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# 3RBMP



3 River Basin Management Plans

## **TECHNICAL ASSISTANCE ON ECONOMIC ANALYSES WITHIN RIVER BASIN MANAGEMENT PLANS AND WATER EFFICIENCY ASPECTS IN 3 PILOT RIVER BASINS IN TURKEY**

Workshop on Economic analysis within the RBMPs – 03.10.2019

**IDENTIFICATION OF MEASURES AND COST ASSESSMENT**

Rosa MONZÓ





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# IDENTIFICATION OF MEASURES AND COST ASSESSMENT

## Index

1. Most common measures
2. Legislative references, measures resulting from the compliance with existing laws
3. Related plans and programmes
4. Cost assessment



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## GROUP OF MEASURES

Group	Type	Measure
Point source pollution	Urban discharges	Construction of new urban WWTPs / Improvement of treatment
		Sewage infrastructure
		Septic tanks
	Industrial discharges	Construction of new industrial WWTPs / Improvement of treatment
	Landfills	Removal and closure of unsanitary landfills
		Construction of new sanitary landfills
	Geothermal discharges	Reinjection of geothermal wastewater into GWBs
		Treatment of geothermal wastewater
	Fish farms discharges	Codes of good practices for fish farms
	Olive mills discharges	Construction or improvement and waterproofing of the wastewater lagoons in line with the Circular on Technical Procedures to be followed for Waste Water Management in Olive Oil Facilities.





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## GROUP OF MEASURES

Group	Measure
Diffuse source pollution	Codes of good practices for agriculture, for livestock, for the reduction of pesticides use
	Rehabilitation of mining and quarrying sites
	Legal enforcement of mining sites
	Control of sewage sludge in WWTPs
	Combating desertification, erosion control and afforestation
Morphological improvement in water bodies	Riparian zone restauration
	Construction of fish ladders in dams
Ground waters with qualitative/quantitative problems	Groundwater Abstraction Management Plan
	Groundwater Source Protection Zones



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## GROUP OF MEASURES

Group	Measure
Control and governance	Registries of abstractions for surface and ground waters
	Monitoring and control of surface and ground waters abstractions
	Water discharges inventory
	Monitoring and control of water quality in surface waters
	Monitoring and control of groundwater levels and qualitative surveillance
	Monitoring and control for the objectives of Drinking Water Protected Areas
	Register of river banks occupation
	Water Information System
	Hydrological studies on evolution of ground waters
	Hydrological studies on hydrochemistry and geochemical relationship between GW and mining activities
Studies on the relationship between GW and associated aquatic ecosystems	





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## LEGISLATIVE REFERENCES

### Point source pollution

### Related legislations

### Common legislations

- By-Law on Waste Management (O.G.: 29314; 2 April 2015)
- By-Law on Water Pollution Control (O.G.: 25687; 31 Dec. 2004)
- By-law on Surface Water Quality (O.G: 28483; 30 Nov. 2012)
- By-Law on Waste Collection and Removal Systems (O.G.: 29940; 6 Jan. 2017)

### Urban discharges

- Urban Waste Water Treatment Directive (91/271/EEC)
- By-Law on Urban Waste Water Treatment (O.G: 26047; 8 Jan. 2006)
- By-Law on the Control of Water Losses in DW Supply and Distribution Systems (O.G.: 28994; 8 May 2014)
- Communique on Sensitive Areas for By-Law on Urban Waste Water Treatment (O.G.: 27271; 27 June 2009)

### Industrial discharges

- The Industrial Emissions Directive (2010/75/EU)
- By-Law on Control of Dangerous Substances Causing Water Pollution (O.G.: 26005, 26 Nov. 2005)



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## LEGISLATIVE REFERENCES

### Point source pollution

### Related legislations

#### Olive mills

Circular (2015/10) on the Technical Procedures to Abide by in Management of Waste Waters from Olive Oil Mills (41203884-010.06; 17 Nov. 2015)

#### Landfills

By-Law on Landfill of the Wastes (O.G: 27533; 26 March 2010)  
Environmental Law No. 2872 (O.G.: 18132, 11 August 1983)  
Municipal Law No. 5393 (O.G.: 25874; 3 July 2005)

#### Geothermal discharges

Law on Geothermal Resources and Natural Mineral Waters (O.G.: 26551; 13 June 2007)  
By-law on Implementation of Geothermal Resources and Natural Mineral Waters Law (O.G.: 26727; 11 Dec. 2007)  
By-law on Operation Procedures and Principles of Thermal Waters in Tourism Areas



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## LEGISLATIVE REFERENCES

### Diffuse source pollution Related legislations

#### Common legislations

By-law on Surface Water Quality (O.G: 28483; 30 November 2012)

#### Agriculture and Livestock

Nitrate Directive (91/676/EEC)

By-Law on Protection of Waters against Agricultural Nitrate Pollution (O.G.: 29779; 23 July 2016)

Communiqué on Codes of Good Agricultural Practices against Nitrate Pollution (O.G.: 29976; 11 February 2017)

By-Law on Determination of Sensitive Water Bodies with Areas Affecting these Water Bodies and Improvement of Water Quality (O.G.: 29927; 23 December 2016)

#### Mining activities

Mining Law No. 3213 (O.G.: 18785; 15 June 1985)

By-Law on Bringing the Lands Degraded by the Mining Activities Back to the Nature (O.G.: 27471; 23 January 2010)

Regulation on Mining Wastes (O.G.: 29417, 15 July 2015)





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## LEGISLATIVE REFERENCES

Group of measure	Related legislations
Improvement of water use efficiency	By-Law on the Control of Water Losses in Drinking Water Supply and Distribution Systems (O.G.: 28994; 8 May 2014)
Aquatic species	The Habitats Directive (92/43/EEC)
GWBs with quantitative problems	By-Law on the Protection against Pollution and Deterioration of Groundwater (O.G.: 28257; 7 April 2012)
Drinking water GW Source Protection Zones	Drinking Water Directive (98/83/EC) By-Law on the Protection against Pollution and Deterioration of Groundwater (O.G.: 28257; 7 April 2012)
Control and governance	By-law on Surface Water Quality (O.G: 28483; 30 Nov. 2012) By-Law on the Protection against Pollution and Deterioration of Groundwater (O.G.: 28257; 7 April 2012)
Implementation of floods directive	The Floods Directive (2007/60/EC)



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## RELATED PLANS AND PROGRAMMES

Group of measure	Plans and Programs
<p><b>Point source pollution: Urban discharges</b></p> <p>Construction of UWWTPs</p> <p>Improvement of treatment in existing UWWTPs</p> <p>Maintenance or repair of existing UWWTPs</p>	<p>National WWT Plan 2017 – 2023</p> <p>RBPAPs &amp; Follow-up Tables</p> <p>TÜRAAT Project</p>
<p><b>Point source pollution: Industrial discharges</b></p> <p>Construction of new WWTPs</p>	<p>RBPAPs &amp; Follow-up Tables</p>
<p><b>Point source pollution: Landfills</b></p> <p>Removal of unsanitary landfills</p> <p>Construction of transfer stations/new sanitary landfills</p> <p>Operation, monitoring and control of new sanitary landfills</p>	<p>RBPAPs &amp; Follow-up Tables</p>
<p><b>Improvement of water use efficiency</b></p> <p>Reduce leakage losses in DW networks</p> <p>Measurement of water use</p>	<p>Control of Water Losses in Drinking Water</p>



## BASIC MEASURES

### Urban discharges:

- The following plans or programmes are reviewed to include the already foreseen measures related with urban wastewater treatment plants in Batı Akdeniz Basin:
  - Batı Akdeniz Basin Protection Action Plan, General Directorate of Water Management, 2018
  - Batı Akdeniz River Basin Protection Action Plan, former Ministry of Forestry and Water Management, 2013 (prepared by TÜBİTAK MAM)
  - National Wastewater Treatment Action Plan, Ministry of Environment and Urbanisation, 2017
  - Batı Akdeniz River Basin Reclamation of Sensitive Water Bodies Action Plan, former Ministry of Forestry and Water Management, 2015 (prepared by TÜBİTAK MAM)
  - Antalya and Denizli Provincial Environmental Status Reports, Related Governor's Offices, Environment and Urbanisation Provincial Directorate, 2017
  - TÜRAAT Project



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## BASIC MEASURES

### Urban discharges:

- The projects identified in scope of the already-foreseen measures in the related plans and programmes for Batı Akdeniz Basin are summarised below:

Measure name	Number of measures	Served population	Investment cost (constant TL)	O&M costs (constant TL/year)
Construction of UWWTPs with Secondary Treatment	34	125,169	90,309,732	5,324,749
Improvement of Secondary Treatment for N, P Removal UWWTPs	11	424,987	152,096,389	5,833,310
Maintenance and repair of UWWTPs (Appropriate Treatment)	20	380,411	81,231,019	0
Construction of sewage infrastructure	1	2,422	2,073,825	0
<b>Total</b>	<b>66</b>	<b>932,989</b>	<b>325,710,964</b>	<b>11,158,060</b>



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## BASIC MEASURES Urban discharges – construction of New UWWTPs (16/34):

Province	Program or Plan	Measure (Construction of an UWWTP with Secondary Treatment)	Settlement	District	Settlements served	Served population	Investment cost (constant TL)	O&M costs (constant TL/year)	Investment entity	Planned start year	Planned end year
Antalya	WWTAP 2017	Köşkerler WWTP	Köşkerler	Demre	Köşkerler	2,673	638,959	82,467	Antalya MM	2019	2023
Antalya	BA RBPAP 2018	Yuva WWTP	Yuva	Elmalı	Yuva	3,059	864,362	103,085	Elmalı M	2019	2023
Antalya	WWTAP 2017	Çavdır WWTP	Çavdır	Kaş	Çavdır	3,675	958,439	140,985	Antalya MM	2019	2023
Antalya	TÜRAAT	Tekirova WWTP	Tekirova	Kemer	Tekirova	3,081	4,909,170	85,264	Kemer M	2019	2023
Antalya	WWTAP 2017	Adrasan WWTP	Adrasan	Kumluca	Adrasan	3,043	864,362	104,095	Kumluca M	2021	2023
Antalya	BA RBPAP 2018	Salur WWTP	Salur	Kumluca	Salur	2,683	638,959	83,263	Antalya MM	2019	2023
Burdur	Batı Akdeniz RBPAP	Altınyayla WWTP	Altınyayla	Altınyayla	Altınyayla	3,034	1,615,988	132,111	İlbank	2019	2023
Denizli	BA RBPAP 2018	Akalan WWTP	Akalan	Acıpayam	Akalan	2,389	574,890	78,454	Akalan M	2019	2023
Denizli	BA RBPAP 2018	Darıveren 2 WWTP	Darıveren	Acıpayam	Darıveren	1,456	129,589	69,273	Acıpayam M	2019	2023
Denizli	BA RBPAP 2018	Dedebağı WWTP	Dedebağı	Acıpayam	Dedebağı	2,145	5,579,049	76,053	Acıpayam M	2019	2023
Denizli	WWTAP 2017	Dodurga WWTP	Dodurga	Acıpayam	Dodurga	1,650	4,378,486	71,182	Acıpayam M	2019	2023
Denizli	BA RBPAP 2018	Eskiköy WWTP	Eskiköy	Acıpayam	Eskiköy	955	3,675,617	64,342	Denizli MM	2019	2023
Denizli	BA RBPAP 2018	Kelekçi WWTP	Kelekçi	Acıpayam	Kelekçi	1,435	4,187,181	69,066	Denizli MM	2019	2023
Denizli	BA RBPAP 2018	Köke WWTP	Köke	Acıpayam	Köke	279	2,479,262	57,690	Denizli MM	2019	2023
Denizli	TÜRAAT	Yazır WWTP	Yazır	Acıpayam	Yazır	1,532	4,275,746	70,021	Denizli MM	2019	2023
Muğla	WWTAP 2017	Akyarlar WWTP	Akyarlar	Bodrum	Akyarlar	3,440	958,439	140,613	Bodrum M	2019	2023



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# TECHNICAL ASSISTANCE ON ECONOMIC ANALYSES WITHIN RIVER BASIN MANAGEMENT PLANS AND WATER EFFICIENCY ASPECTS IN 3 PILOT RIVER BASINS IN TURKEY



## BASIC MEASURES Urban discharges – construction of New UWWTPs (18/34):

Province	Program or Plan	Measure (Construction of an UWWTP with Secondary Treatment)	Settlement	District	Settlements served	Served population	Investment cost (constant TL)	O&M costs (constant TL/year)	Investment entity	Planned start year	Planned end year
Muğla	BA RBPAP 2018	Gündoğan Andızlı WWTP	Gündoğan	Bodrum	Gündoğan	6,000	11,323,250	113,991	Bodrum M	2019	2022
Muğla	BA RBPAP 2018	Gündoğan Köyiçi WWTP	Gündoğan	Bodrum	Gündoğan	2,000	4,656,491	74,626	Bodrum M	2019	2022
Muğla	WWTAP 2017	İslamhaneleri WWTP	İslamhaneleri	Bodrum	İslamhaneleri	2,980	958,439	128,767	Bodrum M	2019	2023
Muğla	BA RBPAP 2018	Ortakent Yahşi WWTP	Ortakent Yahşi	Bodrum	Ortakent Yahşi	9,500	6,816,326	148,434	Muğla MM	2019	2022
Muğla	BA RBPAP 2017	Turgutreis WWTP	Turgutreis	Bodrum	Turgutreis	23,017	8,555,570	1,426,738	Bodrum M	2018	2022
Muğla	WWTAP 2017	Yalı WWTP	Yalı	Bodrum	Yalı	4,655	2,968,886	245,839	Bodrum M	2019	2023
Muğla	WWTAP 2017	Kemer WWTP	Kemer	Fethiye	Kemer	6,288	2,292,437	226,168	Fethiye M	2019	2023
Muğla	WWTAP 2017	Yeşilüzümlü WWTP	Yeşilüzümlü	Fethiye	Yeşilüzümlü	2,544	1,615,988	129,886	Fethiye M	2019	2023
Muğla	WWTAP 2017	Beyobası WWTP	Beyobası	Köyceğiz	Beyobası	3,118	1,615,988	128,509	Köyceğiz M	2019	2023
Muğla	WWTAP 2017	Pınar WWTP	Pınar	Köyceğiz	Pınar	3,273	958,439	141,729	Muğla MM	2019	2023
Muğla	WWTAP 2017	Zeytinalanı WWTP	Zeytinalanı	Köyceğiz	Zeytinalanı	2,702	958,439	123,486	Muğla MM	2019	2023
Muğla	WWTAP 2017	Bozburun WWTP	Bozburun	Marmaris	Bozburun	2,274	2,292,437	194,348	Marmaris M	2019	2023
Muğla	WWTAP 2017	Hisarönü WWTP	Hisarönü	Marmaris	Hisarönü	2,534	638,959	83,759	Marmaris M	2019	2023
Muğla	WWTAP 2017	Yerkesik WWTP	Yerkesik	Menteşe	Yerkesik	2,593	864,362	102,631	Muğla MM	2019	2023
Muğla	WWTAP 2017	Ören WWTP	Ören	Milas	Ören	3,306	2,968,886	237,012	Milas M	2019	2023
Muğla	WWTAP 2017	Selimiye WWTP	Selimiye	Milas	Selimiye	5,226	1,615,988	145,277	Milas M	2019	2023
Muğla	WWTAP 2017	Eşen WWTP	Eşen	Seydikemer	Eşen	2,627	864,362	105,368	Seydikemer M	2019	2023
Muğla	WWTAP 2017	Karadere WWTP	Karadere	Seydikemer	Karadere	4,003	1,615,988	140,216	Seydikemer M	2019	2023





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## BASIC MEASURES

## Urban discharges – improvement of UWWTPs (11)

Province name	Program or Plan	Measure (Improvement of Secondary Treatment for N, P Removal in)	Settlement	District	Settlements served	Served population	Investment cost (constant TL)	O&M costs (constant TL/year)	Investment entity	Planned start year	Planned end year
Antalya	BA RBPAP 2018	Elmalı WWTP	Elmalı	Elmalı	Elmalı	25,000	64,654	544,276	Elmalı M	2019	2023
Antalya	BA RBPAP	Finike WWTP	Finike	Finike	Finike	14,977	12,851,231	426,245	Finike M	2018	2023
Antalya	BA RBPAP	Kumluca WWTP	Kumluca	Kumluca	Kumluca, Mavikent, Beykonak	41,620	16,763,041	739,993	Kumluca M	2021	2023
Denizli	BA RBPAP 2018	Acıpayam Centre Advanced Biological WWTP	Acıpayam	Acıpayam	Merkez, Alladdin, Oğuz, Kırca	26,800	3,722,003	397,680	DESKİ	2018	2022
Denizli	BA RBPAP 2018	Çameli WWTP	Çameli	Çameli	Çameli	4,600	1,615,988	131,555	Çameli M İlbank	2019	2023
Denizli	BA RBPAP 2018	Serinhisar WWTP	Serinhisar	Serinhisar	Yatağan (Serinhisar), Yüreğil (Serinh.), Ayaz (Serinh.), Kuyucak (Acıpayam), Yassihüyük (Acıp.), Karahüyük (Acıp.), Apa (Acıp.), Ovayurt (Acıp.), Karahüyükafşarı (Acıp.)	14,649	10,602,285	422,383	Denizli MM	2018	2022
Muğla	WWTAP 2017	Bodrum WWTP	Bodrum	Bodrum	Bodrum	40,537	16,648,522	727,240	Muğla MM	2019	2023
Muğla	TÜRAAT	İçmeler WWTP	İçmeler	Bodrum	İçmeler	156,000	39,759,991	2,086,932	Muğla MM	2019	2023
Muğla	BA RBPAP 2018	Çiftlik WWTP	Çiftlik	Fethiye	Çamköy, Eldirek, Esenköy, Karaçulha	3,123	8,549,151	286,652	Muğla MM	2017	2023
Muğla	BA RBPAP	Ölüdeniz New WWTP	Fethiye	Fethiye	Fethiye	35,000	22,873,357	47,643	Fethiye M	2017	2023
Muğla	BA RBPAP	Milas WWTP	Milas	Milas	Milas	62,681	18,646,168	22,711	Milas M	2017	2019





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# TECHNICAL ASSISTANCE ON ECONOMIC ANALYSES WITHIN RIVER BASIN MANAGEMENT PLANS AND WATER EFFICIENCY ASPECTS IN 3 PILOT RIVER BASINS IN TURKEY



## BASIC MEASURES Urban discharges – rehabilitation of existing UWWTPs (20)

Province	Program or Plan	Measure (Maintenance and repair with Appropriate Treatment)	Settlement	District	Settlements served	Served population	Investment cost (constant TL)	O&M costs (constant TL/year)	Investment entity	Planned start year	Planned end year
Antalya	BA RBPAP 2018	Kemer Merkez WWTP	Kemer	Kemer	Kemer, Çamyuva	27,482	2,458,611		ASAT	2019	2023
Denizli	TÜRAAT	Yeşilyuva WWTP	Yeşilyuva	Acıpayam	Yeşilyuva	4,438	177,797		Denizli MM	2019	2023
Denizli	BA RBPAP 2018	Yumrutaş WWTP	Yumrutaş	Acıpayam	Yumrutaş	818	147,162		Denizli MM	2019	2023
Muğla	TÜRAAT	Bitez WWTP	Bitez	Bodrum	Bitez	10,000	1,638,321		Muğla MM	2019	2023
Muğla	BA RBPAP 2018	Göltürkbükü WWTP	Göltürkbükü	Bodrum	Göltürkbükü	13,120	386,758		Muğla MM	2019	2022
Muğla	TÜRAAT	Gümbet WWTP	Gümbet	Bodrum	Gümbet	34,866	18,020,965		Muğla MM	2019	2023
Muğla	BA RBPAP 2018	Gümüslük WWTP	Gümüslük	Bodrum	Gümüslük	6,300	105,967		Muğla MM	2019	2022
Muğla	BA RBPAP 2018	Güvercinlik WWTP	Güvercinlik	Bodrum	Güvercinlik	2,000	562,098		Muğla MM	2019	2023
Muğla	BA RBPAP 2018	Konacık WWTP	Konacık	Bodrum	Konacık	11,104	1,038,835		Muğla MM	2019	2022
Muğla	BA RBPAP 2018	Mumcular WWTP	Mumcular	Bodrum	Mumcular	5,000	8,156,481		Muğla MM	2019	2022
Muğla	BA RBPAP 2018	Yalıkavak WWTP	Yalıkavak	Bodrum	Yalıkavak	10,000	144,824		Muğla MM	2019	2022
Muğla	TÜRAAT	Dalaman WWTP	Dalaman	Dalaman	Dalaman	80,000	995,988		Muğla MM	2019	2023
Muğla	TÜRAAT	Datça WWTP	Datça	Datça	Datça	13,000	1,639,614		Muğla MM	2019	2023
Muğla	TÜRAAT	Fethiye WWTP	Fethiye	Fethiye	Fethiye	90,000	36,468,044		Muğla MM	2019	2023
Muğla	BA RBPAP 2018	Göcek WWTP	Göcek	Fethiye	Göcek	4,535	249,886		Muğla MM	2019	2022
Muğla	WWTAP 2017	Marmaris WWTP	Marmaris	Marmaris	Marmaris, İçmeler, Beldibi, Armutalan, Adaköy	38,558	3,418,767		MoEU	2018	2022
Muğla	BA RBPAP 2018	Turunç WWTP	Turunç	Marmaris	Turunç	2,400	4,934,411		Muğla MM	2019	2022
Muğla	BA RBPAP 2018	Akfen Güllük WWTP	Güllük	Milas	Güllük	5,790	410,097		Muğla MM	2019	2022
Muğla	BA RBPAP 2018	Dalyan WWTP	Dalyan	Ortaca	Dalyan	16,000	221,438		Muğla MM	2019	2023
Muğla	TÜRAAT	Akyaka WWTP	Akyaka	Ula	Akyaka	5,000	54,956		Muğla MM	2019	2023







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## BASIC MEASURES

### Urban discharges – construction of sewage infrastructure:

- In Batı Akdeniz Basin, 1 sewage infrastructure to be constructed in scope of basic measures related to urban discharges:

Province name	Program or Plan	Measure name (Construction of sewage infrastructure)	Settlement	District	Settlements served	Served population	Investment cost (constant TL)	O&M costs (constant TL/year)	Investment entity	Planned start year	Planned end year
Denizli	BA RBPAP 2018	Alaattin sewage infrastructure	Alaattin	Acipayam	Alaattin	2,422	2,073,825		Alaattin M	2019	2023



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## BASIC MEASURES

### Solid waste landfills:

- Principally, the following plans or programmes are reviewed to include the already-foreseen measures related with solid landfills in Batı Akdeniz Basin:
  - Batı Akdeniz Basin Reclamation of Sensitive Water Bodies Action Plan, former Ministry of Forestry and Water Management, 2015 (prepared by TÜBİTAK MAM), SWBAP later on
  - Antalya and Denizli Provincial Environmental Status Reports, Governor's Office, Environment and Urbanisation Provincial Directorate, 2017
  - Batı Akdeniz Basin Protection Action Plan, General Directorate of Water Management, 2018
  - Batı Akdeniz Basin Protection Action Plan, former Ministry of Forestry and Water Management, 2013 (prepared by TÜBİTAK MAM)



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## BASIC MEASURES

### Solid landfills:

- The projects identified in scope of the already-foreseen measures in the related plans and programmes for Batı Akdeniz Basin are summarised below:

Measure name	Number of measures	Area cover (ha)	Investment cost (constant TL)	O&M costs (constant TL/year)
Closure of Unsanitary Landfills	33	105	97,924,185	0
Construction of Sanitary Landfills	0	0	0	0
<b>Total</b>	<b>33</b>	<b>105</b>	<b>97,924,185</b>	<b>0</b>



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## TECHNICAL ASSISTANCE ON ECONOMIC ANALYSES WITHIN RIVER BASIN MANAGEMENT PLANS AND WATER EFFICIENCY ASPECTS IN 3 PILOT RIVER BASINS IN TURKEY



# BASIC MEASURES Solid waste landfills – removal and closure of unsanitary landfills (17/33)

Province	Program or Plan	Measure name (Closure and removal of unsanitary landfills in)	Settlement	District	Settlements served	Area (ha)	Investment cost (constant TL)	Investment entity	Planned start year	Planned end year
Antalya	BA SWBAP	Elmalı district	Elmalı	Elmalı	Elmalı	13.95	13,009,073	Antalya MM	2017	2023
Antalya	BA SWBAP	Elmalı district	Akçay	Elmalı	Akçay	0.48	452,007	Antalya MM	2017	2023
Antalya	BA SWBAP	Elmalı district	Yuva	Elmalı	Yuva	0.27	254,027	Antalya MM	2017	2023
Antalya	BA SWBAP	Finike district	Hasyurt	Finike	Hasyurt	2.46	2,293,886	Antalya MM	2017	2023
Antalya	BA SWBAP	Finike district	Sahilkent	Finike	Sahilkent	17.20	16,035,943	Antalya MM	2017	2023
Antalya	BA SWBAP	Kaş district	Gömbe	Kaş	Gömbe	0.84	779,239	Antalya MM	2017	2023
Burdur	BA SWBAP	Altınyayla district	Altınyayla	Altınyayla	Altınyayla	0.97	904,760	AltınyaylaM	2017	2023
Burdur	BA SWBAP	Çavdır district	Çavdır	Çavdır	Çavdır	4.17	3,885,843	Çavdır M	2017	2023
Burdur	BA SWBAP	Çavdır district	Bayır	Çavdır	Bayır	4.32	4,024,979	Çavdır M	2017	2023
Burdur	BA SWBAP	Çavdır district	Kozağacı	Çavdır	Kozağacı	4.85	4,525,479	Çavdır M	2017	2023
Burdur	BA SWBAP	Çavdır district	Söğüt	Çavdır	Söğüt	6.50	6,057,006	Çavdır M	2017	2023
Burdur	BA SWBAP	Göhlhisar district	Göhlhisar	Göhlhisar	Göhlhisar	1.50	1,394,815	Göhlhisar M	2017	2023
Burdur	BA SWBAP	Göhlhisar district	İbecik	Göhlhisar	İbecik	1.46	1,365,626	Göhlhisar M	2017	2023
Burdur	BA SWBAP	Göhlhisar district	Yusufça	Göhlhisar	Yusufça	4.12	3,845,650	Göhlhisar M	2017	2023
Burdur	BA SWBAP	Yeşilova district	Güney	Yeşilova	Güney	0.70	649,241	Yeşilova M	2017	2023
Denizli	BA SWBAP	Acıpayam district	Acıpayam	Acıpayam	Acıpayam	1.17	1,091,084	Denizli MM	2017	2023





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# TECHNICAL ASSISTANCE ON ECONOMIC ANALYSES WITHIN RIVER BASIN MANAGEMENT PLANS AND WATER EFFICIENCY ASPECTS IN 3 PILOT RIVER BASINS IN TURKEY



## BASIC MEASURES Solid waste landfills – removal and closure of unsanitary landfills (16/33)

Province	Program or Plan	Measure name (Closure and removal of unsanitary landfills in)	Settlement	District	Settlements served	Area (ha)	Investment cost (constant TL)	Investment entity	Planned start year	Planned end year
Denizli	BA SWBAP	Acipayam district	Akalan	Acipayam	Akalan	17.00	15,853,350	Denizli MM	2017	2023
Denizli	BA SWBAP	Acipayam district	Alaattin	Acipayam	Alaattin	0.51	475,601	Denizli MM	2017	2023
Denizli	BA SWBAP	Acipayam district	Dariveren	Acipayam	Dariveren	0.64	596,832	Denizli MM	2017	2023
Denizli	BA SWBAP	Acipayam district	Dedebağı	Acipayam	Dedebağı	0.58	542,278	Denizli MM	2017	2023
Denizli	BA SWBAP	Acipayam district	Dodurga	Acipayam	Dodurga	0.37	345,044	Denizli MM	2017	2023
Denizli	BA SWBAP	Acipayam district	Kelekçi	Acipayam	Kelekçi	0.43	400,997	Denizli MM	2017	2023
Denizli	BA SWBAP	Acipayam district	Kumafşarı	Acipayam	Kumafşarı	0.31	289,091	Denizli MM	2017	2023
Denizli	BA SWBAP	Acipayam district	Yassihüyük	Acipayam	Yassihüyük	2.81	2,620,466	Denizli MM	2017	2023
Denizli	BA SWBAP	Acipayam district	Yazır	Acipayam	Yazır	0.48	444,267	Denizli MM	2017	2023
Denizli	BA SWBAP	Acipayam district	Yeşildere	Acipayam	Yeşildere	0.32	294,033	Denizli MM	2017	2023
Denizli	BA SWBAP	Acipayam district	Yeşilyuva	Acipayam	Yeşilyuva	0.76	708,738	Denizli MM	2017	2023
Denizli	BA SWBAP	Acipayam district	Yumrutaş	Acipayam	Yumrutaş	0.19	177,185	Denizli MM	2017	2023
Denizli	BA SWBAP	Çameli district	Çameli	Çameli	Çameli	0.75	702,863	Denizli MM	2017	2023
Denizli	BA SWBAP	Serinhisar district	Serinhisar	Serinhisar	Serinhisar	4.51	4,205,801	Denizli MM	2017	2023
Denizli	BA SWBAP	Serinhisar district	Yatağan	Serinhisar	Yatağan	0.87	811,319	Denizli MM	2017	2023
Muğla	BA SWBAP	Milas district	Milas	Milas	Milas	9.00	8,392,950	Muğla MM	2017	2023
Muğla	BA SWBAP	Milas district	Selimiye	Milas	Selimiye	0.53	494,718	Muğla MM	2017	2023





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## BASIC MEASURES Solid waste landfills – construction of new sanitary landfills:

- There are sanitary landfills in Fethiye, Marmaris, Menteşe and Milas. Rehabilitation works to add pre-processing facilities and power plants pursue in these districts. Also sanitary landfills in place in Kaş, Ortaca, Datça. Solid wastes in neighbouring settlements are transferred to these sanitary landfills directly or via transfer stations.
- Acıpayam-Serinhisar Transfer Station serves to transfer the solid wastes of neighbouring settlements to Tavas Solid Waste Disposal Plant in Tavas, Denizli.
- Kumluca Sanitary Landfill in Antalya was converted to a transfer station in order to transfer the solid wastes of neighbouring settlements to Kızıllı Integrated Solid Waste Disposal Facility located in Kepez, Antalya.
- Kemer municipality's solid waste is transferred to Kızıllı sanitary landfill, in Antalya basin. Three other districts of Antalya province in Batı Akdeniz (Kaş, Elmalı and Demre) will also start transferring their solid waste to Kızıllı within the year 2019.



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## COST ASSESSMENT

Measures	Unit for cost assessment
<b>Urban discharges</b>	
Construction of UWWTPs	Population / Equivalent population
Sanitary water infrastructure	Urban inhabitant
Adaptation of septic tanks	Rural inhabitant
<b>Industrial discharges</b>	
Construction of new Industrial WWTPs	Effluent amount (m <sup>3</sup> /day)
Improvement of treatment in industrial WWTPs	Equivalent population
<b>Landfills</b>	
Construction of sanitary landfills	Inhabitant
<b>Geothermal discharges</b>	
Reinjection of geothermal wastewater into GWBs	Well
Treatment of geothermal wastewater	Wastewater amount (m <sup>3</sup> /day)
<b>Fish farms discharges</b>	
Codes of good practices for fish farms	Measure
<b>Olive mills discharges</b>	
	Measure







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## COST ASSESSMENT

Measures	Unit for cost
<b>Diffuse source pollution</b> Codes of Good Practices: training activities of for agricultural enterprises, for livestock enterprises, for the reduction of pesticides use	Measure
Rehabilitation of mining and quarrying sites	Area of the site (ha)
Legal enforcement of mining sites	Mining site capacity (m <sup>3</sup> )
Control of sewage sludge in WWTPs Combating desertification, erosion control and afforestation	Measure
<b>Improvement of water use efficiency</b> Measurement of geothermal water Modernization of irrigation	Well Irrigation area (ha)
<b>Morphological improvement in water bodies</b> Riparian zone restoration Construction of fish ladders in dams	River length (km) Fish ladder
<b>Environmental flows implementation</b>	Surface water body
<b>GWBs with qualitative/quantitative problems</b> Groundwater Abstraction Management Plan	Groundwater body
<b>Drinking water</b> Groundwater Source Protection Zones	Well







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# COST ASSESSMENT

Measures	Unit for cost
<b>Control and governance</b>	
Monitoring of water quality in the SWs	Measure
Surface water extractions inventory	
Register of river banks occupation	
Development and establishment of water integrated information system	
Registry of new authorizations of water discharges or revision of the existing ones	
Monitoring of GW levels and qualitative surveillance	Area (km <sup>2</sup> )
Control networks for GW chemistry	
Registry and inventory of GW extractions	
Register and control of volumes extracted and returned to GWBs	
Control networks on drinking water protected areas	Well
Hydrogeological studies on hydrochemistry and geochemical relationship between GW and mining activities	Groundwater body
Studies on GW hydrochemistry and geochemical evolution	
Studies on relationship between GW and the GWAAE	
Constitution of user communities	
Wetland and GW Dependent Terrestrial Ecosystem Management Plan	Area (ha)





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# 3RBMP



3 River Basin Management Plans

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THANK YOU FOR YOUR ATTENTION  
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