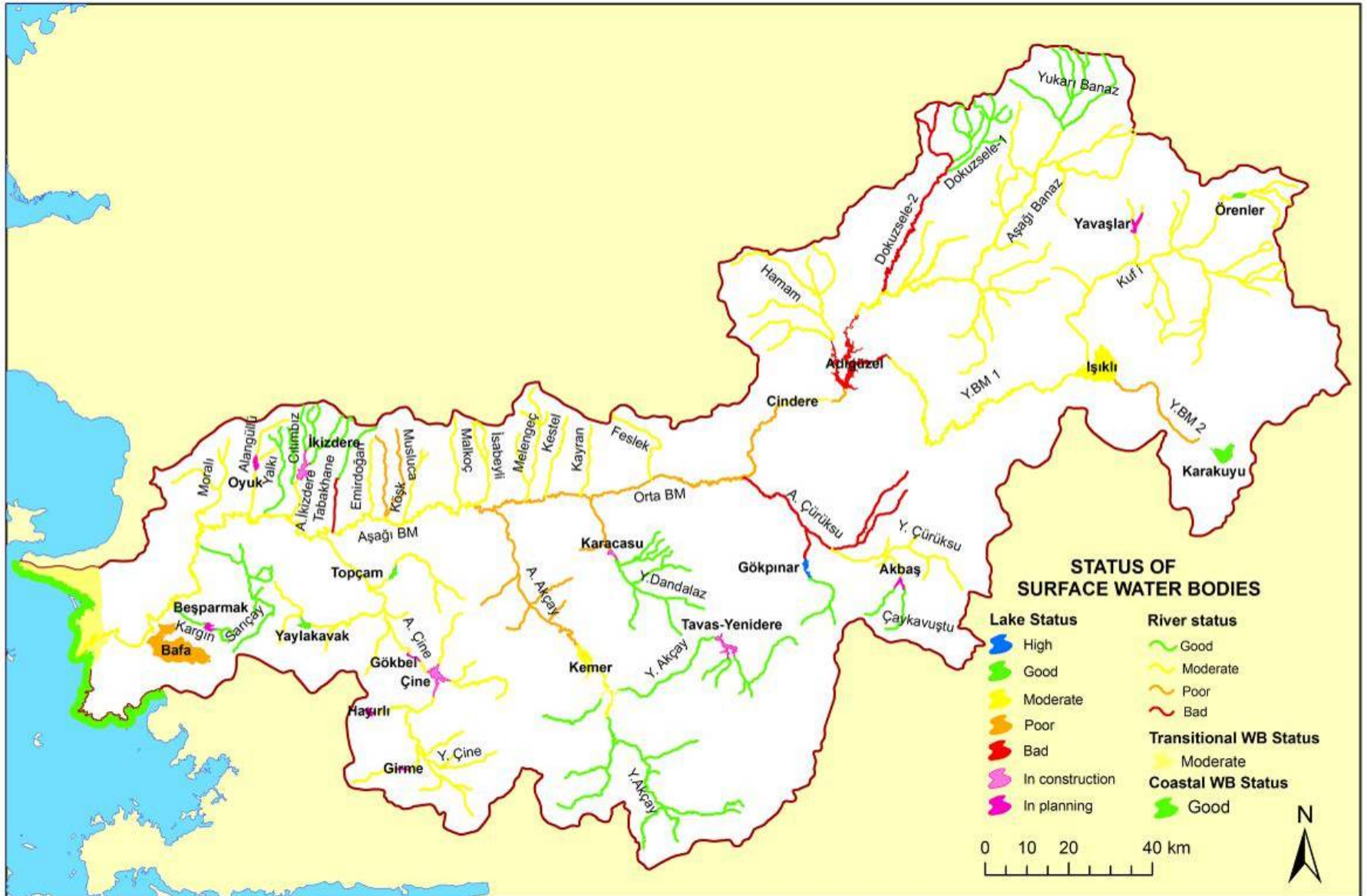


# We have started to monitor water quality according to EU standards

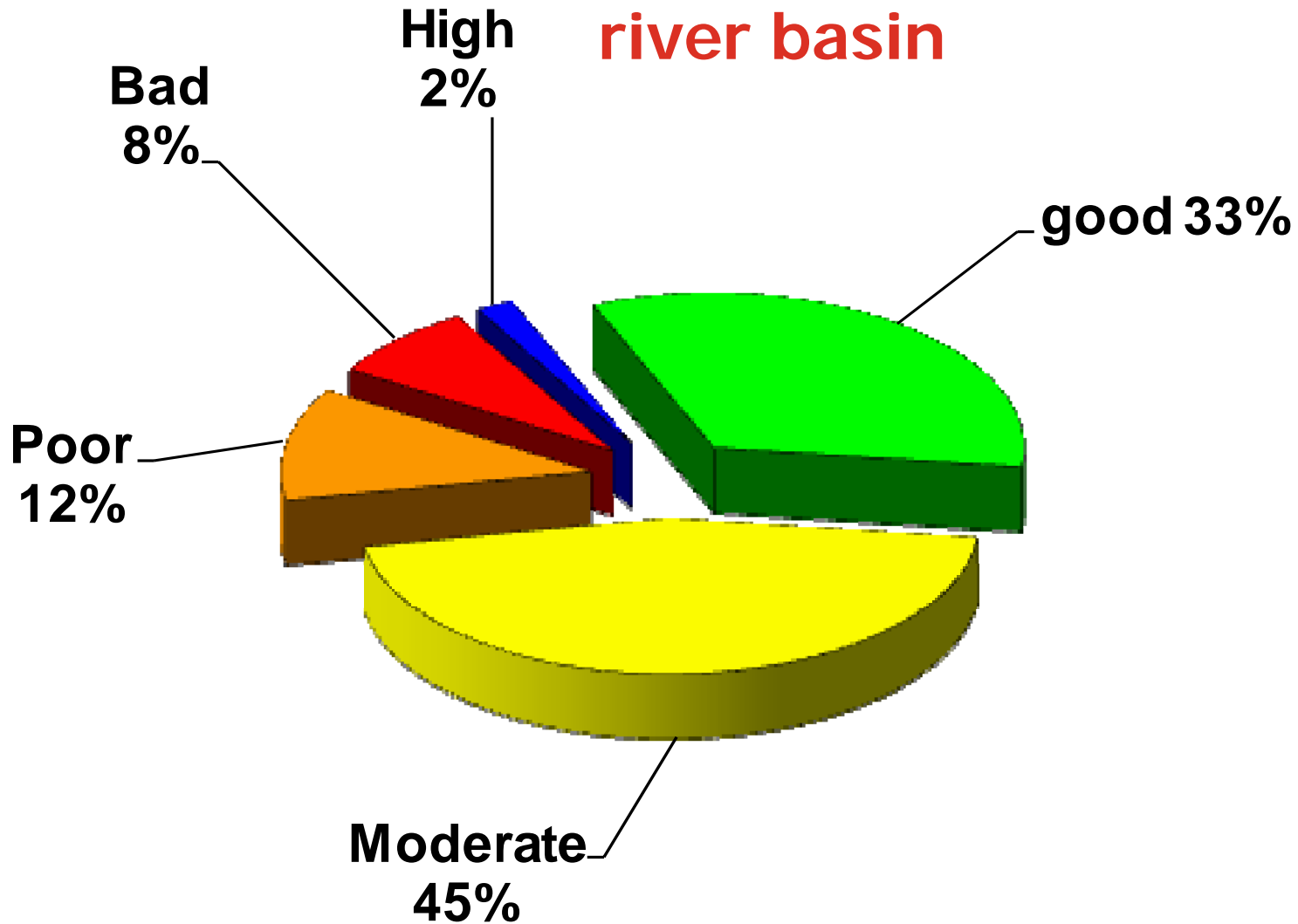


We are developing effective measures via monitoring focused on pollution sources basin wide. We are developing more effective measures by basin wide monitoring focused on pollution sources. We will identify monitoring points in 25 basins in 2011 according to EU<sup>14</sup> standards

# Status of surface water bodies



# Water body status in the Büyük Menderes river basin





- **Waste Water Treatment Action Plan**
- **River basin Protection action plans**
- **River Basin Management Plans**

MINISTRY OF ENVIRONMENT AND  
FORESTRY  
DG Environment Management



**WWTAP**  
**( 2008 – 2012 )**

ANKARA - 2008



AKARÇAY HAVZASI KORUMA EYLEM PLANI  
MINISTRY OF ENVIRONMENT AND  
FORESTRY  
DG Environment Management

AKARÇAY HAVZASI KORUMA EYLEM PLANI



KASIM 2008



**Büyük Menderes RBMP**  
**YÖNETİM PLANI**



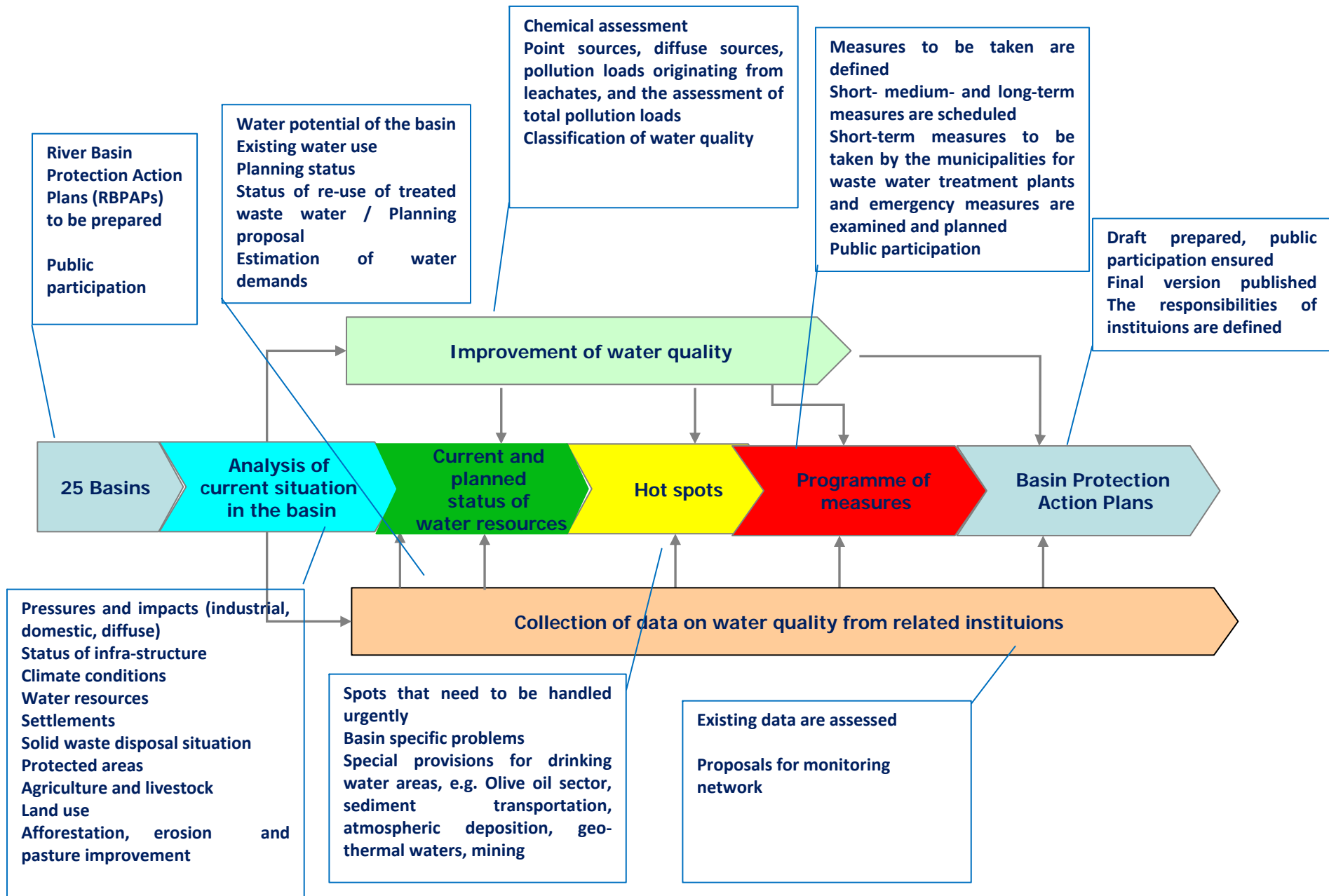
Su politikası alanında Topuluk faaliyetleri için çerçeve oluşturan, 23  
Ekim 2000 tarihli ve 2000/60/EC sayılı AVRUPA PARLAMENTOSU VE  
KONSEYİ DİREKTİFİ  
Madde 13 ve Ek VII gereğince

Ankara, 2010

# STATUS OF BASIN PROTECTION ACTION PLANS



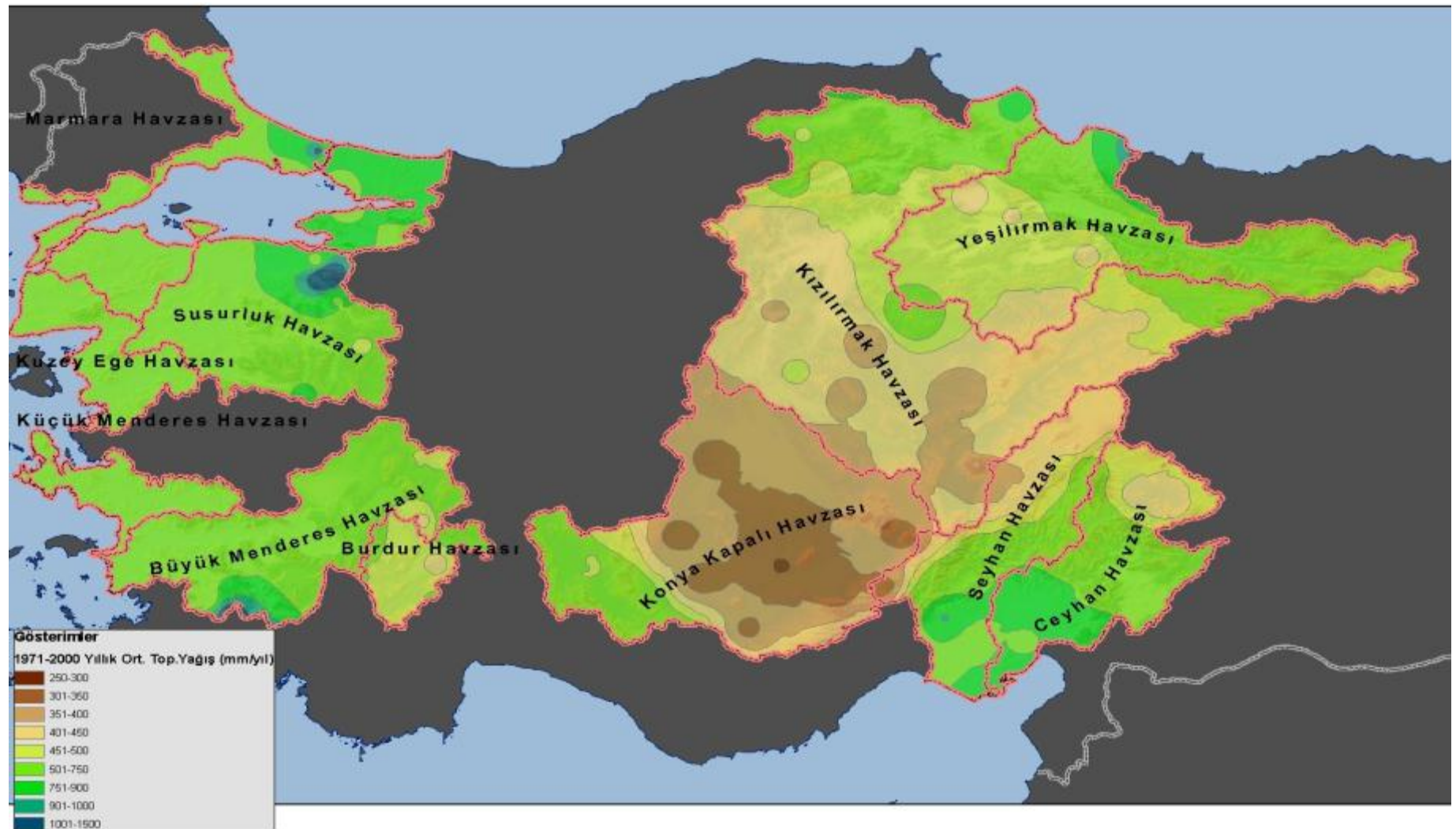
# Basin Protection Action Plans





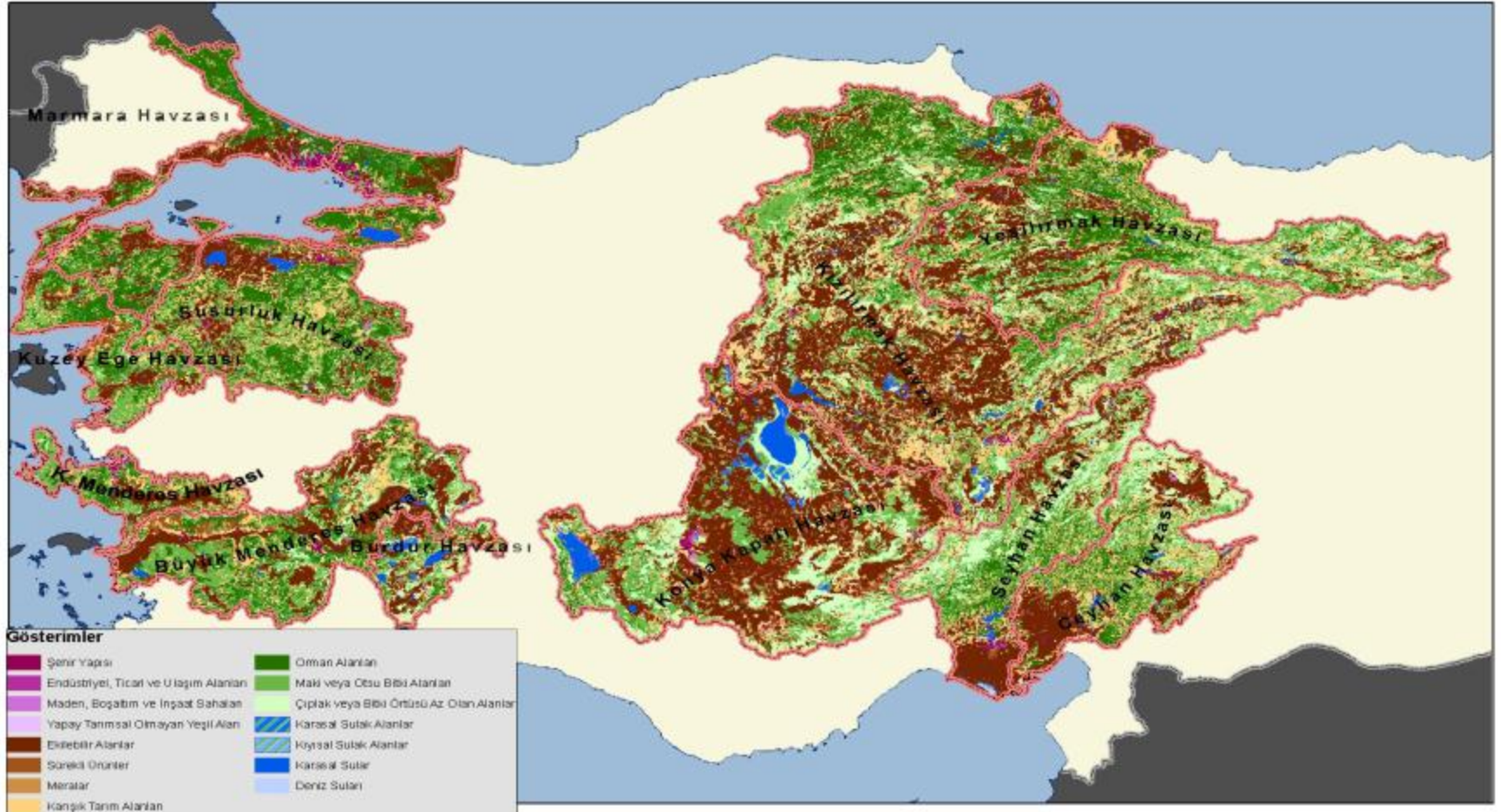
# Basin Protection Action Plans

## Distribution of Average Precipitation in Basins



# Basin Protection Action Plans

## Land Use in Basins



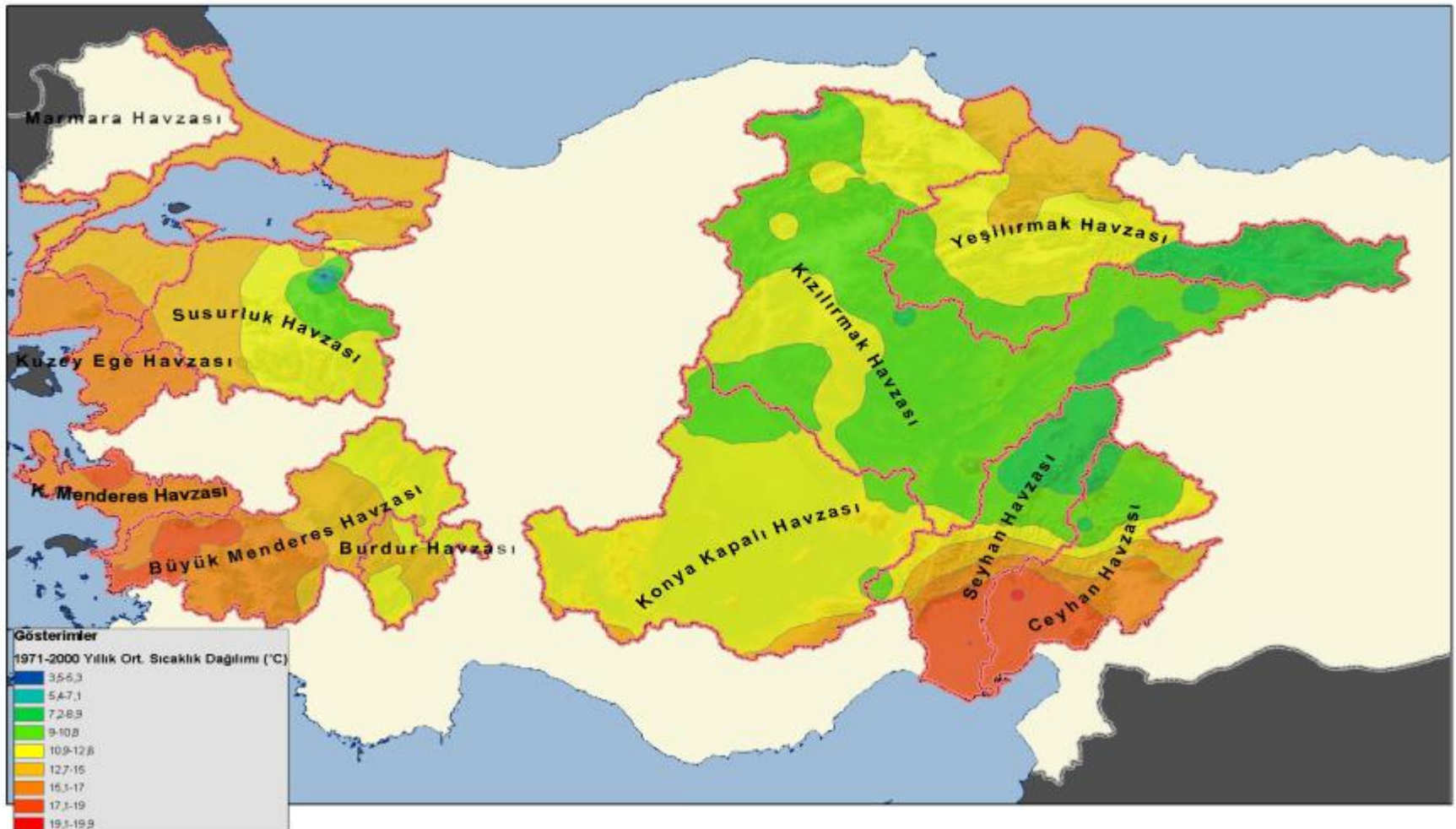
# Basin Protection Action Plans

## Protected Areas



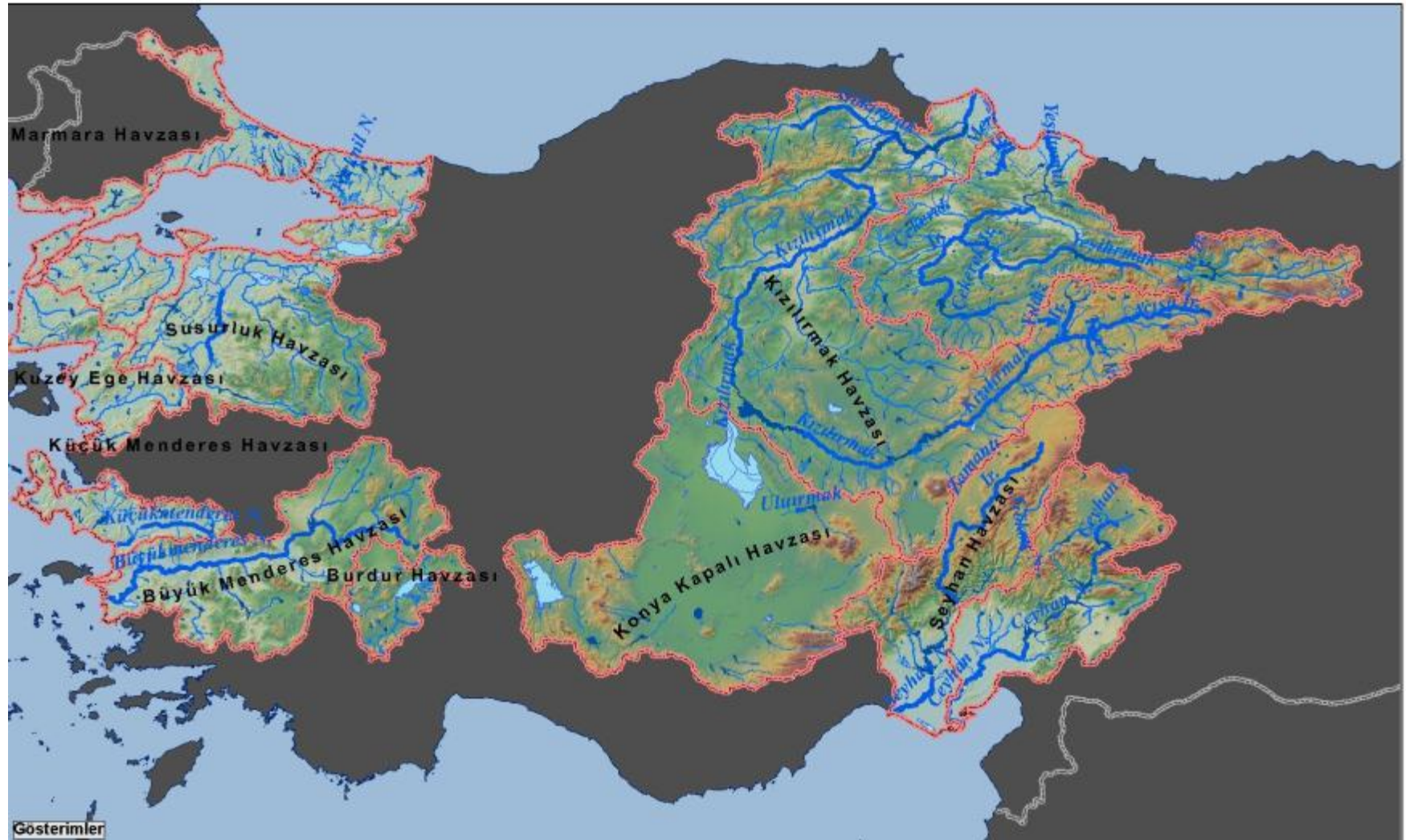
# Basin Protection Action Plans

## Average Temperature Distribution



# Basin Protection Action Plans

## Water Resources in Basins

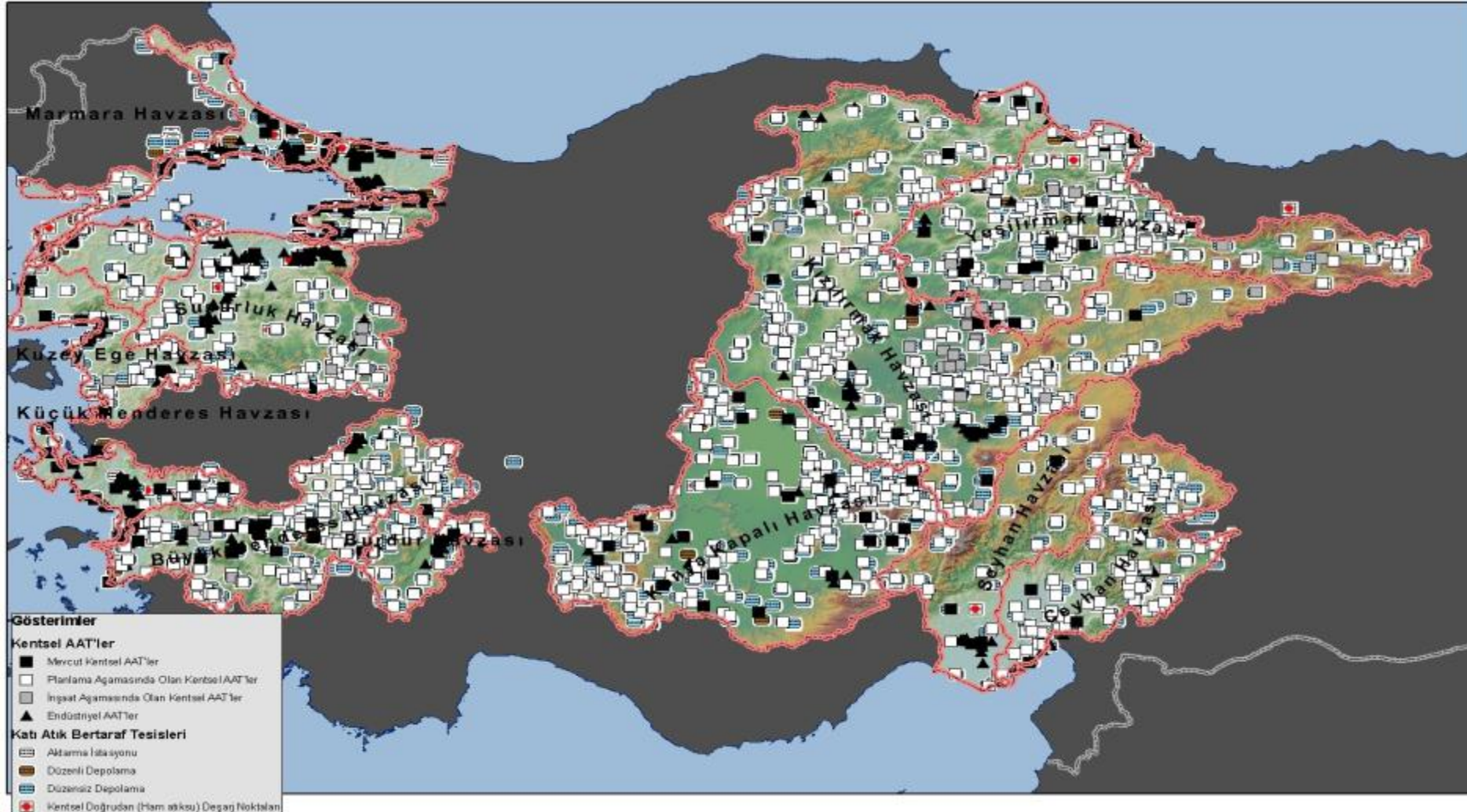






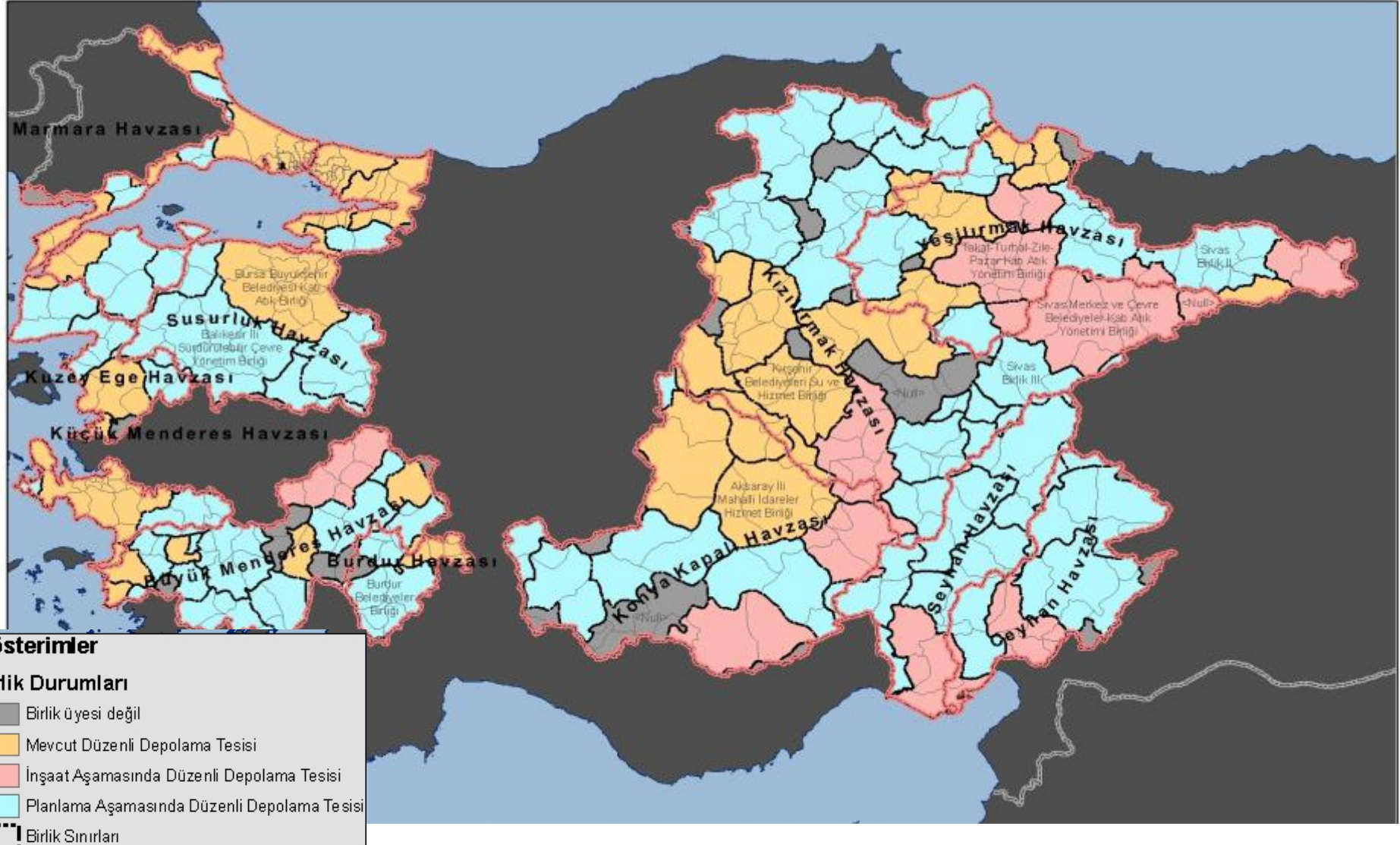
# Basin Protection Action Plans

## Land Works - Designation of Environmental Infrastructures



# Basin Protection Action Plans

## Status of Solid Waste Disposal in Basins-Planning



# Water Quality

## Water Quality



### Gökırmak ve Devrez Streamlets

COD, BOD: 1-2  
NH<sub>4</sub>-N: 2  
Total P: 2-3

### Acıçay River

BOD: 3-4  
NH<sub>4</sub>-N: 4  
NO<sub>3</sub>-N: 1-2  
Total P: 3-4

### Delice Streamlet

BOD: 2  
NH<sub>4</sub>-N: 4  
NO<sub>3</sub>-N: 3  
Total P: 2

### Karasu Streamlet

BOD: 2-3  
NH<sub>4</sub>-N: 3-4  
NO<sub>3</sub>-N: 1  
Total P: 3-4

### Kırşehir Streamlet

COD, BOD: 4  
NH<sub>4</sub>-N: 4  
Total P: 4

### Kızılırmak

•COD : 1-2  
•BOD : 2-3  
•NH<sub>4</sub>-N : 2-4  
•NO<sub>2</sub>-N : 3-4  
•NO<sub>3</sub>-N : 1-2  
•Total P : 2-4

### Yozgat Streamlet

BOD: 3  
NH<sub>4</sub>-N: 4  
NO<sub>3</sub>-N: 2  
Total P: 4

### Acısu

BOD: 2-3  
NH<sub>4</sub>-N: 3-4

### Sarımsaklı Water(Karasu)

BOD: 2-4  
NH<sub>4</sub>-N: 3-4  
Total P: 4

### Gösterim

| KOI         | NO <sub>3</sub> -N |
|-------------|--------------------|
| • Ölçüm Yok | • Ölçüm Yok        |
| • 1         | • 1                |
| • 2         | • 2                |
| • 4         | • 3                |
|             | • 4                |

| NH <sub>4</sub> -N | Desarj Noktaları              |
|--------------------|-------------------------------|
| • Ölçüm Yok        | • Endüstriyel AAT Deşarj      |
| • 1                | • Endüstriyel Doğrudan Deşarj |
| • 2                | • Evsel AAT                   |
| • 3                | • Evsel Doğrudan Deşarj       |
| • 4                | • Katı Atık Sızıntı Suyu      |

| NO <sub>2</sub> -N |
|--------------------|
| • Ölçüm Yok        |
| • 1                |
| • 2                |
| • 3                |
| • 4                |

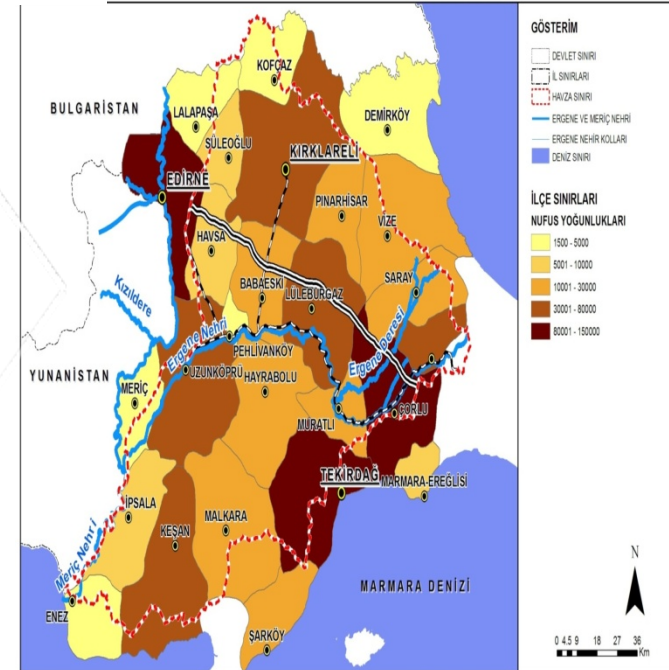


# EXAMPLE

## ERGENE RIVER BASIN



- Ergene River originates from Istranca Mountain in Tekirdağ City.
- It flows into River Meriç , and then flows to the Saroz Gulf.
- The whole length of the river is 283 km and it has 11.000 square kilometers of river basin.
- The water potential of Ergene River is 1,71 billion cubic meters per year.
- 12% of wheat, 61% of sunflower and 54% of rice productions of Turkey are being produced in the basin.



# ACTIONS VIA ERGENE RIVER BASIN ACTION PLAN

**Action 1.** Works on rehabilitation of stream beds are going on.

**Action 2.** Municipal waste water treatment plants are being constructed by Directorate General for State Hydraulic Works.

**Action 3.** Rehabilitation Organized Industrial Zones are established

**Action 4.** Advanced joint waste water treatment plants for industry are being constructed.

**Action 5.** Processing less polluting raw materials and using less water are being started.

**Action 6.** Works on afforestation and combating soil erosion are going on.

**Action 7.** It is being entered into planned era in Ergene, 1/25.000 plans are being implemented.



# ACTIONS VIA ERGENE RIVER BASIN ACTION PLAN

**Action 8.** Solid and hazardous waste processing, recovery and disposal plants are being established.

**Action 9.** Pollution from agriculture will be controlled.

**Action 10.** Ergene River is going to be monitored online continually.

**Action 11.** Intimate inspections are going on.

**Action 12.** Practicing environmental friendly production has been started.

**Action 13.** Early warning system against floods is being established.

**Action 14.** Ground water consumption is being controlled.

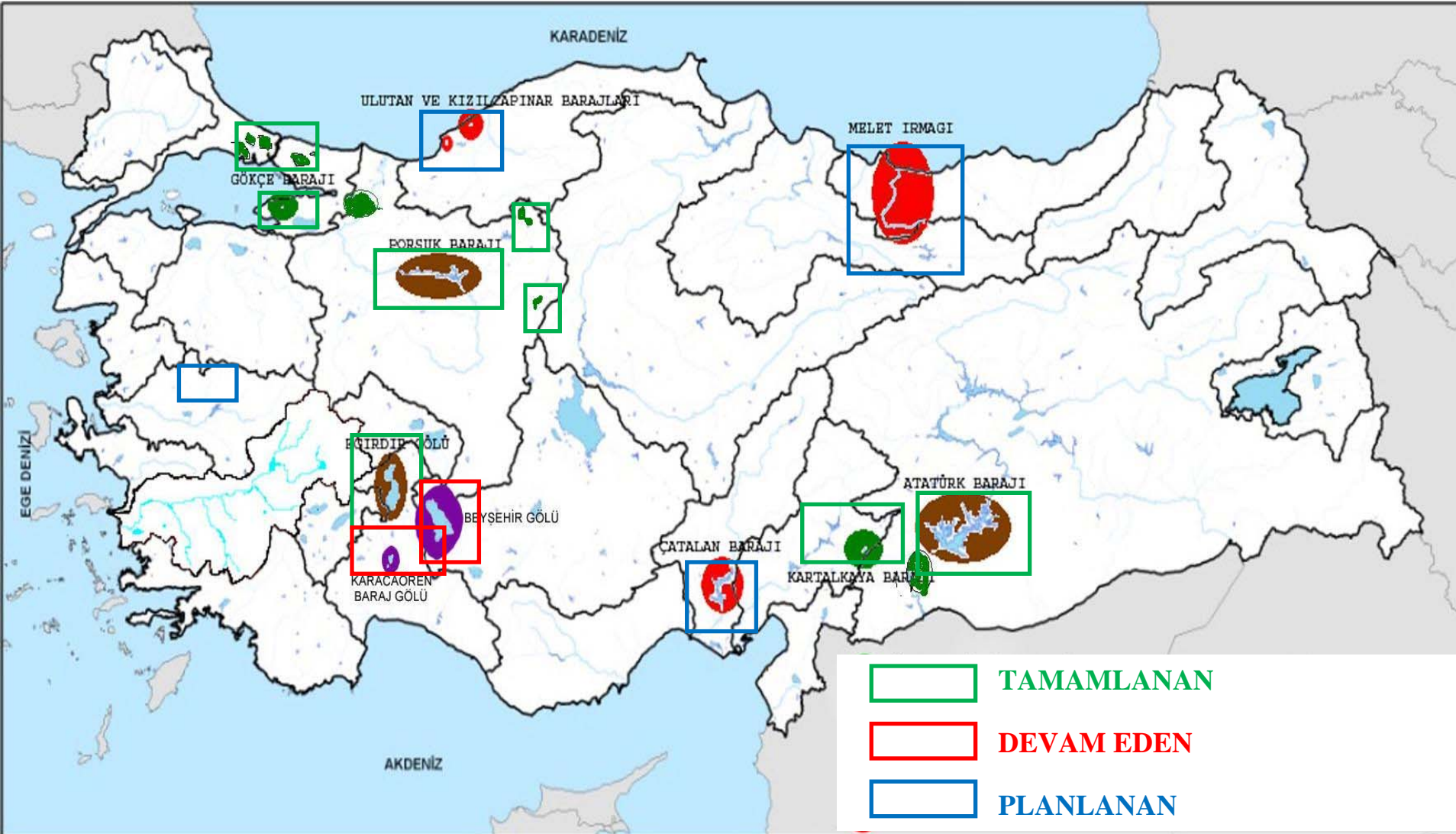
**Action 15.** Dams, ponds, irrigation facilities are being constructed.





# Determination of Special Provision studies are being conducted for the protection of drinking water basins.

## DETERMINATION OF SPECIAL PROVISION STUDIES IN TURKEY

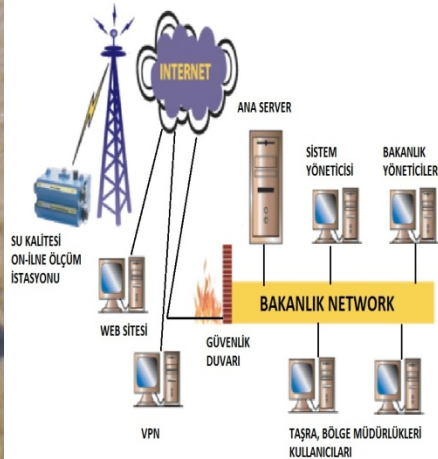


# Project titled "Capacity Building on Water Quality Monitoring" was submitted to the Component I of IPA for the Programming Year 2009.

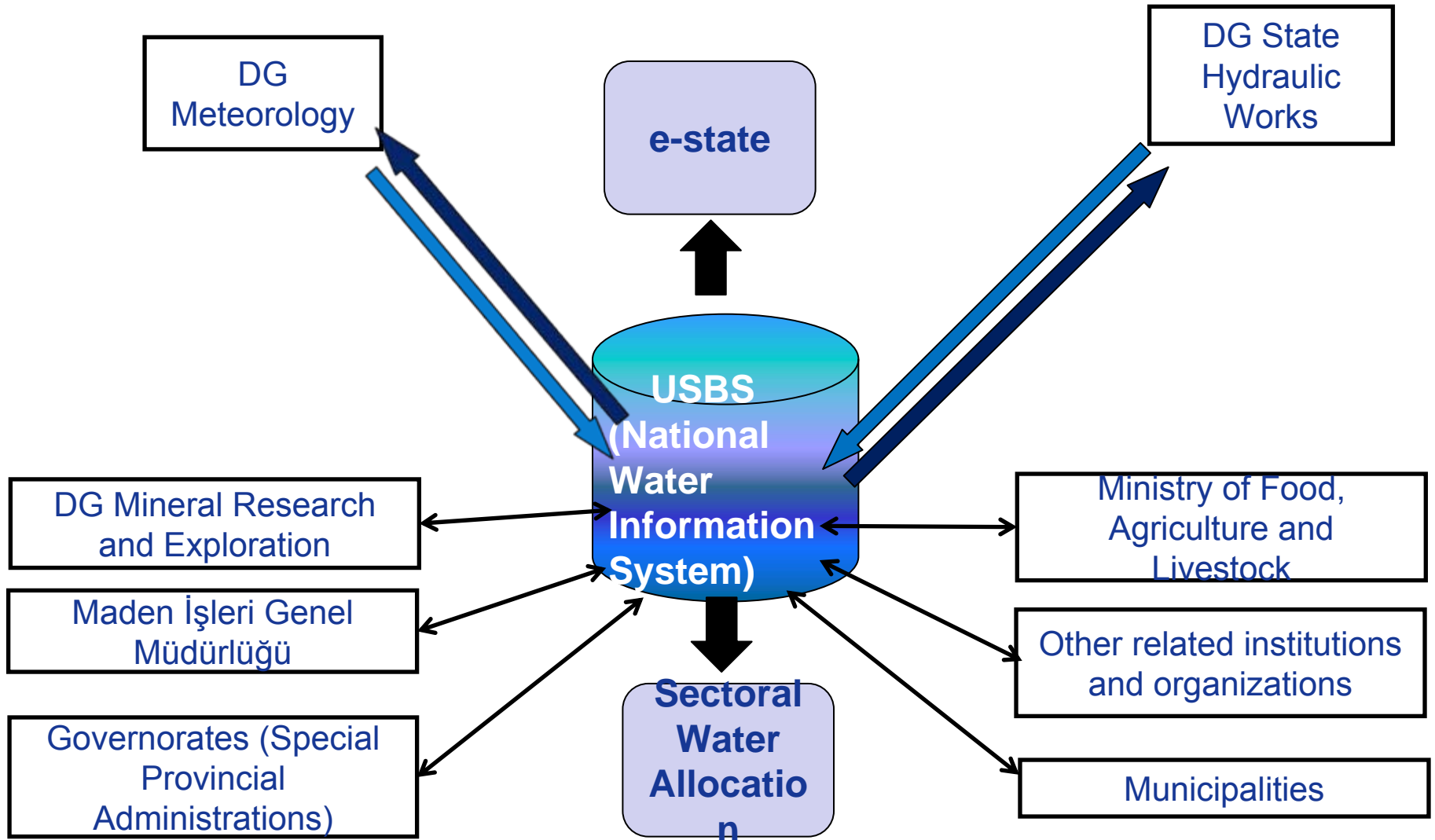
**UNDER THE SCOPE OF  
4.000.000 EURO EU  
TWINNING PROJECT**

**IN  
BÜYÜKMENDERES  
ERGENE  
SUSURLUK  
SAKARYA  
AKARÇAY  
BASINS**

**DETERMINATION OF  
MEASURING STATIONS,  
PARAMETERS WHICH WILL BE  
MEASURED  
AND MEASUREMENT  
INTERVALS**



# Water Database of the Ministry of Forestry and Water Affairs



# FLOOD AND DROUGHT PLANS

**Flood management plans are being prepared**



**Flood Protection Action Plans start in the West Black Sea Region.**

**Strategies for dry periods are being identified.**

**The impacts of climate change are being identified.**

# Natural Basin Management Strategic Document



By National Management Strategic Document;

“Enhancing legal and institutional capacity, maintaining the ordination and cooperation between related institutes for sustainable management of basins.

•Sustainable management and usage of water resources in basins.

•Preventing erosion and devastation of natural resources and basin areas, rehabilitation and maintaining sustainable usage in damaged basin areas.

•Protection of biological variety and lanscape and maintaining sustainable usage of basins.

•Increasing the living quality and welfare of people in basins.

•Devolving fighting mechanisims for natural disasters due to damaged natural resources in basins.

•Adding the probable effects of climate changing in basin management and developing harmonizing mechanisims.

Are aimed

# WATER CONSERVATION ACTION PLAN (WCAP)

## 1. Reuse of Treated Domestic Wastewater



## 2. Public Awareness on Saving Water



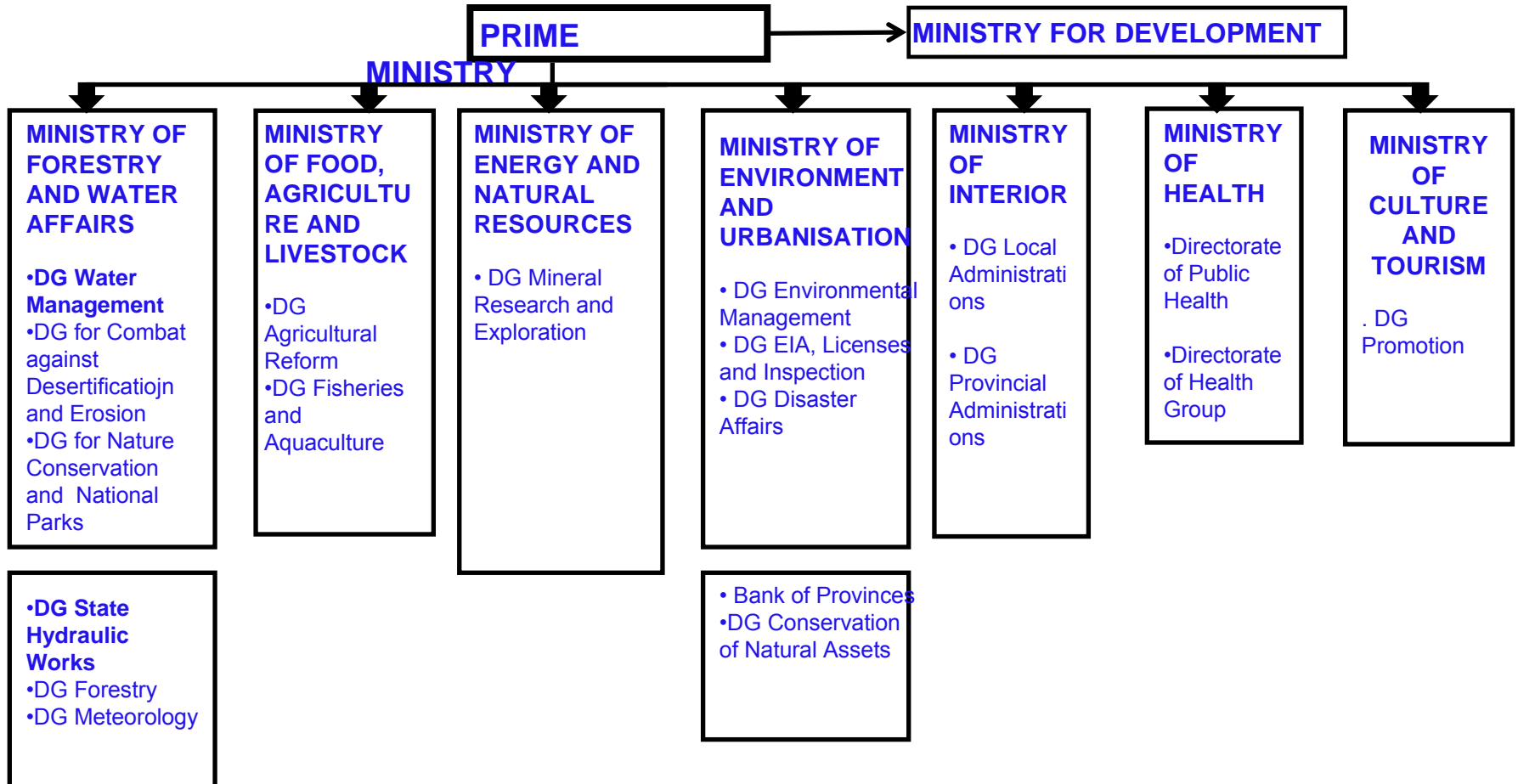
## 3. Reduce Water Loss and Leakage Ratios



# Planning for river basin management plans

|   | <b>Action</b>  | <b>Year</b>       | <b>Remarks</b>  |
|---|--|-------------------|---|
| 1 | <b>Designation of River Basin Districts</b>                    | <b>2012</b>       | <b>25 basins have already been defined.</b>   |
| 2 | <b>Start preparing the Article 5 Reports for River Basins</b>  | <b>After 2013</b> | <b>River Basin Protection Action Plans (RBPAP) will set the basis for Article 5 reports</b> |
| 3 | <b>Start preparing the river basin management plans</b>        | <b>After 2014</b> |   |
| 4 | <b>Start of implementation of river basin management plans</b> | <b>After 2015</b> |   |
| 5 | <b>Achievement of "good water status"</b>                      | <b>2027</b>       | <b>Depends on the actual challenges in the basins.</b>                                      |

# SOME OF THE WATER RELATED INSTITUTIONS IN TURKEY – EXISTING STRUCTURE

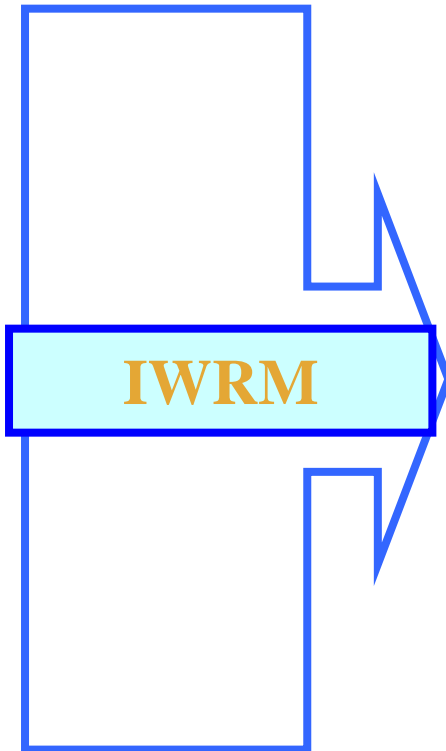






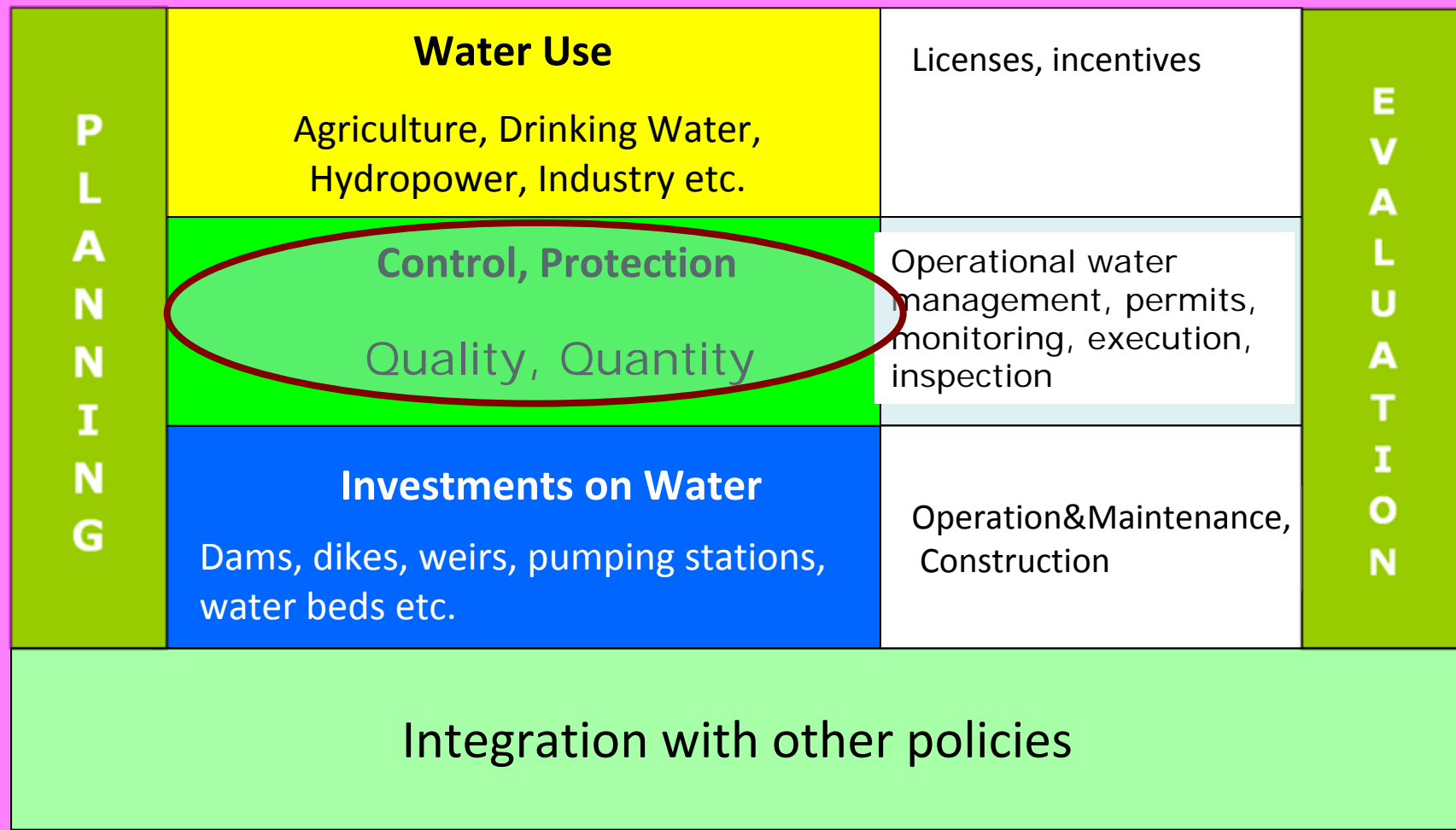
# GENERAL DIRECTORATE OF WATER MANAGEMENT

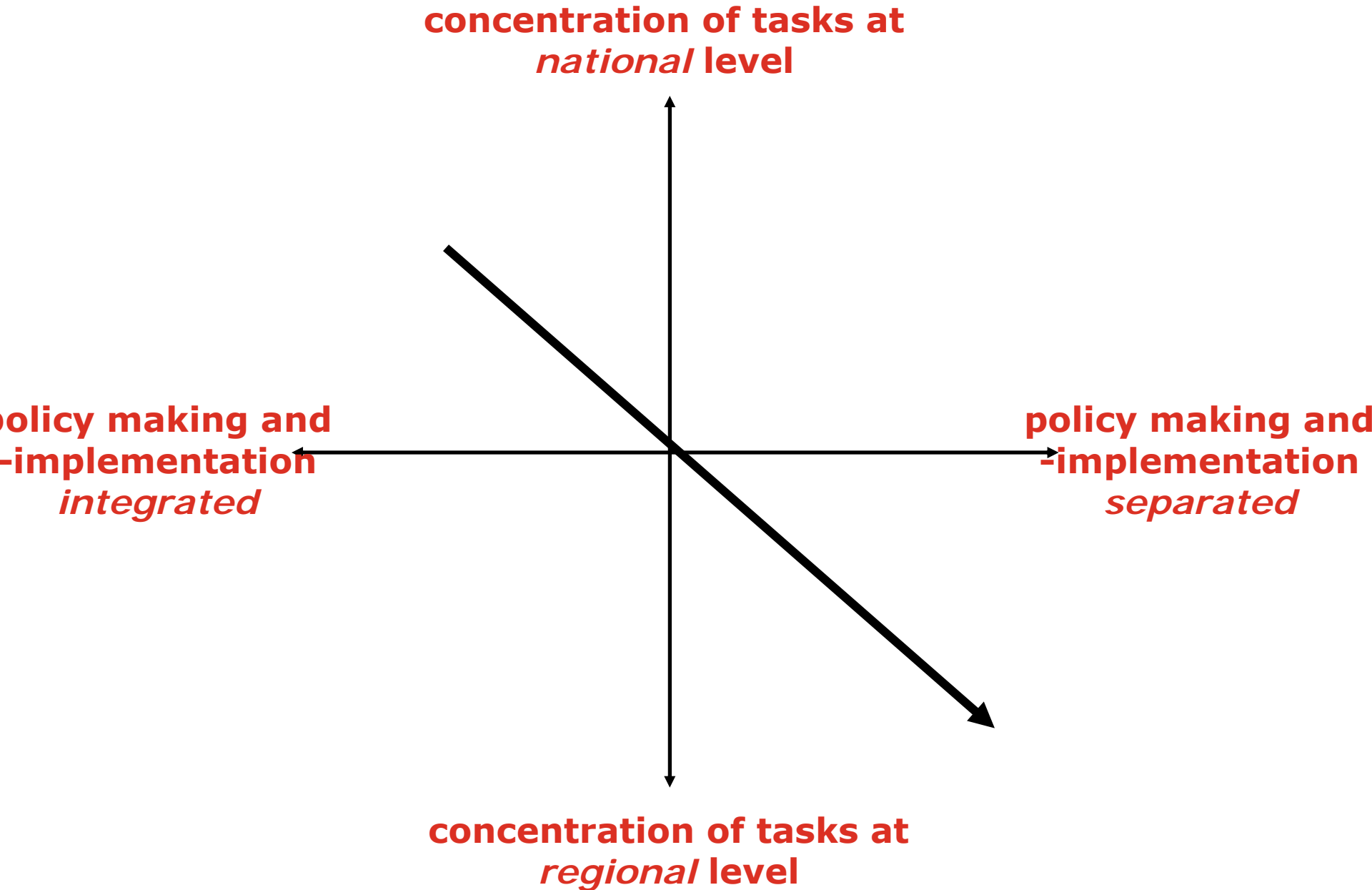
- **Basin Management Planning Department,**
- **Water Legislation and Policy Department,**
- **Inventory and Allocation Department,**
- **Water Quality Management Department,**
- **Monitoring department,**
- **Flood and Drought Management Department,**
- **Management Services department,**



# Responsibilities and Roles in Basin Management

## Coordination, Policy and Legislation







# WATER MANAGEMENT COORDINATION BOARD



**Water Management Coordination Board** has been established by the Circular of the Prime Ministry no 2012/7.

# WATER MANAGEMENT COORDINATION BOARD

**Minister of Forestry and  
Water Affairs**

**Undersecretary of the Ministry  
of EU Affairs**

**Undersecretary of the Ministry of  
Science, Industry and  
Technology**

**Undersecretary of the Ministry  
of Environment and  
Urbanization**

**Undersecretary of the Ministry of  
Foreign Affairs**

**Undersecretary of Energy and  
Natural Resources**

**Undersecretary of Food,  
Agriculture and Livestock**

**Undersecretary of the Ministry  
of Interior**

**Undersecretary of the Ministry of  
Development**

**Undersecretary of the Ministry  
of Culture and Tourism**

**Undersecretary of the Ministry of  
Health**

**Director General of State  
Hydraulic Works**

**Director General of Water  
Management**

**Director General of Nature  
Conservation and National  
Parks**

**Director General of Combat  
Against Desertification and  
Erosion**

**Director General for  
Meteorology**

**Director of Water Institute of  
Turkey**

**NGOs**

**UNIVERSITIES**

# BASIN MANAGEMENT COMMITTEES



Implementations will be followed closely with a **participatory approach**

An advisor group composing of academicians and NGOs will be formed



# Balancing users and protectors





# RIVER BASIN MANAGEMENT PLAN GOOD WATER STATUS

**Ecology**

**Chemistry**

**Hydro-**

**Morphology**

(Flood, dams, ports, channels, over-  
abstraction etc)



**Water Status**

|          |
|----------|
| HIGH     |
| GOOD     |
| MODERATE |
| POOR     |
| BAD      |

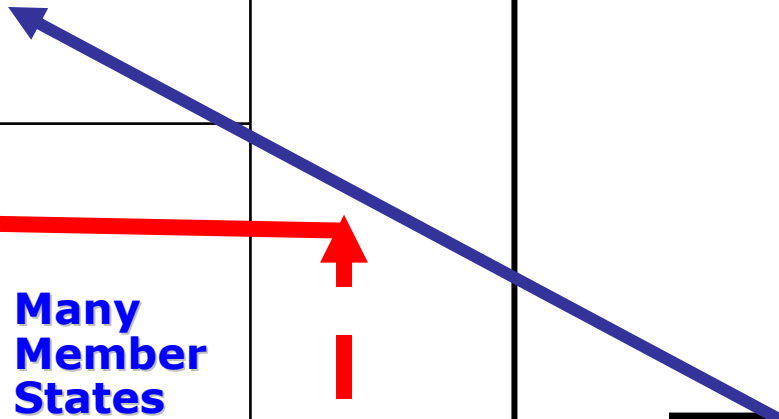


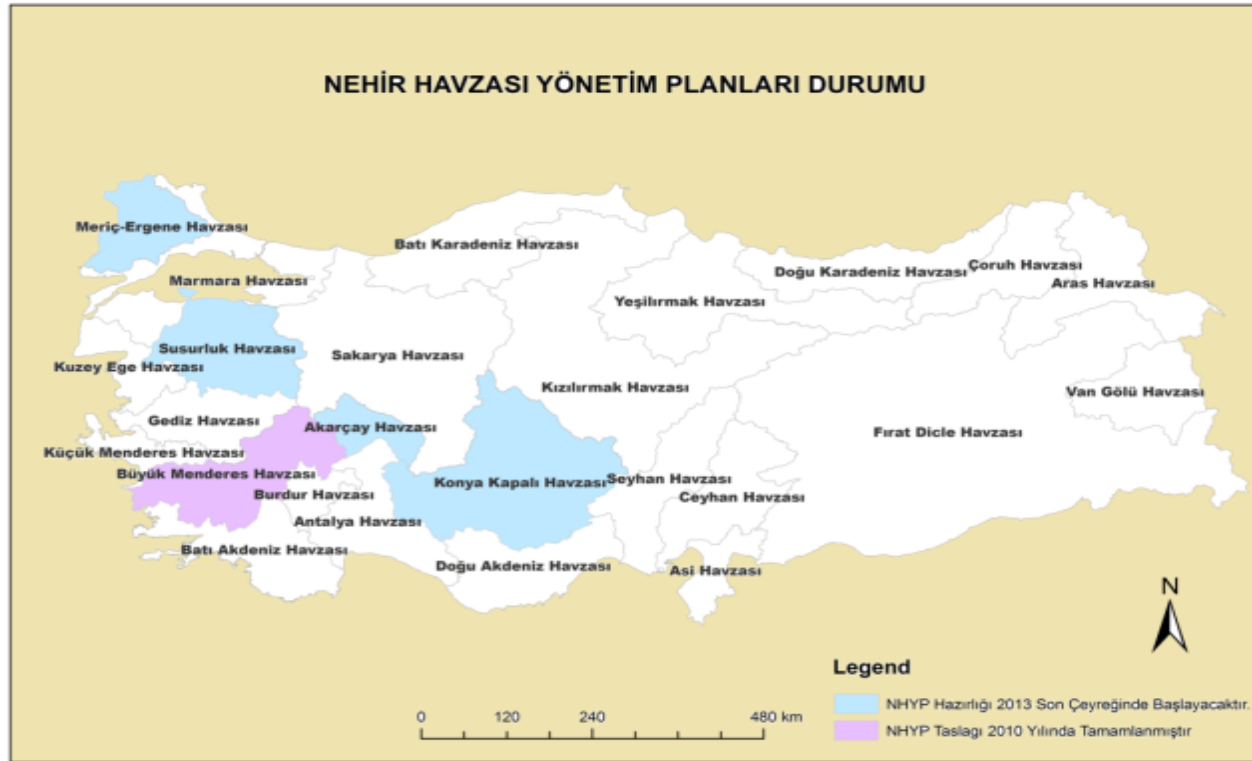
# RBMP TIME TABLE

|                          |                |   |               |
|--------------------------|----------------|---|---------------|
| <b>2027(EU)<br/>2033</b> | <b>4. RBMP</b> |   | <b>TURKEY</b> |
| <b>2021(EU)<br/>2027</b> | <b>3. RBMP</b> |   |               |
| <b>2015(EU)<br/>2021</b> | <b>2. RBMP</b> | <b>Many<br/>Member<br/>States<br/>will<br/>achieve<br/>good<br/>status<br/>at<br/>this<br/>date</b> |               |
| <b>2009(EU)<br/>2015</b> | <b>1. RBMP</b> |   |               |

**Exemptions**

**Implementation  
dates foreseen by  
the Directive**





## Our planning

We will start preparing River Basin Management Plans in 5 basins (**Susurluk, Akarçay, Meriç-Ergene, Konya Kapalı, Büyük Menderes**) after 2013.

Under the Institution Building for Pre-Accession (IPA) Programme for 2011, our project proposal of 6.6 million Euro has been approved for the basins named above.



# CONCLUSIONS

## IN WATER SECTOR

- BASIN APPROACH
- GOOD PLANNING
- GOOD MANAGEMENT
- BALANCING USERS AND PROTECTORS
- ECONOMIC AND SOCIAL- SUSTAINABLE DEVELOPMENT



**GREEN GROWTH**

# Thank you for your attention

E-mail: [ncicek@ormansu.gov.tr](mailto:ncicek@ormansu.gov.tr)

