









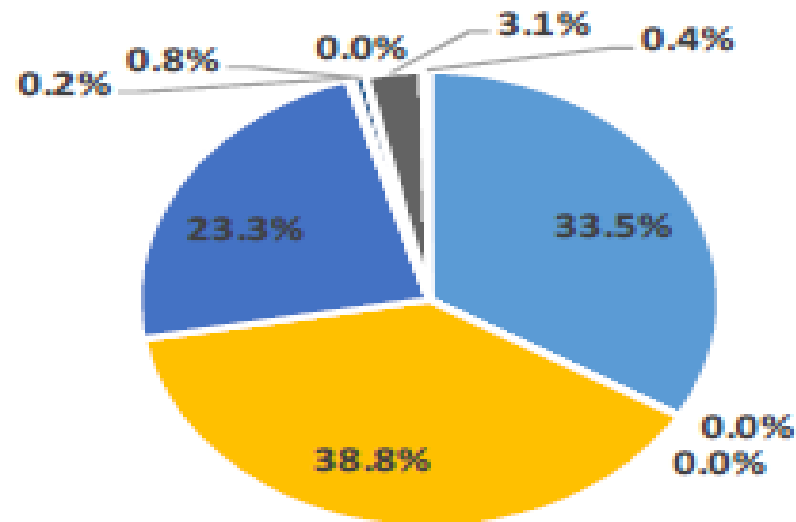


Use of water resource cost and Environmental cost - case in Macedonia

Summary information regarding funds collected by water charges (WMPs 2011-2014)













| # | Water use charge | Unit charge | 000 MKD | | | | Share 2010 |
|-------------------------|--|---|----------------|---------------|---------------|---------------|--|
| | | | 2010* | 2012 | 2013 | 2014 | |
| 1 | Water supply for consumption via public water supply | 2% per m3 of water supply fee | 43,200 | 45,000 | 29,500 | 21,000 |  33.5% |
| 2 | Irrigation of agricultural land | 2% of irr. water supply fee | - | | | |  0.0% |
| 3 | Water supply to industry and technological use | 2% of industry water supply fee | - | | | |  0.0% |
| 4 | Electric energy generation | 0.5-2% of production cost per kWh | 50,000 | | | |  38.8% |
| 5 | Water bottling for commercial purposes | 1% of product sale price per liter | 30,000 | | | |  23.3% |
| 6 | Thermal energy from geothermal waters | 7 MKD per m3 of thermal water used | 300 | | | |  0.2% |
| 7 | Fish and water birds breeding | 3% of fish sale price | 1,000 | 10,000 | 1,600 | 900 |  0.8% |
| 8 | Land drainage | 1% per ha of land drainage fee | - | | | |  0.0% |
| 9 | Washing and extraction/separation of sand and gravel** | 7% of the price for m3 of separated material | 4,000 | | | |  3.1% |
| 10 | Waste water discharge | 1% of waste water fee + 0.4% of average salary per PE | 500 | - | 900 | 300 |  0.4% |
| Total ('000 MKD) | | | 129,000 | 55,000 | 32,000 | 22,200 | |
| Total ('000 €) | | | € 2,098 | € 894 | € 520 | € 361 | |

Distribution of funds collected by water charges, WMP 2010

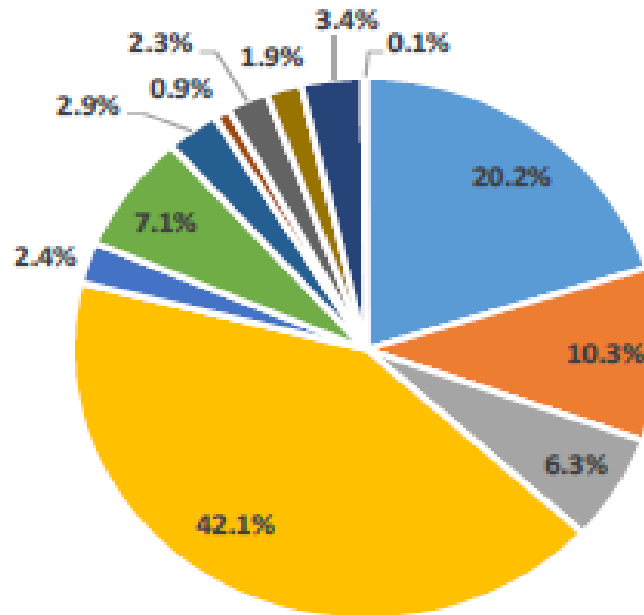


- Public water supply
- Water supply to industry
- Water bottling
- Fisheries
- Sand and gravel
- Irrigation of agricultural land
- Electric energy generation
- Geothermal waters
- Land drainage
- Waste water discharge

Summary information of the potential revenues from water charges (2010-2012)

| # | Water use charge | Unit charge | 000 MKD | | | | Share |
|--|--|--|----------------|----------------|----------------|----------------|--|
| | | | 2010 | 2011 | 2012 | Average | |
| 1 | Water supply for consumption via public water supply | 2% per m3 of water supply fee | 43,666 | 45,355 | 45,494 | 44,838 |  20.2% |
| 2 | Irrigation of agricultural land | 2% of irr. water supply fee | 22,991 | 22,991 | 22,991 | 22,991 |  10.3% |
| 3 | Water supply to industry and technological use | 2% of industry water supply fee | 17,536 | 16,453 | 8,318 | 14,103 |  6.3% |
| 4 | Electric energy generation | 0.5-1% of production cost per kWh | 102,267 | 88,209 | 90,548 | 93,674 |  42.1% |
| 5 | Water bottling for commercial purposes | 1% of product sale price per liter | 4,665 | 5,108 | 6,510 | 5,428 |  2.4% |
| 6 | Thermal energy from geothermal waters | 7 MKD per m3 of thermal water used | 15,928 | 16,558 | 14,778 | 15,755 |  7.1% |
| 7 | Fish and water birds breeding | 3% of fish sale price | 6,993 | 6,386 | 6,125 | 6,501 |  2.9% |
| 8 | Land drainage | 1% per ha of land drainage fee | 1,952 | 1,952 | 1,952 | 1,952 |  0.9% |
| 9 | Washing and extraction/separation of sand and gravel | 7% of the price for m3 of excavated material | 3,951 | 4,953 | 6,173 | 5,026 |  2.3% |
| 10 | Waste water discharge | 1% of waste water fee + 0.4% of average salary | 4,163 | 4,319 | 4,346 | 4,276 |  1.9% |
| 11 | Tourism activities | 2% of estimated market value of the land | 7,622 | 7,622 | 7,622 | 7,622 |  3.4% |
| 12 | Lake/water transport | 1% of annual revenues | 483 | 170 | 180 | 278 |  0.1% |
| Total revenues ('000 MKD) | | | 232,217 | 220,076 | 215,036 | 222,443 | |
| Total revenues ('000 €) | | | € 3,776 | € 3,578 | € 3,497 | € 3,617 | |
| 5% of total (water sector planning and mngt - 000 MKD) | | | 11,611 | 11,004 | 10,752 | 11,122 | |

Distribution of potential revenues by water charges (average 2010 – 2012)



- Public water supply
- Irrigation of agricultural land
- Water supply to industry
- Electric energy generation
- Water bottling
- Geothermal waters
- Fisheries
- Land drainage
- Sand and gravel
- Waste water discharge
- Tourism activities
- Lake transport

Use of water charge revenues (WMP: 2012-2014)

| # | Use of revenues from water charges, as defined in WMPs | 000 MKD | | |
|--------------|--|---------------|---------------|---------------|
| | | 2012 | 2013 | 2014 |
| 1 | Construction of new; maintenance and upgrade of existing water supply systems | 12,027 | 22,000 | 14,700 |
| 2 | Preparation of Water-economy basis and development of river basin management plans | 2,750 | | 1,500 |
| 3 | Assumed responsibilities of the Water Fund | 40,223 | | |
| 4 | Maintenance of water flows, construction/maintenance of water flow-regulating structures, flood protection | | 10,000 | |
| 5 | Water management research activities and studies development -- Slatino Dam | | | 3,000 |
| 6 | Hydrogeology and other research activities | | | 3,000 |
| Total | | 55,000 | 32,000 | 22,200 |

Comparison of assessed water management revenues and costs (2010-2012)

| Item | 2010 | 2011 | 2012 | Average |
|--|-----------|-----------|-----------|-----------|
| Total water management revenues ('000 MKD) | 232,217 | 220,076 | 215,036 | 222,443 |
| Total water management revenues ('000 €) | € 3,776 | € 3,578 | € 3,497 | € 3,617 |
| Total water management costs ('000 MKD) | 1,439,212 | 1,606,825 | 1,981,222 | 1,675,753 |
| Total water management costs ('000 €) | € 23,402 | € 26,127 | € 32,215 | € 27,248 |
| Share of water use charges in total WM costs | 16.1% | 13.7% | 10.9% | 13.3% |

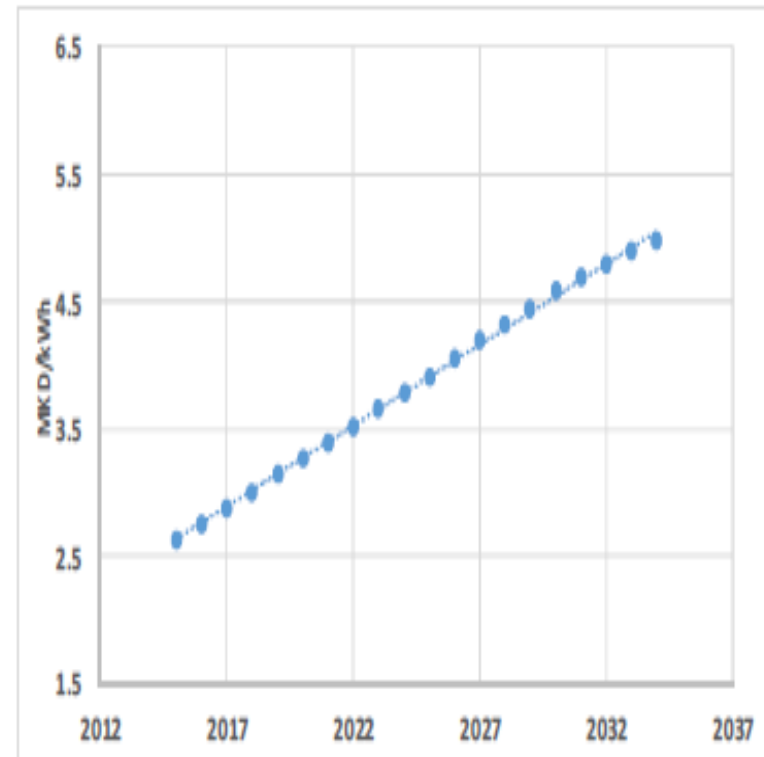
Summary information of projected revenues from water charges (2015-2034) - Business-as-usual scenario

| | Business-as-usual / Water use charge | 000 MKD | | | | Share 2015 | Share 2024 | Share 2034 |
|-----------------|--|---------------|---------|---------|---------|------------|------------|------------|
| | | Current Av. 0 | 2015 1 | 2024 10 | 2034 20 | | | |
| 1 | Water supply for consumption via public water supply | 44,838 | 46,408 | 63,249 | 89,219 | 20.2% | 19.1% | 18.5% |
| 2 | Irrigation of agricultural land | 22,991 | 23,566 | 29,431 | 37,674 | 10.3% | 8.9% | 7.8% |
| 3 | Water supply to industry and technological use | 14,103 | 14,314 | 16,367 | 18,994 | 6.3% | 4.9% | 3.9% |
| 4 | Electric energy generation | 93,674 | 100,965 | 164,235 | 263,688 | 42.1% | 49.5% | 54.6% |
| 5 | Water bottling for commercial purposes | 5,428 | 5,563 | 6,948 | 8,894 | 2.4% | 2.1% | 1.8% |
| 6 | Thermal energy from geothermal waters | 15,755 | 16,227 | 21,173 | 28,455 | 7.1% | 6.4% | 5.9% |
| 7 | Fish and water birds breeding | 6,501 | 6,534 | 6,833 | 7,183 | 2.9% | 2.1% | 1.5% |
| 8 | Land drainage | 1,952 | 1,962 | 2,052 | 2,157 | 0.9% | 0.6% | 0.4% |
| 9 | Washing and separation of sand and gravel | 5,026 | 5,076 | 5,551 | 6,132 | 2.3% | 1.7% | 1.3% |
| 10 | Wastewater discharge | 4,276 | 4,426 | 6,032 | 8,509 | 1.9% | 1.8% | 1.8% |
| 11 | Tourism activities | 7,622 | 7,774 | 9,291 | 11,326 | 3.4% | 2.8% | 2.3% |
| 12 | Lake/water transport | 278 | 286 | 373 | 501 | 0.1% | 0.1% | 0.1% |
| Total (000 MKD) | | 222,443 | 233,100 | 331,535 | 482,731 | | | |
| Total (000 €) | | € 3,617 | € 3,790 | € 5,391 | € 7,849 | | | |

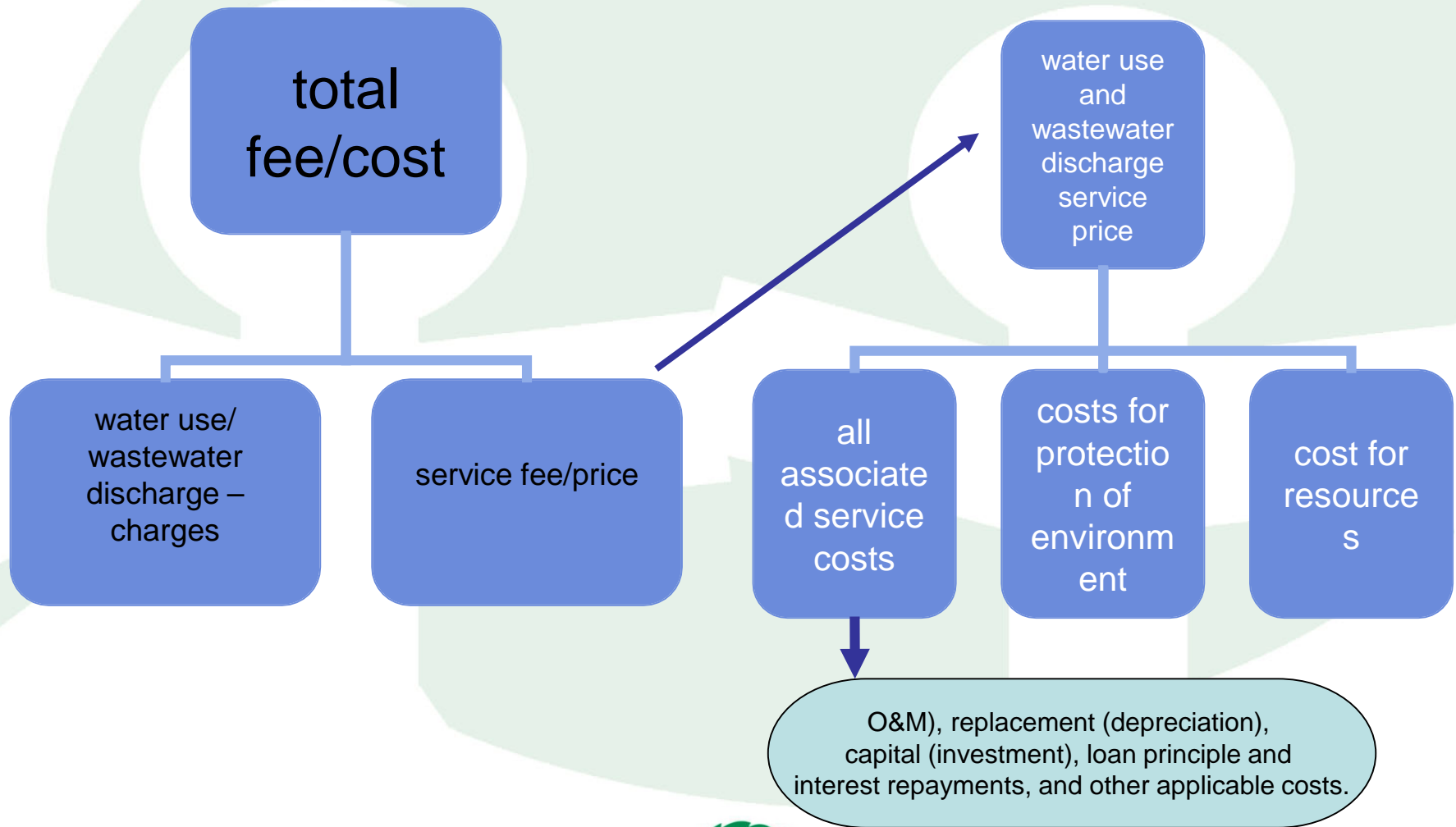
Overview of expected annual percentages of water charge increase by categories

Projected electricity production cost increase (2015 – 2034)

| # | Business-as-usual scenario | % of annual increase |
|----|--|----------------------|
| 1 | Annual water supply for consumption increase | 3.5% |
| 2 | Annual water supply for irrigation increase | 2.5% |
| 3 | Annual water supply for industry increase | 1.5% |
| 4 | Electricity price increase | Varies |
| 5 | Annual water bottling (production) increase | 2.5% |
| 6 | Annual thermal energy from geothermal water increase | 3.0% |
| 7 | Annual fisheries revenues increase | 0.5% |
| 8 | Annual land drainage revenues increase | 0.5% |
| 9 | Annual sand and gravel revenues increase | 1.0% |
| 10 | Annual waste water discharge revenues increase | 3.5% |
| 11 | Annual tourism revenues increase | 2.0% |
| 12 | Annual lake transport revenues increase | 3.0% |



Environmental cost/Resource cost*



* environmental costs include the damages incurred by ecosystems and people as a result of water use. Resource costs then occur only when the resource is used beyond its natural regenerative capacity