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WASTEWATER MANAGEMENT IN TURKEY: PRESENT AND FUTURE PERSPECTIVES

Statistical, Economic and Social Research and Training Centre for Islamic Countries
Higher Council for Environment and Natural Resources
"Water Resources Management"

23rd-24th November, 2011
Khartoum,Sudan

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LEGISLATION

ENVIRONMENTAL LAW (2006)

By-Law on Water Pollution Control (2004)

By-Law on Urban Wastewater Treatment (2006)

Communiqué of Sensitive and Less-Sensitive Water Areas concerning

Communiqué of Sampling and Analyses

Communiqué of Wastewater Treatment Plants Technical Methods

Communiqué of Administrative Methods

- By-Law on Control of Pollution caused Dangerous substances in the Water and Environment (2005)
- The Regulation on the Quality of the Surface Water From Which Drinking Water is Obtained or Planned to be Obtained(2005)
- By-Law on Control of Soil Pollution (2005)

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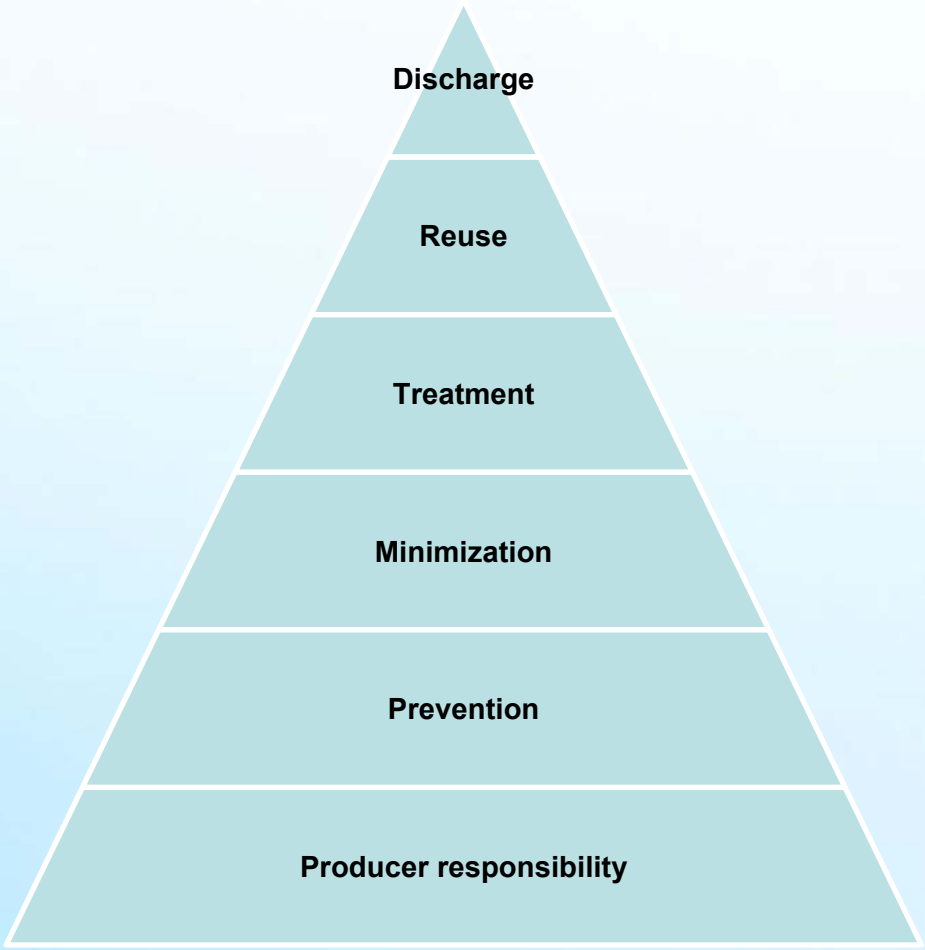
WASTEWATER POLICY

To protect water supplies

- Ministry is enjoined to approve and guide the environment protection projects.
- Ministry has the main responsibility about the determination of the technologies of wastewater treatment plants and their implementation.
- Penalties are regulated based on the type of crime factors and the amounts are kept up.



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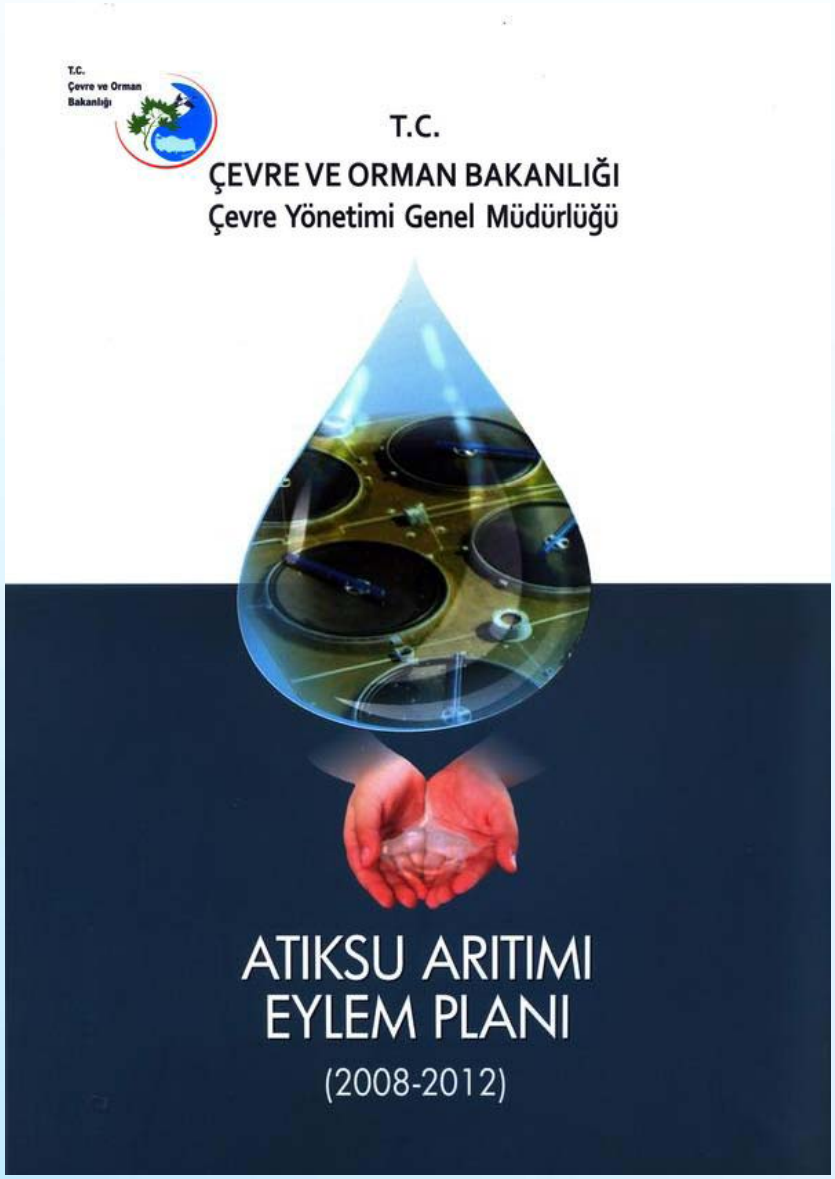
WASTEWATER TREATMENT ACTION PLAN

- Prioritization in 25 River basins has been done by taking into account pollution, pressure and impacts, drinking water and protected areas.
- Short, medium, and long term targets have been indentified



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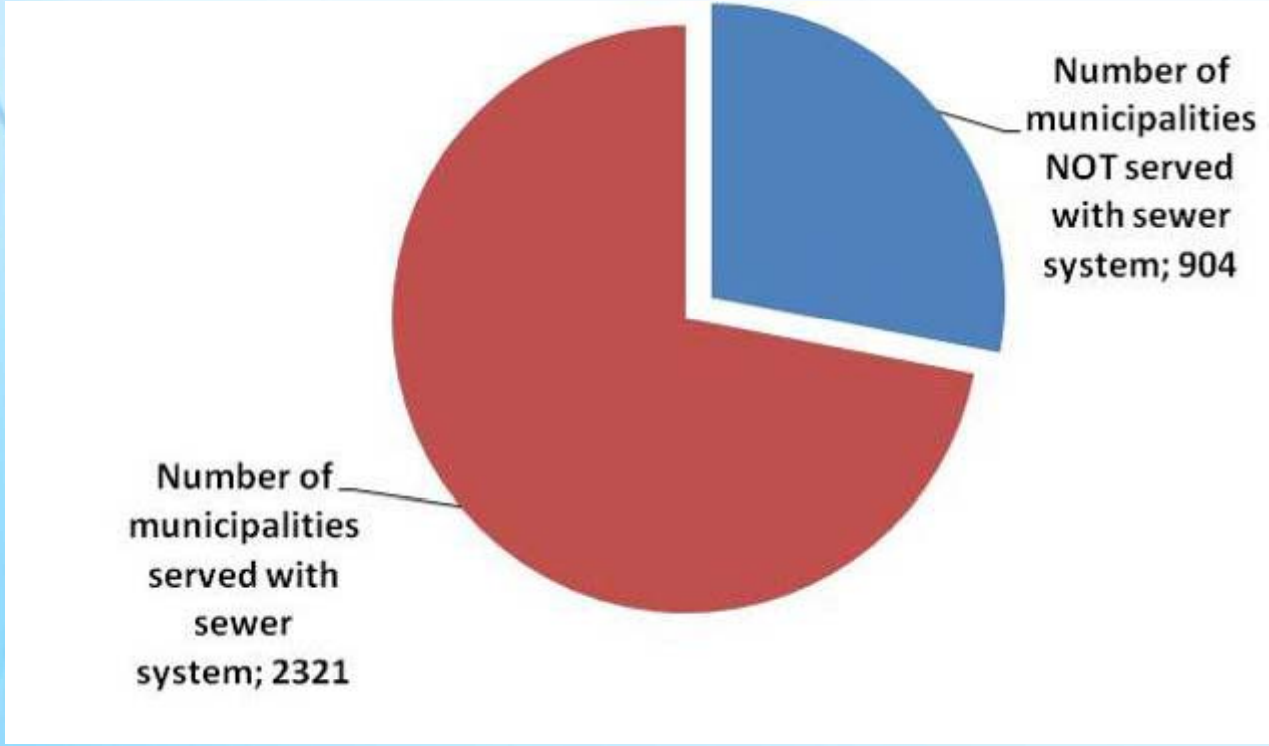
CURRENT SITUTATION OF WASTEWATER COLLECTION SYSTEMS(SEWER) IN TURKEY

Number of municipalities served or not served with sewer system



The ratio of municipal population served with sewer system is 88 %

CURRENT SITUTATION OF WASTEWATER TREATMENT PLANTS IN TURKEY

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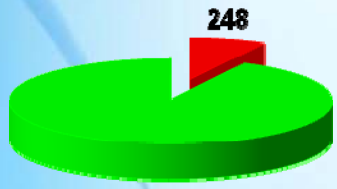
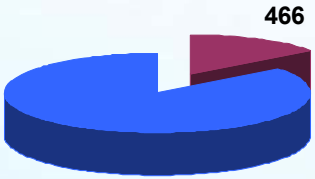
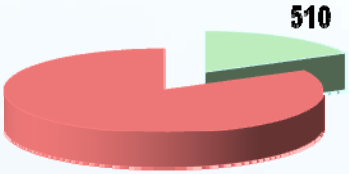
The number of municipalities serviced with WWTP



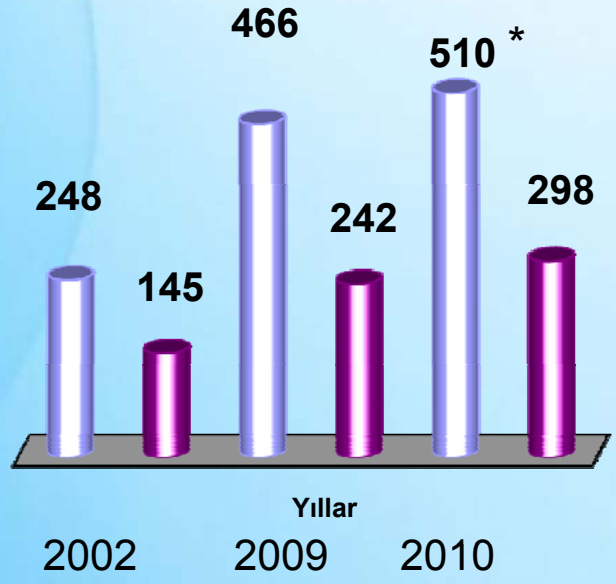
2002
Total Number of Municipalities: 3227



2009
Total Number of Municipalities :3225



2010
Total Number of Municipalities : 2951



- **Number of Municipality serviced with WWTP**
- **Number of WWTP**

* **Total Number of Municipalities has been decreased from 3225 to 2951 by 2010.**

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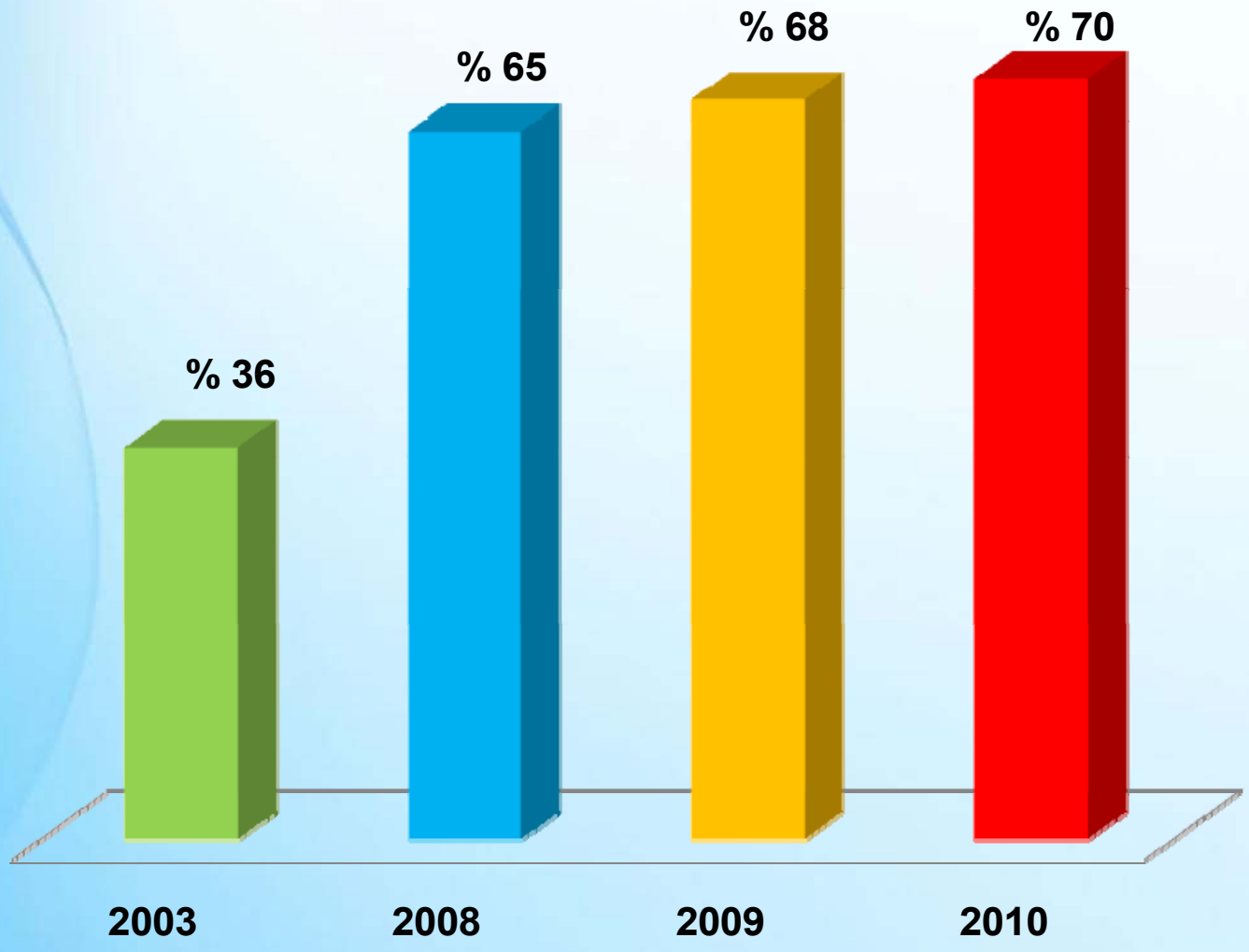
CURRENT SITUTATION OF WASTEWATER TREATMENT PLANTS IN TURKEY (CONT')



The Ratio of the population serviced with WWTP to Total Municipality Population (%)

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CURRENT SITUATION IN TURKEY

	Total Population	Number Of Municipalities	Population Serviced by WWTP	The Ratio of Population Serviced by WWTP	The Ratio of Population Not Serviced by WWTP
≥100.000	39,918,189	152	36,456,453	91,3%	8,7%
50.000-99.999	6,895,295	96	2,906,130	42,1%	57,9%
10.000-49.999	6,854,402	317	1,966,047	28,7%	71,3%
2.000-9.999	5,603,722	1455	594,918	10,6%	89,4%
TOPLAM	59,271,608	2020	41,923,548	70,7%	29,3%

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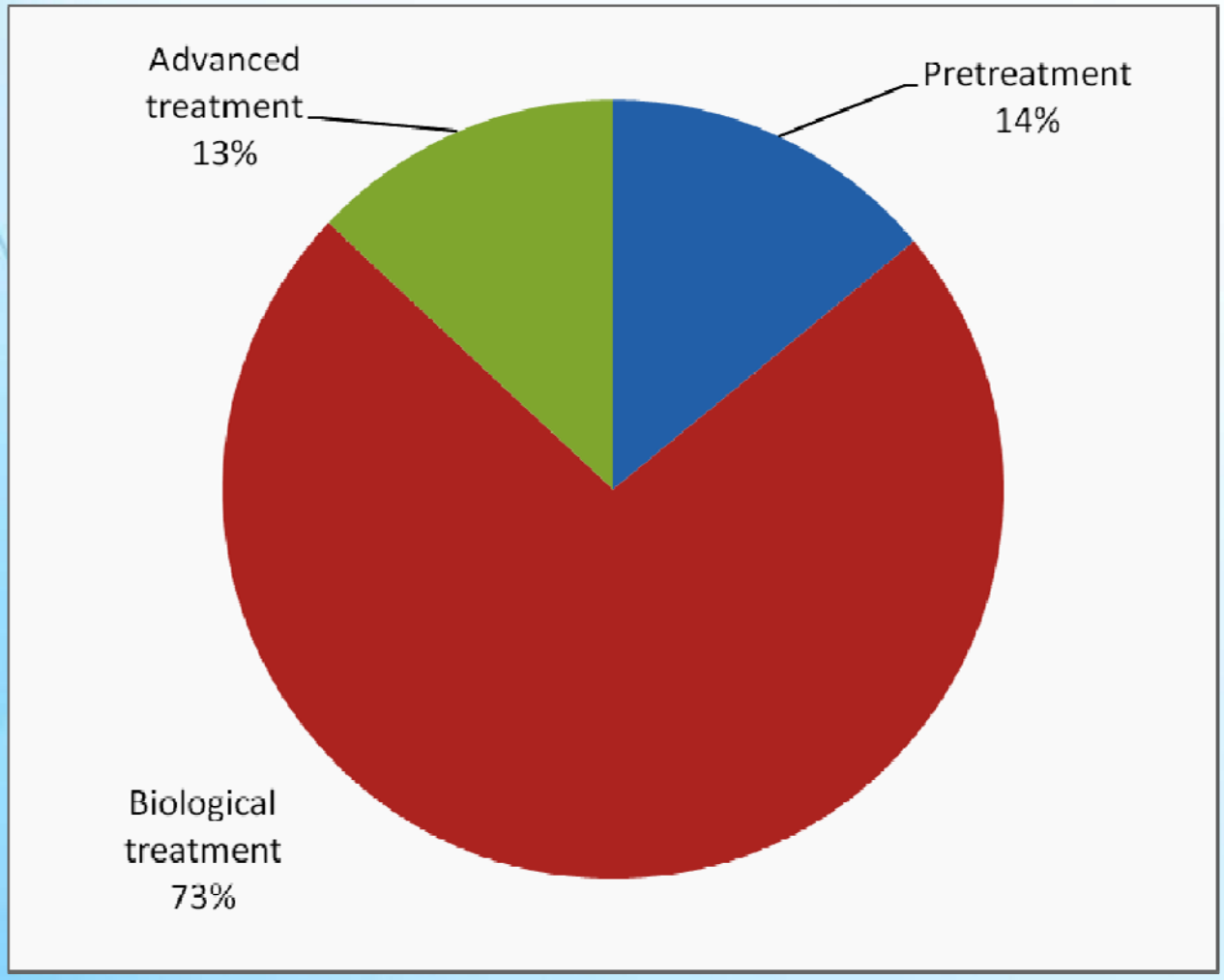
WASTEWATER TREATMENT PLANT TYPES



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DEVELOPMENTS FOR WASTEWATER TREATMENT IN TURKEY - 1988

Name	Aydın Municipality WWTP
Operation Year	1988
Type of the Treatment	***Aerobic / Anaerobic Stabilization Pond***

AYDIN

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DEVELOPMENTS FOR WASTEWATER TREATMENT IN TURKEY - 1996

PLANT NAME	Afyonkarahisar Municipality WWTP
Operation Year	1996
Capacity (m3/day)	46.600
Type of the Treatment	***Trickling Filter***

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DEVELOPMENTS FOR WASTEWATER TREATMENT IN TURKEY - 2006

PLANT NAME	BURSA WWTP
Operation Year	2006
Capacity (m3/day)	87.500
Type of the Treatment	***Tertiary Treatment***

BURSA

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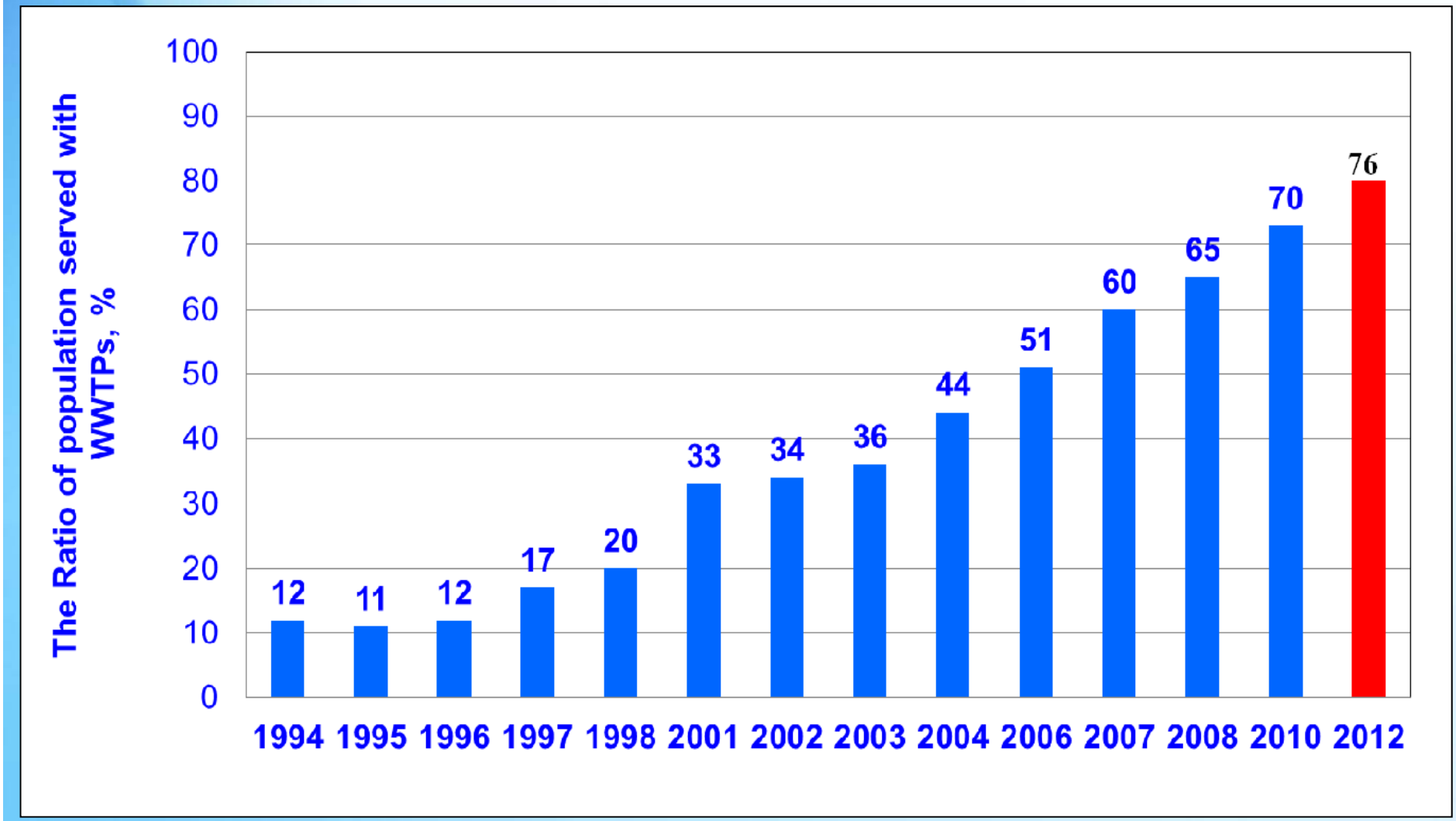
FUTURE PERSPECTIVES FOR WASTEWATER TREATMENT



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LEGISLATION: COMMUNIQUE OF WASTEWATER TREATMENT PLANTS TECHNICAL METHODS

Our Ministry has revised the "Communiqué of Technical Methods" which also includes wastewater reuse regulations for irrigation purposes in 2010.

This communiqué has been prepared in order to regulate the technical methods and implementations of;

- **Technology selection for wastewater treatment plants**
- **Design criteria**
- **Disinfection of treated wastewaters**
- **Reuse**
- **Deep sea discharge**
- **Sludge disposal**

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AN EXAMPLE: REUSE OF DOMESTIC WASTEWATER FOR IRRIGATIONAL PURPOSES- BELEK REGION

- There are regional wastewater treatment plants in Belek, Antalya, serving group of hotels.
- Reclaimed wastewater is being used for irrigation of the golf courses.
- The capacity of the treatment plant is about 10.000 people.

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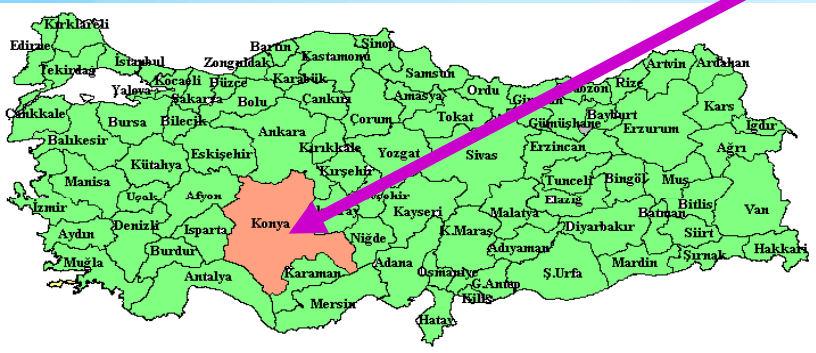
AN EXAMPLE: REUSE OF DOMESTIC WASTEWATER FOR IRRIGATIONAL PURPOSES-KONYA

- Konya Municipality Wastewater Treatment Plant has been designed for carbon and partial N removal with a projection of 2015. It has been designed with a 1.000.000 population equivalent and 200.000 m^3/day of flowrate.

- After open flow channel disinfection process of treated wastewater, it is planned to be used for irrigation.

- 400 m^3/day of this treated amount is thought to be used in the median strips of the plant for irrigation.

- 1000 m^3/day of pilot study - Purple network for reused water to irrigate green areas



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AN EXAMPLE: REUSE OF DOMESTIC WASTEWATER FOR INDUSTRIAL PURPOSES-ISTANBUL-PASAKOY

- Q= 100,000 m^3/day
- Advanced Wastewater Treatment Plant (N ve P Removal)
- After final sedimentation tank, treated wastewater is first filtered by sand filters and then it goes through UV disinfection.
- UV disinfected effluent is used for industrial process water (Tannery industries located in Tuzla) and irrigation purposes.

Initial Turbidity/ Final Turbidity	**30mg/l / < 10 NTU**
UV initial fecal coliform	**max. 100.000 CFU/100 ml**
UV final fecal coliform	**<2,2 CFU/100 ml**

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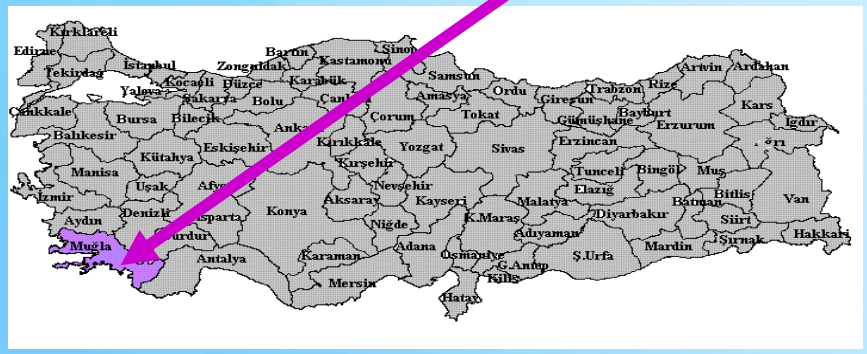
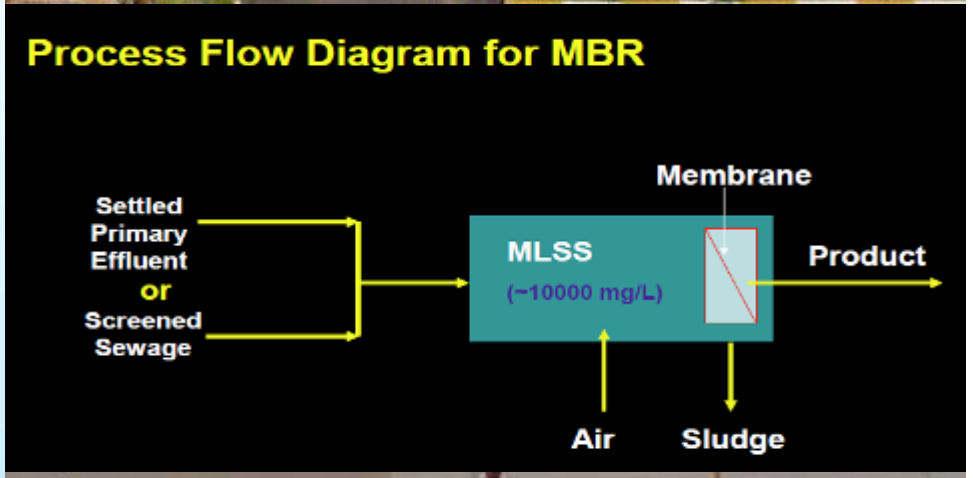
MBR APPLICATION: REUSE OF DOMESTIC WASTEWATER FOR IRRIGATIONAL PURPOSES MUĞLA – KONACIK

- KONACIK Municipality in Bodrum Domestic Wastewater Treatment Plant is one of the first membrane application in Turkey in domestic wastewater treatment

- Recovered water is used for irrigation purposes, and for car-washes.

- Q=1500 m^3/day





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CONCLUSIONS

- It is necessary to determine current approaches and policies in order to protect water resources effectively and in a sustainable way.

- The potential for recovery and reuse of wastewater is gradually increasing by using Cleaner Production Techniques.

- Wastewater reuse should be primarily taken into account while managing domestic and industrial wastewaters especially in semi arid regions, touristic regions.

- Turkey is ready to make cooperation in the fields of water supply, wastewater treatment, recovery and reuse, and also Cleaner Production concept.

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THANK YOU FOR YOUR ATTENTION…