

Programme of Measures for Achieving Water
Protection Objectives within the Dauguva River
Basin District
Annex 2

**RATIONALE FOR THE PROGRAMME OF MEASURES FOR ACHIEVING
WATER PROTECTION OBJECTIVES WITHIN THE DAUGUVA RIVER
BASIN DISTRICT**

CHAPTER I. GENERAL PROVISIONS

1. The Programme of Measures is designed for the Dauguva River Basin District (RBD) which covers the Lithuanian part of the Dauguva River Basin.

The Programme was drawn up upon analysis of the status of water bodies within the Dauguva RBD and assessment of impacts of anthropogenic activities on water bodies. The development of the Programme took account of the programmes currently implemented on the national level as well as technical feasibility of the measures and economic resources, including recovery of costs related to the provision of water services.

Pursuant to the requirements of the Law of the Republic of Lithuania on Water (Žin.*, 1997, No. 104-2615; 2003, No. 36-1544), a programme of measures must be established for each river basin district in order to achieve water protection objectives. Each programme of measures comprises basic measures which are the mandatory requirements under the Lithuanian laws regulating the water sector and relevant European Union (EU) directives (construction of wastewater treatment facilities and manure storage facilities, balanced soil fertilisation, crop rotation, etc.). Where the assessment of the effect of the basic measures reveals that they are sufficient for achieving water protection objectives, the programme is limited to these measures. If, however, the basic measures are not sufficient for a water body to achieve water protection objectives, supplementary measures are then chosen as may be necessary in order to attain the set water protection objectives.

A wide range of measures can be available. Some of them are purely engineering ones, for example, construction of domestic and industrial wastewater treatment facilities, installation of protection belts for water bodies, renaturalisation of straightened river beds, etc. Other instruments are legal (permits for carrying out economic activities, impoundment of rivers or construction of hydropower plants (HPP), etc.), economic (taxes and charges, sanctions, incentives, subsidies and the like), information (seminars, events, public education through the press, on the internet), etc.

Legal acts provide for possible exceptions in respect of the achievement of certain water protection objectives. One of them is the extension of the deadline (until 2027 at the latest) for achieving the set objective, provided that the objective cannot be achieved in time for reasons of technical feasibility, disproportionate costs or natural conditions. Another exception is the establishment of less stringent objectives that must also be justified by technical feasibility, natural conditions or disproportionate costs, as well as when the achievement of good status would lead to far-reaching negative socio-

* *Valstybės žinios* [official gazette]

economic consequences that cannot be avoided by any significantly better environmental option. These exceptions can be applied only in rare cases, subject to the economic analysis and reasoned arguments for the necessity of the exception.

The present document on the Programme of Measures for the Daugava RBD gives a description of the basic and supplementary measures, as well as specifies the costs of their implementation.

CHAPTER II. BASIC MEASURES FOR ACHIEVING GOOD WATER STATUS IN THE DAUGUVA RBD

Taking into account that the implementation of the basic measures has been regulated in relevant legislation currently in force as well as in programmes and various other documents, the requirements of the basic measures which have already been transposed into the national legal framework are not specified in this document to avoid repetition of these requirements in different documents.

2. Pursuant to Part A of Annex VI to Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ 2004 special edition, Chapter 15, Volume 5, p. 275), (WFD), basic measures are those which must be implemented in order to meet the requirements of the following directives:

2.1 Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC (OJ 2006 L 64, p. 37) (Bathing Water Directive);

2.2. Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (OJ 2010 L 20, p. 7) (Birds Directive);

2.3 Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption (OJ 2004 special edition, Chapter 15, Volume 4, p. 90), (Drinking Water Directive);

2.4. Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances (OJ 2004 special edition, Chapter 5, Volume 2, p. 410) (Major Accidents Directive);

2.5. Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment (OJ 2004 special edition, Chapter 15, Volume 1, p. 248) as last amended by Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 (Environmental Impact Assessment Directive);

2.6. Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture (OJ 2004 special edition, Chapter 15, Volume 1, p. 265) (Sewage Sludge Directive);

2.7. Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment (OJ, 2004 special edition, Chapter 15, Volume 10 p. 26) (Urban Wastewater Treatment Directive);

2.8. Council Directive 91/414/EEC concerning the placing of plant protection products on the market (OJ 2004 special edition, Chapter 3, Volume 11, p. 332) as last amended by the Commission Directive 2010/42/EU of 28 June 2010 (OJ 2006 L 161, p. 6) (Plant Protection Products Directive);

2.9. Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (OJ 2004 special edition, Chapter 15, Volume 2, p. 68) (Nitrates Directive);

2.10. Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora of 21 May 1992 (OJ 2004 special edition, Chapter 15, Volume 2, p. 102) (Habitats Directive);

2.11. Directive 2008/1/EC of the European Parliament and of the Council concerning integrated pollution prevention and control of 15 January 2008 (OJ 2008 L 24, p. 8), as last amended by Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 (OJ 2009 140, p. 114) (IPPC Directive).

All the above-listed directives are already being implemented or must be implemented in Lithuania by 2010. The next section describes the basic measures and their implementation costs. These will later be compared with the costs of supplementary measures, assessing the supplementary efforts needed to achieve the goals established in the Law of the Republic of Lithuania on Water.

SECTION I. MEASURES PROVIDED FOR IN THE COMMUNITY WATER LEGISLATION AND TRANSPOSED INTO THE LITHUANIAN LEGAL FRAMEWORK

Urban Wastewater Treatment Directive

3. The basic measures under the Urban Wastewater Directive cover construction and reconstruction of wastewater treatment facilities in agglomerations with a population equivalent (p.e.) of more than 2 000 with a view to improve the quality of discharged wastewater so that it conforms to the requirements set for effluents emitted into surface water bodies. The said requirements are defined in the Wastewater Management Regulation approved by Order No. D1-236 of the Minister of Environment of the Republic of Lithuania of 17 May 2006 (Žin., 2006, No. 59-2103; 2007, No. 110-4522).

The key piece of legislation transposing the Directive is the Law of the Republic of Lithuania on Water, which started regulating treatment of wastewater.

Later, the following legislation was passed:

3.1. Law of the Republic of Lithuania on Drinking Water Supply and Wastewater Management (Žin., 2006, No. 82-3260);

3.2. Law of the Republic of Lithuania on the Entry into Force and Implementation of the Law on Drinking Water Supply and Wastewater Management (Žin., 2006, No. 82-3261);

3.3. Drinking Water Supply and Wastewater Management Development Strategy for 2008–2015 approved by Resolution No. 832 of the Government of the Republic of Lithuania of 27 August 2008 (Žin., 2008, 104-3975);

3.4. Wastewater Management Regulation;

3.5. List of National Projects No. 1 under Measure No. VP3-3.1-AM-01-V “Renovation and development of water supply and wastewater management systems” approved by Order No. D1-462 of the Minister of Environment of the Republic of Lithuania of 9 September 2008 (Žin., 2008, No. 109-4162; 2009, No. 47-1882).

4. Under the EU Treaty of Accession, Lithuania has been granted a transitional period for the implementation of the requirements of the Urban Wastewater Treatment Directive. Lithuania has undertaken to collect and adequately treat wastewater observing the following schedule:

4.1. wastewater in agglomerations with a p.e. of 10 000 and more shall be treated observing the established standards as from 31 December 2007;

4.2. wastewater collection systems in conformity with the established requirements shall be in place in agglomerations with a p.e. of more than 2 000 as from 31 December 2009;

4.3. wastewater shall be treated observing the established standards in agglomerations of between 2 000 and 10 000 as from 31 December 2009;

4.4. in newly planned agglomerations, wastewater management requirements shall be observed from the moment of the wastewater generation.

Effect of the measures under the Urban Wastewater Treatment Directive

5. There are two agglomerations with a p.e. of more than 2 000 on a list drawn up by the Environmental Protection Agency (EPA): Visaginas and Zarasai. The wastewater treatment plants (WWTP) in these agglomerations are the main objects actually subject to the requirements of the Urban Wastewater Treatment Directive. Visaginas belongs to the agglomerations with a p.e. from 10 000 to 100 000 and Zarasai is an agglomeration of between 2 000 and 10 000 p.e.

The quality parameters of wastewater discharged from Visaginas and Zarasai WWTP and conformity thereof with the requirements of the Urban Wastewater Treatment Directive are provided in Table 1 below.

Table 1. Quality parameters of wastewater discharged from large agglomerations with a p.e. of more than 2 000 in the Dauguva RBD. Concentrations which fail the requirements of the Urban Wastewater Treatment Directive are given in bold italics.

Town	Agglomeration size	Receiving water body	Wastewater volume, thou. m ³ /m	BOD ₇ * mg/l	NH ₄ -N * mg/l	NO ₃ -N* mg/l	N _{total} * mg/l	P _{total} * mg/l
Visaginas	10 000 – 100 000	Lake Drūkšiai	1 679	4.1	0.444	8	10	5.3
Zarasai	2 000 – 10 000	Laukesa River	242	3.6	0.57	3.3	6.7	2.27

* BOD₇- biochemical oxygen demand for 7 days; NH₄-N – ammonium nitrogen; NO₃-N – nitrate nitrogen; N_{total} – total nitrogen; P_{total}- total phosphorus

In 2009, concentrations of total phosphorus in wastewater discharged from Visaginas WWTP were still failing the requirements of the Urban Wastewater Treatment Directive. However, new wastewater treatment facilities are currently under construction in Visaginas, funded under Project No. 2005/LT/16/C/PE/001 “Investment Programme for the Neris River Basin, 1st stage” (implementer – Environmental Project Management Agency under the Ministry of Environment of the Republic of Lithuania). The works are planned to be completed in 2010. It is expected that the quality of wastewater discharged from the new wastewater treatment facilities will be meeting all requirements of the Wastewater Management Regulation.

The quality of wastewater discharged from Zarasai WWTP conforms to the requirements of the Urban Wastewater Treatment Directive by BOD₇. Due to its size (<10 000 p.e.), the agglomeration is not subject to the requirements for the cleanup of total nitrogen and total phosphorus.

The baseline scenario was developed taking into account the current situation and forecasted changes and on the basis of the following assumptions:

5.1. After the construction of the WWTP in Visaginas, concentrations of total phosphorus in its effluents will conform to the requirements of the Urban Wastewater Treatment Directive, i.e. will not exceed 2 mg/l; other quality parameters of discharges will remain the same.

5.2. The quality parameters of discharges from Zarasai WWTP will not change and will remain the same as in 2009.

5.3. The volume of wastewater discharged from Zarasai and Visaginas wastewater treatment facilities is not expected to change in the nearest future and will remain the same as in 2009.

5.4. The loads emitted from other wastewater dischargers (i.e. dischargers of industrial wastewater and surface runoff and dischargers of settlements with a p.e. of less than 2 000 p.e.) will not change and will remain the same as in 2009.

The loads currently discharged into surface water bodies within the Dauguva RBD from point pollution sources and loads forecasted after the implementation of the basic measures under the Urban Wastewater Treatment Directive are presented in Table 2. The present point pollution loads were assessed using the EPA data of 2009.

The information given in the table below demonstrates that the basic measures under the Urban Wastewater Treatment Directive will not have any effect on point pollution loads of BOD₇ and total nitrogen, so these are expected to remain the same as today. The load of total phosphorus is expected to go down by 48% as a result of the construction of the new WWTP in Visaginas town.

Table 2. Present and forecasted point pollution loads in the Dauguva RBD after the implementation of the basic measures under the Urban Wastewater Treatment Directive

Pollutant	Discharger	Present load	Forecasted load after the implementation of the basic measures under the Urban Wastewater Treatment Directive
BOD ₇ , t/year	Agglomerations of >10 000 p.e.	6.9	6.9
	Agglomerations of between 2 000 and 10 000 p.e.	0.9	0.9
	Agglomerations of <2 000 p.e.	1.05	1.05
	Industrial wastewater	21.8	21.8
	Surface runoff	11.9	11.9
	TOTAL:	42.55	42.55
Total nitrogen, t/year	Agglomerations of >10 000 p.e.	16.8	16.8
	Agglomerations of between 2 000 and 10 000 p.e.	1.6	1.6
	Agglomerations of <2 000 p.e.	1.65	1.65
	Industrial wastewater	15.1	15.1
	Surface runoff	9.6	9.6
	TOTAL:	44.75	44.75
Total	Agglomerations of >10 000 p.e.	8.9	3.4

Pollutant	Discharger	Present load	Forecasted load after the implementation of the basic measures under the Urban Wastewater Treatment Directive
phosphorus, t/year	Agglomerations of between 2 000 and 10 000 p.e.	0.5	0.5
	Agglomerations of <2 000 p.e.	0.25	0.25
	Industrial wastewater	0.7	0.7
	Surface runoff	1.2	1.2
	TOTAL:	11.55	6.05

Source: experts' estimations taking into account the data on point pollution loads in 2009 (EPA) and information about water purification projects already completed and those planned for the future

The load of total phosphorus discharged from Visaginas WWTP to Lake Drūkšiai is expected to go down after the implementation of the basic measures under the Urban Wastewater Treatment Directive whereas the point pollution load discharged into rivers will remain the same. Hence the pollution outflow from the territory of Lithuania by the main rivers of the Dauguva RBD should remain the same. The present pollution loads transferred by the rivers Laukesa-Nikajus, Dysna and Birvėta are given in Table 3.

Table 3. Pollution loads transferred by the main rivers of the Dauguva RBD

River	BOD ₇ , t/year	NH ₄ , t/year	NO ₃ , t/year	P _{total} , t/year
Laukesa-Nikajus	98	1.15	44.3	3.5
Dysna	206	3.4	75.4	4.7
Birvėta	256	6	103	8.6
TOTAL:	560	10.55	222.7	16.8

Source: experts' estimations

Implementation costs of the Urban Wastewater Directive

6. The measures under the Urban Wastewater Treatment Directive (construction and reconstruction of wastewater treatment facilities, construction of new and reconstruction of the existing sewerage networks) are provided for in the List of National Projects No. 1 under Measure No. VP3-3.1-AM-01-V "Renovation and development of water supply and wastewater management system". There are no settlements of Dauguva RBD on this list. The construction of Visaginas WWTP is funded under Project No. 2005/LT/16/C/PE/001 "Investment Programme for the Neris River Basin, 1st stage".

Nitrates Directive

7. The objective of the Nitrates Directive is to reduce pollution of water bodies generated or induced with nitrates used in agriculture and to prevent such pollution in future.

The key piece of legislation transposing the Nitrates Directive is the Programme on the Reduction of Water Pollution from Agricultural Sources approved by Order No. 3D-686/D1-676 of the Minister of Agriculture of the Republic of Lithuania and the Minister of Environment of the Republic of Lithuania of 9 December 2008 (Žin., 2008, No. 143-5741), which is the document regulating the second stage of the Programme. The first stage ended in 2007 and the second one will last until May 2012.

Effect of the measures under the Nitrates Directive

8. The effect of the measures under the Nitrates Directive was assessed forecasting changes in the status of water bodies as a result of the implementation of the said measures, which was done with a help of mathematical modelling. Changes in the water status as compared to the present situation were assessed taking into account the effectiveness and extent of the implementation of the planned measures.

A list of the key measures under the Nitrates Directive as well as prospects and extent of the implementation of the measures in Lithuania are provided in Table 4, which also gives information on the impact and effectiveness of the measures.

However, it is rather difficult to determine the effect of each measure because it depends on a number of factors, such as natural conditions, farming methods and type. Accordingly, the effectiveness of the measures may differ from farm to farm. The effectiveness values used for the forecasting of the impact of the Nitrates Directive were determined on the basis of summary results of studies conducted in other countries (UK and Denmark).

The table below demonstrates that many basic measures under the Nitrates Directive will have either no or only a minor impact on pollution loads. The main measure which is expected to have a noticeable effect is construction of manure storages on farms with more than 10 livestock units (LSU).

Table 4. Basic measures under the Nitrates Directive and their effectiveness

No.	Requirement	Application	Impact on pollution loads	Expected decrease in pollution loads after implementation of the measure, %
1	Construction of manure storages on farms (except for those with deep animal houses). Capacity of the manure storage (of the pit, tank or lagoon type) shall be 8 months for storing manure from pigs and poultry and 6 months for storing manure from cattle, horses, sheep and other animals.	Farms with more than 300 LSU - by 1 January 2008	Loads of nitrate nitrogen and total phosphorus will go down on farms with more than 300 LSU. When manure is spread at the time of the lowest likelihood of surface runoff, reduction of NH ₄ -N and BOD loads can be expected. The measure is effective only when manure is spread at a suitable time and at a safe distance from water bodies. The measure has been partially implemented.	It is assumed that pollution loads on farms with manure storages are 20% lower than on farms without such storages.
2	Construction of manure storages on farms (except for those with deep animal houses). Capacity of the manure storage (of the pit, tank or lagoon type) shall be 8 months for storing manure from pigs and poultry and 6 months for storing manure from cattle, horses, sheep and other animals.	Farms with 10 to 300 LSU by 1 January 2012.	Loads of NO ₃ -N and P _{total} will go down on farms with more than 10 LSU. When manure is spread at the time of the lowest likelihood of surface runoff, reduction of NH ₄ -N and BOD loads can be expected. The measure is effective only when manure is spread at a suitable time and at a safe distance from water bodies.	Livestock pollution loads will go down by 20-30% on farms where this measure will be applied.
3	The amount of N _{total} entering the soil (when fertilising it with organic fertilisers (OF), and pasturing livestock) shall not exceed 170 kg/ha.	All livestock farms	This measure will have either no or only a minor effect, because according to the available data the load of 170 kg/ha is currently not exceeded.	No decrease
4	Organic fertilisers shall not be used between 1 December and 1 April and shall not be applied when the soil is frozen hard, waterlogged or snow covered. In exceptional cases, when autumn is dry, warm and long and fields are ploughed later, or when spring is early and warm and fields are ploughed earlier, organic fertilisers may be applied later or earlier, upon prior notification of the regional environmental protection agency of the relevant Regional Environmental Protection Department (REPD) thereof. Such fertilisation shall be prohibited when the wind is blowing in the direction of a neighbouring residential place. Application of mineral fertilisers is recommended	All livestock farms	It is assumed that application of organic fertilisers on hard-frozen fields is not widely spread because the demand of fertilisers for crops is minimum at this time of the year.	No decrease

No.	Requirement	Application	Impact on pollution loads	Expected decrease in pollution loads after implementation of the measure, %
	only on working days.			
5	Fertilisation plans in conformity with the established requirements shall be in place.	Farms which apply manure on more than 150 ha of utilised agricultural land per year as well as farms which use manure produced by 200 or more LSU for fertilisation, or farms where the annual amount of N _{total} in organic fertilisers used is 20 tonnes or more	The main purpose of fertilisation plans is to stop over-fertilisation. However, so far fertilisation plans are only supposed to specify the amount of organic fertilisers used so the measure will not be effective until mineral fertilisers are included in fertilisation plans.	No decrease
6	The chosen type of fertilisation shall ensure uniform application of fertilisers and a minimum impact of the fertilisation on the environment. When applied on the soil surface, solid and semi-liquid manure shall be incorporated into the soil no later than within 12 hours from its application.	All livestock farms	Application of manure has no or even a negative effect on nitrogen loads because during incorporation of manure NH ₄ -N does not evaporate and enters the soil. The impact of incorporation on loads of P _{total} has been included in the impact of construction of manure storages.	No change in nitrogen loads is expected, the impact on loads of P _{total} is about 5% and it has been included in the impact of the construction of manure storages.
7	Organic fertilisers shall not be used in riparian protection zones of surface water bodies as well as closer than 2 meters from the upper edges of the slopes of reclamation ditches.	All livestock farms	Fertilisation in riparian protection zones of surface water bodies is not expedient due to low density of LSU so most likely it is not widely spread.	No decrease
8	50% of the area shall be sowed with wintering (winter or perennial) plants.	Farms with more than 15 ha of arable land	This requirement has already been met. According to declarations, wintering crops, meadows and pastures in 2004 accounted for 63.1% of the total declared area, in 2005 this number was 60.6%, in 2006 – 58.2% and in 2007– 60.2%.	No decrease
9	Livestock density on a farm shall not exceed 1.7 of livestock units per hectare of utilised agricultural land.	All livestock farms	At present livestock density does not exceed 1.7 LSU/ha	No decrease
10	Application of crop rotation to prevent erosion.	Farms situated in hilly terrains	Reduction of input of nitrogen, phosphorus and suspended matter into water bodies	Likely decrease in pollution with suspended matter and phosphorus

Source: experts' analysis results

Implementation costs of the Nitrates Directive

9. 914 manure storages for 170 500 livestock units (LSU) were built from 2004 through 2008. The annual capacity of these storages is 540 thousand tonnes of manure/slurry. The average size of farms which used the assistance under the Nitrates Directive during the said period was 82 LSU. The actual average number of LSU on farms which implemented the requirements of the Nitrates Directive was twice higher than planned because the implementation of these requirements during the assistance period was highly relevant for large farms with more than 300 LSU. Since the main users of the assistance were large farms, the number of manure/slurry tanks built was three times lower than actually planned; however, the capacity of these tanks was much larger.

The basic measures under the Nitrates Directive will cover farms with more than 10 LSU which to date do not have manure storages. The total number of LSU in the Dauguva RBD and the number of LSU on farms of different size and on farms which already have manure storages are given in Table 5. Information on the distribution of LSU on farms of different size and on those with manure storages at the level of wards was provided by the Agri-Information and Rural Business Centre. The LSU number in the basin data was estimated in proportion to the area of a respective ward in the basin.

Table 5. LSU number on farms of different size in the Dauguva RBD, 2008

RBD	LSU number	LSU density	LSU number on farms with less than 10 LSU	LSU number on farms with 10 to 300 LSU	LSU number on farms with more than 300 LSU	No. of LSU on farms with manure storages in place	No. of LSU on farms where manure storages will be constructed
Dauguva	12 141.8	0.065	8 883.8	2 036.6	1 221.4	728.5	2 529.5
TOTAL	12 141.8	0.065	8 883.8	2 036.6	1 221.4	728.5	2 529.5

Source: Agri-Information and Rural Business Centre

To date, the implementation of the requirements for manure management was funded under two programmes: under the Measure “Compliance with standards” of the Rural Development Programme for 2004-2006 and under the first activity area “Implementation of the requirements of the Nitrates Directive and new mandatory Community standards” of the Measure “Modernisation of agricultural holdings” of the Rural Development Programme for 2007-2013 approved by Commission Decision No. C (2007)5076 of 19 October 2007.

Under the Measure “Compliance with standards” of the Rural Development Programme for 2004-2006¹, substantial assistance was provided for the introduction of advanced manure management technologies, acquisition of new manure loading and transportation vehicles, slurry spreading equipment, and reconstruction of the existing or construction of new manure storages or slurry collectors. Economic entities which participate in this programme (about 2 468) are supposed to achieve compliance of their farms with the environmental requirements of the Nitrates Directive within three years from the signing of the agreement. Pursuant to the Measure “Compliance with standards” of the Rural Development Programme for 2004-2006, the total amount allocated from the budget of 2004-2006 in Lithuania was LTL 368 021 000. Also, LTL 57 582 384 were paid out by

¹ Covers two directives: Council Directive 92/46/EEC of 16 June 1992 laying down the health rules for the production and placing on the market of raw milk, heat-treated milk and milk-based (OJ L 268, 1992 9 14, p. 1-32, Chapter 3, Volume 13, p. 103 - 134) (Milk Directive) and the Nitrates Directive.

July 2010 from the 2007-2013 Programme budget under the Measure “Compliance with Standards. Obligations under the Rural Development Programme” of the Rural Development Programme for 2004-2006. In addition, LTL 24 686 045 were paid out (the value of the authorised agreements totals to LTL 38 937 853) until July from the 2007-2013 Programme budget for the “Implementation of the requirements of the Nitrates Directive and new mandatory Community standards” (source: National Paying Agency, NPA, 2010).

The amount allocated for one LSU under the Programme for 2004-2006 varied between LTL 805 and LTL 960 and that under the Programme for 2007-2013 – between LTL 345 and LTL 1 934 (however, the beneficiaries may use these funds to cover not more than 40-60% of the eligible project expenditure). Although the number of manure storages built is available, there is no data on which particular programme the construction was funded from. The final report on the assessment of the Programme for 2004-2006 stated that the implementation of the Nitrates Directive had been allocated 2.5 times more funds than for the implementation of the Milk Directive. Following this proportion, it is assumed that about LTL 280 million could have been allocated from the EU and national budget funds for the implementation of the Nitrates Directive by 2010.

Since the number of LSU for the manure whereof storages should still be built is more than twice larger than the number of those whose manure is already managed in an appropriate manner, the additional amount needed in Lithuania totals to about LTL 600 million and the total amount required for the implementation of this requirement of the Directive may be as large as LTL 900 million.

The distribution of the funds in different basins was calculated by dividing the total amount allocated for Lithuania in proportion to the number of manure storages in the basins. It is assumed that the share of manure storages built using the assistance funds is more or less the same in all basins. The estimated distribution of funds is provided in Table 6.

Table 6. Demand of costs for the implementation of the Nitrates Directive in the Dauguva RBD, LTL, rounded up

RBD	Funds paid out for implementation of the Nitrates Directive	Demand of additional funds for implementation of the Nitrates Directive
Dauguva	1 534 500	5 324 800
Total	1 534 500	5 324 800

Source: experts' estimations based on the data of the NPA

The level of the implementation of the requirement to construct manure storages differs depending on the individual RBD. The amount already paid out within the Dauguva RBD for the implementation of the Directive totals to LTL 1.5 million and the additional demand may be more than LTL 5 million.

Drinking Water Directive

10. The Drinking Water Directive is intended to protect people from negative effects of water pollution ensuring that drinking water is wholesome and clean. The provisions of the Directive are applicable to all kinds of drinking water as well as water used for food preparation and processing. The Directive is not applicable for natural mineral waters and waters which are medicinal products. When the minimum requirements of the

Directive are applied, water is wholesome and clean if it is free from any micro-organisms and parasites and from any substances which, in numbers or concentrations, constitute a potential danger to human health.

The key legislation transposing the requirements of the Drinking Water Directive:

10.1. Law of the Republic of Lithuania on Drinking Water (Žin., 2001, No. 64-2327);

10.2. Law of the Republic of Lithuania on Drinking Water Supply and Wastewater Management;

10.3. Wastewater Management Regulation;

10.4. Rules for the Development of Plans for Expansion of Water Supply and Wastewater Management Infrastructure approved by Order No. D1-636 of the Minister of Environment of the Republic of Lithuania of 29 December 2006 (Žin., 2007, No. 8-337);

10.5. Procedure for State Control of Drinking Water approved by Order No. 643 of the Director of the State Food and Veterinary Service of the Republic of Lithuania of 10 December 2002 ((Žin., 2003, No. 3-99), which transposed the specific requirements of the Directive for drinking water quality control;

10.6. Lithuanian Hygiene Norm HN 24:2003 “Drinking water safety and quality requirements” approved by Order No. V-455 of the Minister of Health of the Republic of Lithuania of 23 July 2003 (Žin., 2003, No. 79-3606);

10.7. Lithuanian Hygiene Norm HN 44:2006 “Delineation and maintenance of sanitary protection zones of wellfields” approved by Order No. V-613 of the Minister of Health of the Republic of Lithuania (Žin., 2006, No. 81-3217);

10.8. Law of the Republic of Lithuania on Local Self-Government (Žin., 1994, No. 55-1049; 2008, No. 113-4290), which contains a provision on the obligation of municipalities to organise supply of drinking water.

Effect of the measures under the Drinking Water Directive

11. Controls over drinking water quality

This measure is implemented in accordance with the requirements of the Lithuanian Hygiene Norm HN 24:2003 “Drinking water safety and quality requirements”. The Hygiene Norm sets forth the requirements for the quality of drinking water (chemical composition, the number of quality assessments per year, analysis methods, etc.). The quality of drinking water in Lithuania is controlled by the Ministry of Health and the State Food and Veterinary Service.

12. Removal of old operational bore wells which are no longer in use

The procedure for the removal of old operational bore wells which are no longer used and which can turn into potential groundwater pollution sources is laid down in the Lithuanian environmental regulatory document LAND 4-99 “Procedure for the design, installation, temporary shutdown and removal of wells intended for water supply and use of water for heating energy” approved by Order No. 417 of the Minister of Environment of the Republic of Lithuania of 23 December 1999 (Žin., 1999, No. 112-3263). The procedure for the removal of bore wells is controlled by the Ministry of Environment of the Republic of Lithuania.

13. Establishment of sanitary protection zones of wellfields

Sanitary protection zones (SPZ) of wellfields are established and officially designated in accordance with the requirements of the Hygiene Norm HN 44:2006 “Delineation and maintenance of sanitary protection zones of water extraction sites”. Sanitary protection zones are defined for each water extraction site and consist of three belts:

13.1. the belt of strict regime (first belt) is a belt located closest to the catchment equipment and designed for the protection of the wellfield and groundwater catchment equipment against intentional or accidental pollution, where any economic or other activity not related with the extraction, improvement and supply of groundwater is forbidden;

13.2. the belt preventing microbial pollution (second belt) is a protective belt where microbial and chemical pollution is restricted;

13.3. the belt preventing chemical pollution (third belt) is a protective belt where chemical pollution is restricted.

The municipality on the territory of which a respective wellfield is located shall organise establishment and protection of the WPZ in accordance with the requirements of the Law of the Republic of Lithuania on Drinking Water and the Law of the Republic of Lithuania on Protected Areas (Žin., 1993, No. 63-1188; 2001, No. 108-3902).

When a special plan of the SPZ of a wellfield is drafted, agreed and approved pursuant to the procedure laid down in relevant legislation, special land use conditions are entered in the Real Property Cadastre and Real Property Register pursuant to the procedure laid down in Article 22 of the Law of the Republic of Lithuania on Land (Žin., 1994, No. 34-620; 2004, No. 28-868) and the Regulations of the Real Property Cadastres of the Republic of Lithuania approved by Resolution No. 534 of the Government of the Republic of Lithuania of 15 April 2002 (Žin., 2002, No. 41-1539; 2005, No. 80-2899). This is an important requirement because it ensures application of restrictions on economic activity within the SPZ. The approved belts of the SPZ of wellfields have to be marked when drafting other territorial planning documents, and economic activities are regulated in accordance with the limitations laid down in the Hygiene Norms HN 44:2006 and other legislation. An important measure is controls over establishment and official designation of SPZ because so far no sanitary protection zones of any wellfield have been officially designated in accordance with the provisions of the Lithuanian Hygiene Norm HN 44:2006 “Delineation and maintenance of sanitary protection zones of wellfields”.

In Lithuania only groundwater is used for drinking purposes and the quality of groundwater is good due to favourable natural conditions and environmental measures applied.

Implementation costs of the Drinking Water Directive

14. The Drinking Water Supply and Wastewater Management Strategy for 2008-2015 has set forth that drinking water supply and wastewater management services shall become accessible to at least 95% of the Lithuanian population by 2015 and that publicly supplied water shall fully (100%) comply with the established safety and quality requirements.

15. Measures for the implementation of the requirements of the Drinking Water Directive (construction of new and reconstruction of the existing water supply networks, construction and rehabilitation of water improvement facilities) for 2007-2013 cover measures provided for on the List of National Projects No. 1 under Measure No. VP3-3.1-AM-01-V “Renovation and development of water supply and wastewater management systems”. No projects on renovation and expansion of water supply and wastewater management infrastructure have been planned in the Dauguva RBD.

Birds Directive

16. The Birds Directive regulates the protection of areas of importance for birds and requires establishment of special protected areas for the conservation of certain species of birds. The Checklist of the Birds of Lithuania at present contains 358 species of birds.

The key legislation transposing the Birds Directive:

16.1. Law of the Republic of Lithuania on Protected Areas;

16.2. Law of the Republic of Lithuania on Protected Fauna, Flora and Fungi Species and Communities (Žin., 1997, No. 108-2727; 2009, No. 159-7200);

16.3. General Regulations of Areas of Importance for the Conservation of Habitats or Birds approved by Resolution No. 276 of the Government of the Republic of Lithuania of 15 March 2004 (Žin., 2004, No. 41-1335);

16.4. Criteria for the Screening of Areas Important for the Conservation of Birds approved by Order No. D1-358 of the Minister of Environment of the Republic of Lithuania of 2 July 2008 (Žin., 2008, No. 77-3048), which regulate the screening of areas important for the conservation of birds.

For the purpose of conservation, restoration and maintenance of such areas, certain measures have to be implemented. Very often such measures include restriction of economic activities in protected areas, or special measures designed to recreate and restore such areas. These measures are listed below.

Establishment of areas of importance for the conservation of birds

17. The General Regulations of Areas of Importance for the Conservation of Habitats or Birds laid down that areas of importance for the conservation of birds shall be established with a view to preserve protected species of birds in their habitats. In addition, areas important for bird migration must also be preserved.

The establishment of protected areas in Lithuania falls within the responsibility of the State Service for Protected Areas. Areas of importance for the conservation of birds are included in the List of Protected Areas of the Republic of Lithuania, or Parts thereof, Containing Areas of Importance for the Conservation of Birds approved by Resolution No. 399 of the Government of the Republic of Lithuania of 8 April 2004 (Žin., 2004, No. 55-1899; 2006, No. 92-3635; 2010, No. 36-1719). The number of the approved areas of importance for the conservation of birds totals to 82.

Development of nature management plans for areas of importance for the conservation of birds

18. The General Regulations of Areas of Importance for the Conservation of Habitats or Birds require preventing deterioration in the status of conservation of natural habitats and protected species. This requires development of nature management plans (NMP) for protected areas and strategic planning documents. NMP are approved by orders of the Minister of Environment designating institutions to be in charge and potential sources of financing.

Status of the implementation of the Birds Directive

19. Regulations of Areas of Importance for the Conservation of Birds and boundaries of the areas were approved by relevant resolutions of the Government of the Republic of Lithuania. There are nine areas of importance for the conservation of birds (AICB) in the Dauguva RBD occupying a territory of 18 550 ha. A large area thereof, 13 207 ha (71%), coincides with the territory of areas of importance for the conservation of natural habitats (AICH) (Table 7).

Table 7. Areas of importance for the conservation of birds in the Dauguva RBD

	Area of importance for the conservation of birds	AICB code	Municipality	Total area of AICB, ha	Area of AICB in the sub-basin, ha	Share of AICB in the sub-basin, %	Area of AICB overlapping with AICH, ha
1	Adučiškio-Guntauninkų forests	LTSVEB008	Švenčionys distr. and Ignalina distr.	5 670	5 670	100	5 671
2	Birvėta wetlands	LTIGNB001	Ignalina distr.	1 240	1 238	100	571
3	Wetland complex of Dysnai and Dysnykštis lake sides	LTIGNB004	Ignalina distr.	4 017	4 017	100	
4	Lake Drūkšiai	LTZARB003	Zarasai distr. and Ignalina distr.	3 654	3 654	100	3 612
5	Pušnies, Ružas and Apvardai wetland complex	LTIGNB005	Ignalina distr.	1 063	1 063		801
6	Smalva wetland complex	LTZARB002	Zarasai distr.	547	547	100	547
7	Svyła River valley	LTSVEB001	Ignalina distr.	357	357	100	0
8	North-eastern part of Gražutė Regional Park	LTZARB004	Zarasai distr, and Ignalina distr.	5 700	1 648	29	1 648
9	Western part of Aukštaitija National Park	LTIGNB003	Utena distr., Ignalina distr., Švenčionys distr.	35 005	358	1	358
	Source			57 252	18 550	32	13 207

Source: State Service for Protected Areas and experts' estimations

Note: The area of AICB and AICH were established using geographical information systems (GIS)

Until July 2010, nature management plans were developed for 54 areas (throughout Lithuania) and approved by respective orders of the Minister of Environment. The majority of the plans are designed for a 10 years' period (2008-2017).

Information on the nature management plans for areas within the Dauguva RBD is provided in Table 8.

Table 8. Protected areas with nature management plans (NMP) in place in the Dauguva RBD

NMP	Status	Area of the site with NMP in place ha	Area of the site covered by NMP in the sub-basin, ha	Share of the site covered by NMP in the sub-basin, %	Area of the site covered by NMP in the sub-basin where AICB is situated, ha
Adučiškis Telmological Reserve	Developed (not approved yet)	846	846	100.0	846
Birvėta wetlands	Approved	1 240	1 238	99.9	1 238
Lake Drūkšiai	Developed (not approved yet)	3 612	3 612	100.0	3 612
Smalva wetland complex	Developed (not approved yet)	547	547	100.0	547
Svyła biosphere polygon	Developed (not approved yet)	357	357	100.0	357
TOTAL		6 602	6 600		6 600

Source: State Service for Protected Areas and experts' estimations

Note: Titles of the nature management plans usually do not coincide with the names of the corresponding AICB or AICH.

Implementation costs of the Birds Directive

20. The costs of the implementation of the Birds Directive include the costs needed for the development and implementation of nature management plans for areas of importance for the conservation of birds, and for the monitoring of AICB (information thereon is provided in Table 9). The average investment costs of the implementation of the Birds Directive in the Dauguva RBD total to around LTL 1 865 740 and the average annual operating costs are estimated at about LTL 347 540. These costs are planned to be funded from the state budget. The costs of the measures provided in the nature management plans should be deemed as indicative ones. The costs of the implementation of individual measures will be revised by announcing tenders².

Table 9. Implementation costs of the Birds Directive in the Dauguva RBD

Group of costs	Measure period	Preliminary investment costs (2007-2015), LTL	Operating costs (2007-2015), LTL	Average annual operating costs, LTL
Development of NMP	10 years	0	353 265	70 653
Implementation of NMP already in place	10 years	1 583 564	1 637 510	181 946
Implementation of new NMP	10 years	282 178	212 44	52 447
AICB monitoring	1 year	0	0	42 489
TOTAL ~		1 866 000	1 991 000	347 540

Source: experts' estimations

Notes:

1. The average costs of the development of a nature management plan were estimated on the basis of a survey of suppliers' prices for elaboration of 40 nature management plans (with the total area of 37 146 ha), which was conducted by the State Service for Protected Areas. The bids for the development of these plans varied from LTL 1.352 million to LTL 1.965 million (on average LTL 1.66 million or LTL 45 per ha). For the calculation purposes, it was assumed that the costs of the development of a NMP on the territory of one hectare are the same. In NATURA 2000 areas where AICB and AICH overlap, 50% of the costs were assigned to the costs of the implementation of the Habitats Directive. It is assumed that NMP for all AICB will be prepared in five years.
2. The investment and operating costs of the implementation of the nature management plans were estimated on the basis of information contained in the NMP provided on the website of the Ministry

² Data of the State Service for Protected Areas

- of Environment of the Republic of Lithuania³. The implementation costs were recalculated for the period of the implementation of the Management Plan of the RBD (i.e. until 2015).
3. The costs of the implementation of the Birds Directive for the areas with no nature management plans⁴ were calculated following the methodology of unit costs. The average annual investment costs of the implementation of NMP in areas of importance for the conservation of birds (during the period 2007-2015) total to LTL 54 per ha and the average annual operating costs are 7.89 LTL/ha. On sites where AICB and AICH overlap, the average investment costs (for the period 2007-2015) total to LTL 20 per ha, and the average annual operating costs are LTL 3.12 per ha. These unit costs were calculated on the basis of the implementation costs of the NMP already developed and those to be elaborated in future⁵, taking into account the overlapping of AICB and AICH⁶.
 4. AICB monitoring costs include expenditures for salaries, social insurance contributions and fuel costs⁷. The recalculation of the monitoring costs for sub-basins assumed that monitoring costs for one hectare are the same in different areas important for the conservation of birds. The costs of salaries were estimated following the gross salary per average month in the public sector during the first quarter of 2009⁸.

Habitats Directive

21. The Habitats Directive regulates protection of areas of importance for natural habitats and requires establishment of special protected areas for the conservation of certain natural habitats.

The key legislation transposing the Habitats Directive:

21.1. Law of the Republic of Lithuania on Protected Areas;

21.2. General Regulations of Areas of Importance for the Conservation of Habitats or Birds;

21.3. Boundaries of areas of importance for the conservation of habitats were approved with the List of Areas in Conformity with the Criteria for the Screening of Areas of Importance for the Conservation of Natural Habitats Intended for the Provision to the European Commission, which was adopted by Order No. D1-210 of the Minister of Environment of the Republic of Lithuania of 22 April 2009 (Žin., 2009, No. 51-2039). The said List was supplemented by Order No. D1-654 of the Minister of Environment of the Republic of Lithuania of 3 November 2009 on the amendment of Order No. D1-210 of the Minister of Environment of the Republic of Lithuania of 22 April 2009 on the approval of the List of Areas in Conformity with the Criteria for the Screening of Areas of Importance for the Conservation of Natural Habitats Intended for the Provision to the European Commission;

21.4. Law of the Republic of Lithuania on Protected Fauna, Flora and Fungi Species and Communities (Žin., 1997, No. 108-2727; 2009, No. 159-7200);

³ Information source: <http://www.am.lt/gamtotvarka/plans.php>

⁴ Information source: <http://www.am.lt/gamtotvarka/plans.php>

⁵ Information source: <http://www.am.lt/gamtotvarka/plans.php>

⁶ Information source: GIS information of the cadastre of the Areas Protected by the State.

⁷ The average costs of AICB monitoring were estimated having surveyed the Administrations of Labanoras Regional Park, Aukštaitija National Park, Žuvintas Regional Park, Regional Parks of the Nemunas Loops, Regional park of Kaunas Lagoon, Anykščiai Regional Park, and Varniai Regional Park about work and fuel costs for the monitoring of AICB in 2007-2009. Due to variation of the monitoring scopes, the average data of 2007-2009 was used.

⁸ According to Statistics Lithuania, the average monthly gross salary in the public sector during the first quarter of 2009 was LTL 2 318.8.

Establishment of areas of importance for the conservation of habitats

22. The General Regulations of Areas of Importance for the Conservation of Habitats or Birds laid down that areas of importance for the conservation of habitats shall be established with a view to preserve and restore natural habitats of flora and fauna. The establishment of protected areas in Lithuania falls within the responsibility of the State Service for Protected Areas. The number of areas of importance for the conservation of habitats established within the Dauguva RBD until 2009 totals to 17.

Conservation, restoration and maintenance of natural habitats require certain measures. Very often such measures include restriction of economic activities in protected areas, or special measures designed to recreate and restore such areas.

Development of nature management plans for habitats

23. The General Regulations of Areas of Importance for the Conservation of Habitats or Birds require preventing deterioration in the status of conservation of natural habitats and protected species. This requires development of nature management plans for protected areas or other strategic planning documents providing for specific nature management measures.

Other measures

24. Apart from the establishment of special areas for the protection and conservation of birds and habitats, a number of other relevant measures have been introduced. These include implementation of special protection and conservation projects (e.g. building of nests, or training courses on getting to know and observe birds), application of subsidies for farmers who undertake to protect birds with the help of certain measures, as well as conducting of trainings and research projects, and publishing activities. Every year the Minister of Environment of the Republic of Lithuania approves a monitoring plan – a list of birds to be monitored and monitoring sites.

Other sectors are also subject to a number of measures. For example, the Rural Development Programme for 2007-2013 provide for measures promoting environmentally-friendly farming. A methodology for the inventory of habitats is currently prepared and will be used for habitat monitoring starting in 2015 (project “Preparation for the inventory check of natural habitats of Community importance: development of methodological base”; implementer – Botanical Institute).

Assistance in the field of protected areas is related to the intervention area “Improvement and maintenance of the ecological balance of protected forested areas”. 35% of the total assistance under Measures 1.3 (LTL 50.2 million) was actually allocated for this field in Lithuania as compared to the average of 1% of the EU structural assistance for the environment in other countries.

The Lithuanian Rural Development Programme for 2007-2013 also provides for measures promoting environmentally-friendly farming.

Network of NATURA 2000 sites

25. NATURA 2000 is a network of protected areas on the territory of the European Union, which covers natural habitats and species that are very important for the

biological diversity of Europe. The network is developed by implementing the requirements of the Birds Directive and the Habitats Directive. Both directives require establishment of special protected areas for the conservation of certain biological species or important habitats.

Lithuania has been developing the network of NATURA 2000 sites incorporating it into the existing national system of protected areas. To date, the status of NATURA 2000 sites has been mainly granted to the existing protected areas (strict reserves, reserves, national and regional parks) or parts thereof.

As already said, there are 9 areas of importance for the conservation of birds and 17 areas of importance for the conservation of habitats within the Dauguva RBD.

Status of the implementation of the Habitats Directive

26. The Regulations of Areas of Importance for the Conservation of Natural Habitats were adopted by a resolution of the Government of the Republic of Lithuania and the boundaries of the areas of importance for the conservation of natural habitats were approved by an order of the Minister of Environment of the Republic of Lithuania. There are 20 areas of importance for the conservation of natural habitats (AICH) in the Dauguva RBD occupying a territory of 18 659 ha. A large area thereof, 13 206 ha (71%), coincides with the territory of areas of importance for the conservation of birds (Table 10).

Table 10. Areas of importance for the conservation of natural habitats in the Dauguva RBD

	Area of importance for the conservation of natural habitats	Municipality	AICH code	Total area of AICH, ha	Area of AICH in the sub-basin, ha	Share of AICH in the sub-basin, %.	Area of AICH overlapping with AICB, ha
1	Adutiškio bog	Ignalina distr., Švenčionys distr.	LTSVE0002	4 076	4 075	100	4 075
2	Aukštaitija National Park	Ignalina distr., Utena distr., Švenčionys distr.	LTIGN0018	33 048	358	1	358
3	Birvėta River valley at Rimaldiškė	Ignalina distr.	LTIGN0028	113	113	100	113
4	Meadows of Dietkauščizna	Ignalina distr.	LTIGN0004	147	145	98	
5	Dysna River valleys	Ignalina distr.	LTIGN0032	460	459	100	459
6	Lake Drūkšiai	Ignalina distr., Zarasai distr.	LTZAR0029	3 612	3 612	100	3 612
7	Gervelės bog	Ignalina distr.	LTIGN0017	335	235	70	
8	Gražutė Regional Park	Ignalina distr., Zarasai distr.	LTZAR0024	26 102	3 940	15	1 648
9	Guntauninkų forest	Ignalina distr., Švenčionys distr.	LTSVE0037	1 594	1 594	100	1 595
10	Neversčių forest	Švenčionys distr.	LTSVE0032	11	11	100	
11	Puščios bog	Zarasai distr.	LTZAR0030	88	88	100	
12	Pušnies bog	Ignalina distr.	LTIGN0001	779	779	100	779
13	Lake Rūžas	Ignalina distr.	LTIGN0026	59	59	100	22
14	Samanių bog	Zarasai distr.	LTZAR0023	112	16	15	

	Area of importance for the conservation of natural habitats	Municipality	AICH code	Total area of AICH, ha	Area of AICH in the sub-basin, ha	Share of AICH in the sub-basin, %.	Area of AICH overlapping with AICB, ha
15	Sėtikė River and its valley	Švenčionys distr.	LTSVE0016	59	59	100	
16	Smalvelė River and wetlands	Zarasai distr.	LTZAR0026	547	547	100	547
17	Lakes Smalva and Smalvykštis	Ignalina distr., Zarasai distr.	LTZAR0025	2 225	2 225	100	
18	Lake Sungardas	Ignalina distr.	LTIGN0027	117	117	100	
19	Meadows of Šakeliškė	Ignalina distr.	LTIGN0003	108	108	99	
20	Velniabalė bog	Zarasai distr.	LTZAR0022	119	119	100	
	Total:			73 713	18 659	25	13 206

Source: State Service for Protected Areas and experts' estimations

Note: The area of AICB and AICH were established using GIS

Prevention of deterioration in the status of conservation of protected species requires developing nature management plans for protected areas and other strategic documents providing for specific nature management measures. Nature management plans are approved by orders of the Minister of Environment designating institutions to be in charge and providing for measures and costs of implementation and potential sources of financing. NMP are elaborated for specific areas and usually cover both AICB and AICH. Until July 2010, nature management plans were developed for 55 areas (throughout Lithuania) and approved by respective orders of the Minister of Environment. The majority of the plans are designed for a 10 years' period (2008-2017).

Information on nature management plans for areas within the Dauguva RBD is given in Table 11 below.

Table 11. Protected areas with nature management plans (NMP) in place in the Dauguva RBD

NMP	Status	Area of the site with NMP in place, ha	Area of the site covered by NMP in the sub-basin, ha	Share of the site covered by NMP in the sub-basin, %	Area of the site covered by NMP in the sub-basin where AICH is situated, ha
Adutiškis Telmological Reserve	Developed (not approved yet)	846	846	100.0	846
Meadows of Dietkauščizna	Developed (not approved yet)	147	145	98.2	145
Lake Drūkšiai	Developed (not approved yet)	3 612	3 612	100.0	3 612
Smalva wetland complex	Developed (not approved yet)	547	547	100.0	547
Meadows of Šakeliškė	Approved	108	108	100.0	108
TOTAL		5 260	5 258		5 258

Source: State Service for Protected Areas and experts' estimations

Note: Titles of the nature management plans usually do not coincide with the names of the corresponding AICB or AICH.

Implementation costs of the Habitats Directive

27. The costs of the implementation of the Habitats Directive include the costs needed for the development and implementation of nature management plans for areas of

importance for the conservation of habitats, and for the monitoring of AICH (information thereon is provided in Table 12). The average investment costs of the implementation of the Habitats Directive in the Dauguva RBD total to around LTL 126 180 and the average annual operating costs are estimated at about LTL 305 532. These costs are planned to be funded from the state budget. The costs of the measures provided in the nature management plans should be deemed as indicative ones. The costs of the implementation of individual measures will be revised by announcing tenders⁹.

Table 12. Implementation costs of the Habitats Directive in the Dauguva RBD

Group of costs	Measure period	Preliminary investment costs (2007-2015), LTL	Operating costs (2007-2015), LTL	Average annual operating costs, LTL
Development of NMP	10 years	0	418 589	83 718
Implementation of NMP already in place	10 years	11 500	773 746	85 972
Implementation of new NMP	10 years	114 680	457 185	91 437
AICH monitoring	1 year	0	0	44 405
TOTAL ~		126 180	1 649 520	305 500

Source: experts' estimations

Notes:

1. The average costs of the development of a nature management plan were estimated on the basis of a survey of suppliers' prices for elaboration of 40 nature management plans (with the total area of 37 146 ha), which was conducted by the State Service for Protected Areas. The bids for the development of these plans varied from LTL 1.352 million to LTL 1.965 million (on average LTL 1.66 million or LTL 45 per ha). For the calculation purposes, it was assumed that the costs of the development of a NMP on the territory of one hectare are the same. In NATURA 2000 areas where AICH and AICB overlap, 50% of the costs were assigned to the costs of the implementation of the Birds Directive. It is assumed that NMP for all AICH will be prepared in five years.
2. The investment and operating costs of the implementation of the nature management plans were estimated on the basis of information contained in the NMP provided on the website of the Ministry of Environment of the Republic of Lithuania¹⁰. The implementation costs were recalculated for the period of the implementation of the Management Plan of the RBD (i.e. until 2015).
3. The costs of the implementation of the Habitats Directive for the areas with no nature management plans¹¹ were calculated following the methodology of unit costs. The average annual investment costs of the implementation of NMP in areas of importance for the conservation of natural habitats (during the period 2007-2015) total to LTL 6.55 per ha and the average annual operating costs are LTL 15.06 per ha. On sites where AICH and AICB overlap, the average investment costs (for the period 2007-2015) total to LTL 19.66 per ha, and the average annual operating costs are LTL 3.12 per ha. These unit costs were calculated on the basis of the implementation costs of the NMP already developed and those to be elaborated in future¹², taking into account the overlapping of AICB and AICH¹³.
5. AICH monitoring costs include expenditures for salaries, social insurance contributions and fuel costs¹⁴. The recalculation of the monitoring costs for sub-basins assumed that monitoring costs for one hectare are the same in different areas important for the conservation of natural habitats. The costs of salaries were estimated following the gross salary per average month in the public sector during the first quarter of 2009¹⁵. The estimations did not include habitat monitoring costs because such monitoring was not carried out and the required monitoring methodologies were not in place.

⁹ Data of the State Service for Protected Areas

¹⁰ Information source: <http://www.am.lt/gamtotvarka/plans.php>

¹¹ Information source: <http://www.am.lt/gamtotvarka/plans.php>

¹² Information source: <http://www.am.lt/gamtotvarka/plans.php>

¹³ Information source: GIS information of the cadastre of the Areas Protected by the State.

¹⁴ The average costs of AICB monitoring were estimated having surveyed the Administrations of Labanoras Regional Park, Aukštaitija National Park, Žuvintas Regional Park, Regional Parks of the Nemunas Loops, Regional park of Kaunas Lagoon, Anykščiai Regional Park, and Varniai Regional Park about work and fuel costs for the monitoring of AICB in 2007-2009. Due to variation of the monitoring scopes, the average data of 2007-2009 was used.

¹⁵ According to Statistics Lithuania, the average monthly gross salary in the public sector during the first quarter of 2009 was LTL 2 318.8.

Following the data of the State Service for Protected Areas, 300 more areas for the conservation of habitats are planned to be established in order to meet the requirements of the Habitats Directive. A number of these areas would be established in the Dauguva RBD so the implementation costs of the Habitats Directive may go up.

Bathing Water Directive

28. The Bathing Water Directive requires that the Member States officially designate bathing sites and take all necessary measures to ensure adequate quality of bathing waters. Though the parameters set in the Bathing Water Directive do not include such water quality indicators as N, P or BOD, but does regulate parameters which characterise microbiological bathing water quality and can affect bathers' health.

The key piece of national legislation transposing the Bathing Water Directive is the Lithuanian Hygiene Norm HN 92:2007 "Beaches and bathing water quality" approved by Order No. V-1055 of the Minister of Health of the Republic of Lithuania of 21 December 2007 (Žin., 2007, No.139-5716).

Another document which regulates practical introduction of the measures under the Bathing Water Directive is the Bathing Water Quality Monitoring Programme, which is approved every two years. The key objective of this Programme is to assess the quality of bathing waters, to develop a general management strategy and policy for recreational waters, and to establish new bathing sites.

The most important measures of the implementation of the Bathing Water Directive are as follows:

- 28.1. monitoring of bathing water quality;
- 28.2. provision of information on the quality of bathing waters to the public;
- 28.3. official designation of bathing waters;
- 28.4. improvement of bathing water quality and restoration of poor bathing water quality to good status;
- 28.5. development of an information system on bathing waters.

Monitoring of bathing water quality

29. 149 bathing waters were monitored under the Bathing Water Quality Monitoring Programme for 2006-2008 approved by Resolution No. 773 of the Government of the Republic of Lithuania of 4 August 2006 (Žin., 2006 No. 88-3459), including 15 bathing waters in coastal waters (10%), 26 ones – in rivers (17%), 73 – in lakes (49%), 35 – in ponds, quarries, dams (24%). 114 bathing waters (77%) of 149 ones were monitored regularly, 23 – irregularly (15%), and 12 were not subject to any monitoring at all (8%).

Measures for the implementation of the provisions of the Bathing Water Directive for 2009-2011 are provided for in the Bathing Water Quality Monitoring Programme for 2009-2011 approved by Resolution No. 668 of the Government of the Republic of Lithuania of 25 June 2009 (Žin., 2009, No. 80-3344). The objective of this Programme is to maintain and improve the quality of bathing waters by providing safe conditions for people's health. The targets of the Programme are as follows: improvement of the management of the monitoring of bathing water quality; systematic monitoring and analysis of microbiological and chemical pollution of bathing waters; identification of

short-term pollution or exceptional cases; assessment and classification of the quality of bathing waters and provision of characterisation thereof; provision of information on the quality of bathing waters and on short-term pollution or exceptional cases to the general public and to public authorities. 112 bathing waters were monitored in Lithuania in 2009, and the number of bathing waters subject to monitoring under the Bathing Waters Monitoring Programme for 2009-2011 totals to 151. Six of these sites are located within the Dauguva Basin. More detailed information on bathing water monitoring is provided in the report to the European Commission "Bathing water results 2008 – Lithuania". Source: website of the Institute of Hygiene http://www.hi.lt/content/I5_atask_EK.html.

Provision of information on bathing water quality to the public

30. Information on water quality to the general public in Lithuania is provided in the mass media. Information on the quality of bathing waters is regularly announced in the press and on the website of the Institute of Hygiene (www.hi.lt). Following Order No. V-484/D1-273 of the Minister of Health and the Minister of Environment of the Republic of Lithuania of 26 May 2008 on the approval of the Regulations of the Procedure for the Reporting on Bathing Water Quality to the European Commission (Žin., 2008, No. 62-2362), the responsibility for the implementations of the provisions of the Directive related to the collection and assessment of information on bathing water quality and submission thereof to the European Commission lies with the Institute of Hygiene. Also, the Institute of Hygiene is responsible for the assessment of the quality of bathing waters and provision of this information to the public pursuant to Order No. V-1055 of the Minister of Health of the Republic of Lithuania of 21 December 2007 on the approval of the Lithuanian Hygiene Norm HN 92:2007 "Beaches and bathing water quality" (Žin., 2007, No.139-5716).

Official designation of bathing waters

31. There were 99 officially designated bathing waters in Lithuania in 2008, including 6 ones in the Dauguva RBD.

Improvement of bathing water quality

32. The bathing waters within the Dauguva RBD conform to the established quality requirements so no special measures are required at the moment. The key directive the implementation of which also determines the quality of bathing waters is the Urban Wastewater Treatment Directive hence the measures under the said directive at the same time improve the quality of the existing and potential bathing waters.

Development of an information system on bathing waters

33. The existing information system on bathing waters is rather simple and covers exchange of necessary information between relevant departments, including municipalities. There are plans, however, to connect this system to the database/information system managed by the Environmental Protection Agency.

Implementation costs of the Bathing Water Directive

34. The operating costs of the Bathing Water Directive cover the costs of the recognition of beaches as suitable for use, sampling of bathing water, water analysis and provision of information to the public (the data is presented in Table 13). The average annual operating costs of the implementation of the Bathing Water Directive in the Dauguva

RBD total to LTL 18 200. These costs are planned to be funded from municipal budgets under the Bathing Water Monitoring Programme for 2009-2011. Taking into account the status of the Lithuanian economy, the number of monitored bathing waters in 2009 is likely to remain the same as in 2008. No additional costs are planned for the implementation for the Bathing Water Directive.

Table 13. Average annual costs of the implementation of the Bathing Water Directive in the Dauguva RBD in 2009-2011

Group of costs	Unit	Average unit costs, LTL/year	Unit number in the sub-basin	Annual costs in RBD, LTL/year
Recognition of beaches as suitable for use	bathing water	700	4	2 800
Sampling of bathing water and analysis of water	bathing water	3 500	4	14 000
Provision of information to the public on bathing water quality	bathing water	340	4	1 360
TOTAL		4 540		18 160

Source: Bathing Water Quality Monitoring Programme for 2009-2011

Sewage Sludge Directive

35. The Sewage Sludge Directive specifies the conditions under which sewage sludge may be used in agriculture as well as the amount of heavy metals in the soil which is to be fertilised. The Directive has also established the allowable concentrations of heavy metals in sludge and the maximum amount of heavy metals that may enter the soil during a year. The implementation of the Directive should facilitate limitation of the input of heavy metals contained in sludge into the soil.

The study “Investment Programme for Sludge Management in Lithuania” prepared by SWECO BKG in 2006 analysed several ways of sewage sludge handling and emphasised that the use of sludge in agriculture or for the restoration of affected areas is not the best alternative of the sludge use. The priority scheme opted for in the Programme first of all provides for the use of sludge for energy generation. If needed, sludge could be used in agriculture, for fertilising energy forests or restoring affected areas. The Programme has also envisaged that such sludge could be used in agriculture.

36. The key piece of legislation which has transposed the requirements of the Sewage Sludge Directive is the regulatory document LAND 20-2001 “Requirements for the use of sewage sludge for fertilisation” approved by Order No. 349 of the Minister of Environment of the Republic of Lithuania of 29 June 2001 (Žin., 2001, No. 61-2196; 2005, No. 142-5135) (LAND 20-2005), which has laid down an obligation to develop fertilisation plans and analyse amounts of heavy metals in sewage sludge and in the soil.

Measures for the implementation of the Sewage Sludge Directive

Fertilisation plans

37. The regulatory document LAND 20-2005 has laid down that persons intending to use sewage sludge for agricultural purposes must develop fertilisation plans, which have to be coordinated with a relevant Regional Environmental Protection Department (REPD). Fertilisation plans shall be elaborated for six years. These plans are supposed to provide information on soil analysis results and the maximum concentrations of heavy metals which may enter the soil through sewage sludge. However, no data on the annual

number of fertilisation plans prepared and agreed with REPD is available, therefore stricter accounting and control of the plan development is required.

Analysis of sludge composition, data storage, banning and withdrawal of dangerous substances from circulation

38. Sludge suppliers must conduct accounting of the quality of sewage sludge, collect information on the ways of sludge processing, amount and uses. Apart from that, information on concentrations of the following metals in sludge must be collected: lead (Pb), cadmium (Cd), chromium (Cr), copper (Cu), nickel (nickel), zinc (Zn), mercury (Hg). LAND 20-2005 has set forth that sewage sludge may be classified into three categories depending on concentrations of heavy metals in sludge.

Implementation costs of the Sewage Sludge Directive

39. Measures for implementing the requirements of the Sewage Sludge Directive for 2007-2013 are provided for in the List of National Projects No. 01 under Measure No. VP3-3.1-AM-01-V “Renovation and development of water supply and wastewater treatment systems, activity Development of a sludge management infrastructure”. Plans to develop a sludge management infrastructure in Lithuania include construction of sludge processing facilities in 23 towns. Table 14 provides planned investment projects on the development of sludge management infrastructures in towns located in the Dauguva Basin. The total investment costs amount to LTL 9.8 million. It is assumed that the annual operating costs account for 3% of the investment costs.

Table 14. Projects on development of sludge management infrastructures in 2007-2013 in the Dauguva Basin

Municipality	Expected project outputs	Preliminary investment costs, LTL million	Operating costs, LTL million per year
Visaginas town	1 sewage sludge air drying equipment	9.8	
TOTAL		9.8	0.3

Source: List of National Projects No. 01 under Measure No. VP3-3.1-AM-01-V “Renovation and development of water supply and wastewater treatment systems”, activity “Development of a sludge management infrastructure”

Plant Protection Products Directive

40. The requirements of the Plant Protection Products Directive are related to the authorisation, placing on the market, use and control of plant protection products. In Lithuania, only approved products of plant protection may be marketed and used, and companies intending to market such products must obtain special permits. All products must be used under the same conditions which are specified on the label and must be stored observing the requirements of the Code of Good Practice for the Use of Plant Protection Products.

To date, there are 215 plant protection products and 140 active substances that may be contained in plant protection products registered in Lithuania.

The aggregate amount of plant protection products consumed within the Dauguva RBD is not available but it is likely that the largest amounts are consumed in areas of intensive agriculture. It is assumed that herbicides and growth regulators are mostly used in large farms of intensive agriculture hence the annual consumption of these products is growing up.

It is difficult to forecast an impact of plant protection products on the quality of groundwater and surface water. This impact would go down if plant protection products were used adequately and in accordance with the recommendations of the Code of Good Practice for the Use of Plant Protection Products. The use of plant protection products is controlled by the State Plant Protection Service.

41. The key legislation transposing the Plant Protection Products Directive:

41.1. Law of the Republic of Lithuania on Plant Protection (Žin., 1995, No. 90-2013; 2010, No. 13-620);

41.2. List of Authorised Active Substances in Plant Protection Products approved by Order 3D-187 of the Minister of Agriculture of the Republic of Lithuania of 19 April 2004 (Žin., 1995, No. 60-2145).

Measures for the implementation of the Plant Protection Products Directive

Authorisation of plant protection products

42. Plant protection products must be authorised before placing them on the market. Active substances contained in plant protection products are authorised by orders of the Minister of Agriculture. To date, over 150 active substances which may be contained in plant protection products have been authorised in Lithuania.

Table 15. Number of plant protection products authorised in Lithuania

Product	Products authorised for professional usage	Products authorised for individual usage
Insecticides	15	7
Fungicides	52	10
Mordants	18	
Herbicides	85	17
Growth regulators	7	
Defoliants	1	
Other	3	
Total	181	34

Labelling of plant protection products

43. The Law on Plant Protection specifies detailed requirements for the labelling of plant protection, including provision of the name and amount of an active substance, information on danger for health and the environment, and recommendations regarding the product use.

Application of Good Plant Protection Practice

44. The Rules for Good Plant Protection Practice were approved by Order No. 3D-227 of the Minister of Agriculture of the Republic of Lithuania of 26 April 2004 (Žin., 2004, No. 66-2349).

Controls of the use of plant protection products

45. The State Plant Service controls the use of plant protection products.

Other measures include studies and analysis of an impact of plant protection measures, withdrawal and prohibition of harmful substances.

Status of the implementation of the Plant Protection Products Directive

46. The requirements of the Plant Protection Products Directive are related to the authorisation, placing on the market, use and control of plant protection products. Lithuania was not granted a transitional period for transposing this Directive so formally it has already been implemented.

The use of plant protection products (PPP) in Lithuania has been increasing and so have the areas sprayed with plant protection products (Tables 16 and 17).

Table 16. Amounts of plant protection products used in Lithuania (in tonnes, by the active substance)

	2000	2001	2002	2003	2004	2005	2006
Insecticides	6.8	6.3	6.2	7.1	5.7	6.8	7.0
Fungicides	109.5	102.3	97.4	101.7	127.8	152.9	159.2
Mordants	52.4	33.5	35.3	28.4	27.3	22.3	42.2
Herbicides	476.9	530.8	576.8	579.1	725.2	732.4	858.9
Defoliant	5.1	1.0	0.4	0.6	0.6	0.7	0.6
Growth regulators	35.7	51.4	60.2	99.2	110.9	123.3	125.7
Others	1.4	22.9	15.9	31.1	26.1	10.1	3.4
Total:	687.8	748.2	792.2	847.2	1 023.6	1 048.5	1 197.0

Source: website of the State Plant Service

Table 17. Area of sprayed utilised agricultural land in Lithuania, thousand ha

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Herbicides	786.5	800.5	859.1	938	1 036.1	1 251.2	1 278.3	1 473.0	1 454
Fungicides	306.3	336.9	357.4	292.5	372.3	425.7	364.2	477.4	507.4
Insecticides	199.7	193.56	393.6	327.9	397.9	397.1	402.6	464.6	412.5
Growth regulators	46.8	67.5	98.6	122.7	157.1	161.9	141.5	152.6	197.2
Defoliant	1.3	3.3	2.7	0.4	1.1	2.2	33.0	1.5	3.5
Total:	1 340.6	1 401.8	1 711.4	1 681.8	1 964.5	2 238.3	2 219.6	2 567.6	2 574.6

Source: website of the State Plant Service

Plant protection inspectors of the State Plant Service carry out assessments of conformity of the packaging, labelling, storage, use and placement of products on the market with the requirements laid down in relevant legislation. Around 50% of all breaches in 2008 were violations of the requirements for product storage, 20% – for product use, 15% – for placement on the market, 15% – for packaging and labelling. Although no direct breaches in relation to failure to observe water protection requirements were registered, inadequate storage and use of products can be related to pollution of water resources. The said type of violations constitutes the largest share of all breaches.

Table 18. Inspections of PPP carried out and breaches identified throughout Lithuania in 2007-2008

	2007		2008	
	inspections	breaches	inspections	breaches
Use	2 027	455	2 197	420
Placing on the market	1 411	166	1 387	164
Packaging and labelling	479	137	661	121
Storage	721	151	701	126
Total:	4 638	909	4 946	832

Source: website of the State Plant Service

The data in the tables above demonstrates that the statistics on plant protection products is available only for the entire country. There is no data on the use of plant protection products in individual administrative units. Therefore, distribution of the figures for individual RBD was carried out on certain assumptions.

Assuming that plant protection products in individual river basins or sub-basins are used with more or less the same intensity, the plant protection figures can be distributed in proportion to the areas of agriculture and forests in the basins and sub-basins. Such areas in the Dauguva RBD make up around 2% of the total areas in Lithuania. Consequently, following the above-said assumption, the amount of active substances of plant protection products used in this RBD totals to 2% or 24 tonnes.

Implementation costs of the Plant Protection Products Directive

47. Implementation costs of the Plant Protection Products Directive in Lithuania have never been estimated. The main legal, administrative and investment instruments required to ensure the introduction of the Code of Good Practice for the Use of Plant Protection Products in Lithuania, thus reducing pollution of water, were established during interviews with employees of the State Plant Service and regional plant protection inspectors.

The major costs related to potential investments for such measures are required for the acquisition of sprayers and construction of decontamination sites. There are very few such sites in Lithuania. Besides, in the opinion of many inspectors, such sites are not necessary in Lithuania where plant protection products remaining after the main spray are once again sprayed on the fields. Construction of a decontamination site, consisting of a ramp, walls, straw, mixture of peat and humus, etc., can cost from LTL 1 000 to LTL 10 000. There are no such sites in the Dauguva RBD and no construction of the sites here is planned at least until 2015. Consequently, the implementation costs of the Plant Protection Products Directive in the Dauguva RBD are related only to the acquisition and maintenance of sprayers.

All sprayers in Lithuania must have a technical inspection certificate, which is the main disciplinary measure, also having a significant environmental benefit. Inspection costs around LTL 200 and is valid for three years. The price of a sprayer varies a lot depending on its type. The cheapest and most common ones cost about LTL 4 000-5 000, the price of a sprayer needed for a large farm can be as high as LTL 200 000. The majority of sprayers in the Dauguva RBD are of the said cheaper type. According to the information collected from plant protection products inspectors, their number in the Dauguva RBD totals to approximately 100. About ten sprayers are acquired in each administrative district of Lithuania every year. It should be emphasised that this is a very rough estimate because there is no formal accounting of sprayers.

The estimated costs of the acquisition and maintenance of sprayers for farmers in the Dauguva RBD and, consequently, of the implementation of the Plant Protection Products Directive are provided in Table 19 below.

Table 19. Implementation costs of the Plant Protection Products Directive in the Dauguva RBD in 2010-2015, LTL

Measure	Amount			Service life	Costs			
	Annual amount	Number of years	Total		Unit costs	Investments	Operating costs	Annual costs
New sprayer	20	5	100	10	5 000	500 000	5 000	73 000
Technical inspection of new sprayers	20	1	20	3	200	4 000	0	1 000
Technical inspection of the existing sprayers	100	2	200	3	200	40 000	0	15 000
Total						544 000	5 000	89 000

Notes:

* Technical inspection of new sprayers will be required once during the period in question.

** Technical inspection of the existing sprayers will be required twice during the period in question.

Source: experts' estimations

Environmental Impact Assessment Directive

48. The main objective of the Environmental Impact Assessment Directive is to assess public or private projects which can have a significant impact on the environment. The Directive requires that all Member States take measures to ensure that relevant procedures of environmental impact assessment (EIA) are carried out before authorising projects which can have a potential impact on the environment. EIA, inter alia, involves assessment of direct and indirect impacts on the aquatic environment.

Having evaluated an EIA report, a responsible institution takes a decision whether a proposed economic activity may be conducted in a selected area. If the decision is negative, such activity may not be started on that territory. EIA is a preventive measure designed to reduce impacts of economic activities on the environmental components, including surface water bodies and groundwater. An impact on the environment is reduced by selecting a most suitable territory, technologies, and construction solutions as well as conditions of the operation of an object.

49. The provisions of the Environmental Impact Assessment Directive have been transposed into several national legal acts, the key of which is the Law of the Republic of Lithuania on Environmental Impact Assessment of the Proposed Economic Activity (Žin., 1996, No. 82-1965; 2005, No. 84-3105). The Law contains two lists of economic activities. The first list specifies economic activities which are subject to EIA before their startup, and the second one lists economic activities which are subject to screening procedures. EIA have been carried out in Lithuania since 1996 when the said Law was passed.

Implementation costs of the Environmental Impact Assessment Directive

50. No estimation of costs of the implementation of this Directive in Lithuania has been carried out yet. A study conducted for the European Commission¹⁶, which analysed 18 cases in a number of EU Member States, indicates that in most cases EIA costs make up less than 0.5% of project investment costs. The smaller the project, the relatively larger are EIA costs.

¹⁶ <http://ec.europa.eu/environment/eia/eia-studies-and-reports/eia-costs-benefit-en.htm>

As a minimum, an EIA process encompasses development of an EIA programme, development of an EIA study, consultations, public participation, review and decision-making. The whole process can be as long as two years, though usually the procedure is completed within less than a year.

According to the Environmental Protection Department of Utena Region which covers part of the Dauguva Basin, as from 2006 decisions were taken in respect of only six EIA.

For the purpose of estimating the costs of EIA studies until 2015, it is assumed that one EIA will be carried out per year until 2015 (based on the average figure of the last four years).

The costs of an EIA study depend on a number of factors, such as the size of the investment project, technologies, the natural environment, etc. However, following the costs of the existing EIA, the costs of one EIA are estimated at around LTL 70 thousand. Consequently, the implementation of the Environmental Impact Directive in the Dauguva RBD would cost approximately LTL 70 thousand every year, under the baseline scenario.

Integrated Pollution Prevention and Control Directive

51. The Integrated Pollution Prevention and Control (IPPC) Directive aims at reducing pollution from industrial sources. An IPPC permit is the main pollution reduction measure envisaged in the Directive. IPPC permits must provide for that all activities of a company will be arranged so as to care for the environment, specifying requirements for pollution of air, water and soil, generation of waste, etc. The relevant rules transposing the Directive (see below) contain a requirement to introduce measures designed for rational use of water and reduction of pollution. These measures, which must be specified in IPPC permits, enable ensuring that an impact of economic activities is maximally reduced.

52. The key piece of legislation transposing the requirements of the Directive is the Rules for the Issuing, Renewal and Revocation of Integrated Pollution Prevention and Control Permits (hereinafter – the Rules) approved by Order No. 80 of the Minister of Environment of 27 February 2002 (Žin., 2002, No. 85-3684; 2005, No. 103-3829). The Rules require that all activities listed in Annexes I and II thereto have IPPC permits as from 31 December 2007.

Other legislation which regulates pollution prevention:

52.1. Procedure for the Drafting of Reports on the Implementation of the Council Directive 96/61/EB Concerning Integrated Pollution Prevention and Control and Submission of the Reports to the European Commission approved by Order No. D1-630 of the Minister of Environment of the Republic of Lithuania of 10 December 2004 (Žin., 2004, No. 181-6714);

52.2. Procedure for the Assessment of the Implementation of the Best Available Techniques (BAT) in Industrial Enterprises approved by Order No. D1-526 of the Minister of Environment of the Republic of Lithuania of 16 October 2007 (Žin., 2007, No. 108-4446).

IPPC permits

53. All industrial enterprises engaged in the activities listed in Annexes I and II to the Rules are subject to IPPC permits. The permits first of all require implementation of all available pollution prevention measures and introduction of the BAT. Apart from these general requirements, the permits specify pollution limit values as well as require developing programmes on the reduction of water pollution with priority hazardous substances.

There are four industrial enterprises which have been issued IPPC permits within the Dauguva RBD: a fuel combustion installation, a landfill, an installation for intensive rearing of poultry, and an installation for intensive rearing of pigs. It is hardly likely that new installations subject to IPPC permitting will appear in the Dauguva RBD in the nearest future. New IPPC permits may be required only due to changes in technologies.

Implementation costs of the IPPC Directive

54. The costs of the preparation of IPPC permits vary depending on the size of relevant installations and the technology used. Since there are no complex technologies used by the enterprises in the Dauguva RBD, the average costs of IPPC permits used for the estimations were around LTL 10 thousand for one IPPC permit. It is also assumed that about one fourth of the enterprises operating within the Dauguva RBD may update their technologies by 2015 so that new IPPC permits will be required. Consequently, one-time costs of the implementation of the IPPC Directive in the Dauguva RBD until 2015 would total to approximately LTL 10 thousand.

Major Accidents Directive

55. The Major Accidents Directive focuses on dangerous substances used in installations. It also covers industrial activities where chemical substances are used, and storage of dangerous substances. The Directive provides for certain controls of installations depending on the quantity of dangerous substances used therein.

When the quantity of dangerous substances held by a company is lower than the lower threshold levels given in the Directive, compliance of the company with the general provisions on health, safety and environmental protection shall be checked. When the quantity of dangerous substances is above the upper threshold contained in the Major Accidents Directive, the company shall be subject to all requirements provided for therein

56. The key legislation transposing the Major Accidents Directive:

56.1. Regulations of the Prevention, Response to and Investigation of Industrial Accidents approved by Resolution No. 966 of the Government of the Republic of Lithuania of 17 August 2004 (Žin., 2004, No. 130-4649; 2008, No. 109-4159);

56.2. Programme on the Inspection of Dangerous Installations of the Republic of Lithuania approved by Order No. 1-528 of the Director of the State Fire and Rescue Department of 29 December 2006 (Žin., 2007, No. 3-143);

56.3. List of Potentially Dangerous Installations approved by Order No. 539 of the Minister of Environment of the Republic of Lithuania of 11 October 2002 (Žin., 2002, No. 111-4929; 2005, No. 58-2025).

Measures for the implementation of the Major Accidents Directive are briefly discussed below.

Development of emergency plans and safety reports, measures for accident prevention

57. The Regulations of the Prevention, Response to and Investigation of Industrial Accidents require development of accident prevention plans and safety reports in industries working with dangerous substances. The List of Potentially Dangerous Installations in Lithuania currently contains 21 installations which are subject to the requirements of the Major Accidents Directive.

Selection of sites for potentially dangerous installations

58. The Regulations of the Prevention, Response to and Investigation of Industrial Accidents require that a site for a new installation is selected ensuring a safe distance therefrom to residential areas, roads with intensive traffic, recreational and public areas.

Controls over the implementation of the Major Accidents Directive

59. Programmes on the inspection of dangerous installations are approved each year by orders of the Director of the State Fire and Rescue Department, laying down a schedule of the inspection of dangerous installations. The Programme on the Inspection of Dangerous Installations of the Republic of Lithuania approved by Order No. 1-528 of the Director of the State Fire and Rescue Department of 29 December 2006 (Žin., 2007, No. 3-143) contains a control schedule for 2007. The new Programme also introduced systematic control which is supposed to ensure safe operation of dangerous installations. Control of these installations was started back in 2002. The Report of 2003-2005 to the European Commission on the implementation of the Major Accidents Directive in the Member States indicated that there were 14 upper tier establishments in Lithuania in 2002, and in 2005 this number increased to 21. All these establishments were inspected in 2005. The number of establishments inspected in 2006 totalled to 20.

Implementation costs of the Major Accidents Directive

60. The costs required for the implementation of this Directive have not been estimated.

No investment costs are required, the main costs are related to the development of emergency plans. Such plans are required for companies which work with dangerous substances and conform to certain size criteria. Besides, the development of plans is not a continuous process, plans are developed at the start-up of the company or change of technologies.

As indicated in the plan developed for achieving good ecological status in water bodies within the Dauguva RBD, there are four enterprises in this RBD which have been issued IPPC permits: a fuel combustion installation, a landfill, an installation for intensive rearing of poultry, and an installation for intensive rearing of pigs.

It is hardly likely that new installations subject to IPPC permitting will appear in the Dauguva RBD in the nearest future. Emergency plans may be required only due to changes in technologies. All IPPC installations should be surveyed in order to obtain detailed forecasts. However, having in mind relatively low costs of the development of

emergency plans, such survey is not deemed to be necessary at this stage. Preliminary costs can be estimated using expert judgment.

The costs of emergency plans may significantly vary depending on the installation size and the technologies used. Following the experience of plan developers, the costs of one plan under the basic scenario are estimated at LTL 50 thousand. It is also assumed that about one fourth of the IPPC installations operating in the Dauguva RBD may update their technologies by 2015 so that new emergency plans will be required. Consequently, one-time costs of the implementation of the Major Accidents Directive in the Dauguva RBD until 2015 would total to approximately LTL 50 thousand.

Aggregate costs of the basic measures

61. Aggregate summary costs of the implementation of the key water directives during the period until 2015 are given in the table below.

Table 20. Implementation costs of the key water directives in the Dauguva RBD during the period until 2015

Directive	Costs		
	Investment costs until 2015, LTL	Operating costs, LTL/year	Annual costs, LTL/year
Bathing Water Directive *	0	18 160	18 160
Birds Directive *	1 866 000	347 540	601 540
Drinking Water Directive	together with the costs of the Nitrates Directive		
Major Accidents Directive *	50 000		7 000
Environmental Impact Assessment Directive		70 000	70 000
Sewage Sludge Directive **	9 800 000	294 000	1 148 000
Urban Wastewater Treatment Directive	0	0	0
Plant Protection Products Directive *	544 000	5 000	89 000
Nitrates Directive **	5 325 000	53 250	517 250
Habitats Directive *	126 200	305 500	322 500
IPPC Directive *	10 000	0	1 000
Total	17 720 000	1 090 000	2 770 000

Source: experts' estimations

Notes:

* Estimations of annual (annualised) costs were based on a 10 years service life;

** Estimations of annual (annualised) costs were based on a 20 years service life.

Operating costs were estimated applying the following investment percentage: Sewage Sludge Directive – 3%, Nitrates Directive – 1%.

Measures for the implementation of the requirements of other articles of the WFD

Practical measures designed to introduce the principle of recovery of water costs (Article 9 of the WFD)

62. Article 9 of the WFD and the Law of the Republic of Lithuania on Water provide for recovery of the costs of water services pointing out that the state shall take into account the principle of recovery of the water services costs, including environmental and resource costs, having regard to the economic analysis and in accordance, in particular, with the polluter pays principle.

63. The national legislation transposing the requirements of Article 9:

63.1. The cost recovery principle has been enacted in the Law of the Republic of Lithuania on Water. Article 31 thereof says: “The costs incurred while aiming to achieve water protection objectives and providing water services shall be covered by water users.”

63.2. The pricing of water services on the basis of the cost recovery principle is described in the Methodology for the Pricing of Drinking Water Supply and Wastewater Management Services approved by Order No. 03-92 of the National Control Commission for Prices and Energy of 21 December 2006 (Žin., 2006, No. 143-5455).

The estimation of the cost recovery level in the public water supply and wastewater management sector, carried out on the basis of direct comparison of income and expenses, demonstrated that the water supply companies operating within the Dauguva RBD in 2009 averagely recovered 78% of their costs.

Table 21. Financial recovery of water supply and wastewater management costs of two major water supply companies in the Dauguva RBD in 2008 and 2009, %

	1	2	Dauguva RBD
Total costs, 2008	62	81	77
Total costs, 2009	84	77	78

Source: experts' estimations on the basis of prices and cost prices of water supply companies

The main reason of the failure to fully implement the cost recovery principle in many water supply companies is delay by municipalities to approve tariffs covering the costs.

Environmental costs are included in the cost recovery mechanisms though charges for state natural resources and for pollution of the environment.

64. The two main reasons of the failure to fully implement the cost recovery principle in the sector of industry are subsidies and failure to reflect the actual industrial pollution of water resources in the tariffs of charges for state natural resources and for pollution of the environment.

Industrial enterprises usually finance investments to the water sector with their own funds and bank credits. The amount of subsidies to the water sector in Lithuania is rather small. There are two main potential sources of funding:

64.1. EU support granted through mechanisms under the control of the Ministry of Economy, and

64.2. subsidies granted by the Lithuanian Environmental Investments Fund (LEIF).

Until 2007, EU structural support was granted to business (industry included) under the Single Programming Document of Lithuania for 2004–2006 (SPD). More than LTL 1.13 billion of the support administered by the Ministry of Economy was allocated for the implementation of 333 projects during that period. None of these, however, was related to the water sector. Accordingly, the only source of importance for the assessment of cost recovery is subsidies granted by the LEIF.

Only about LTL 1 million of the annual amount of LTL 13 million received from the LEIF was granted to industrial and construction companies for the water sector in 2008

and about LTL 1.7 million – in 2007. As a result of a poor financial situation, only one application of an industrial enterprise was approved for the funding of the water sector in 2009.

Having in mind that industry creates more than LTL 20 billion of the value added, internalisation of LTL 1-2 million (which is the amount of subsidies granted during a more favourable period 2007-2008), i.e. inclusion of such amount into the polluter's costs, does not have any effect on the cost recovery level in the sector of industry.

Today, no reliable data is available on which companies are responsible for emitting certain hazardous substances to rivers, and to what extent. For this reason, the costs of supplementary measures (if any) for the sector of industry cannot be compared to the "external" pollution costs at the moment¹⁷.

Following the afore-said assumption that charges for state natural resources and for pollution of the environment reflect the external environmental costs, it can be maintained that the cost recovery level in the sector of industry is 100%.

65. The cost recovery estimation method used for the public sector cannot be applied for agriculture. The sector of agriculture is not an important direct user of water in Lithuania, the Dauguva RBD included. An important component for estimations is diffuse agricultural pollution which is not included in water or any other costs.

It is very difficult to assess costs of the environment, resources and other expenditure as a result of agricultural pollution pressures (there are no studies and data available on how much the "value" of water bodies is reduced due to agricultural pollution) hence another estimating method could be applied. In such case it should be assumed that "external" costs are approximately equal to the agricultural pollution removal costs. This amount in the Dauguva RBD during the first stage of the Management Plan will total to about LTL 534 thousand every year until 2015. LTL 8 thousand will have to be borne by the state for measures of control. Farmers will have to fund the major part of the costs – LTL 526 thousand. Such agricultural pollution reduction measures would cut down agricultural pollution in areas where it exerts a significant impact. Since there are no water bodies which require supplementary measures to be financed with state funds within this RBD, it is believed that the polluter pays principle will be implemented and the cost recovery level will reach 100% by 2015, on condition that the established measures will be introduced.

However, this is only an a priori assessment meanwhile the actual cost recovery level in agriculture will be identified only in 2015 upon evaluation of farmers' contribution to the implementation of the measures.

¹⁷ Deterioration of the environmental status is treated as "external costs" in our economic system. External costs appear when action or failure to act by one individual or a group of individuals has a damaging effect on other individuals or groups. Pollution means negative "external costs". For example, when a factory pollutes a river with untreated wastewater, the downstream water users incur expenses related to health or water treatment. The English equivalent "externality" is sometimes used in other economic areas. It means an external impact, i.e. a benefit or loss caused by an action or process and incurred by a party not related to that action or process.

Measures to meet the requirements of Article 7 of the WFD

66. Article 7 of the WFD requires:

66.1. identifying all bodies of water used for the abstraction of water intended for human consumption which provide more than 10 m³ a day as an average or serving more than fifty persons, and;

66.2. monitor those bodies of water which provide more than 100 m³ a day as an average.

67. National legislation transposing the requirements of Article 7:

67.1. Regulations of the Register of the Earth Entrails approved by Resolution No. 584 of the Government of the Republic of Lithuania of 26 April 2002 (Žin., 2002, No. 44-1676; 2006, No. 54-1961). The purpose of the Register is to register underground resources, bore wells and exploration of the entrails of the earth, to collect, accumulate, systematise, store, process, use, and provide data required for the management of the entrails of the Earth and protection of the environment;

67.2. Procedure for Groundwater Monitoring by Economic Entities approved by Order No. 1-190 of the Director of the State Geological Survey under the Ministry of Environment of 24 December 2009 (Žin., 2009, No. 157-7130), which has laid down the procedure for the monitoring of groundwater by economic entities which exert an impact of the environment in order to ensure reduction of pollution or any other negative impact caused thereby.

Identification of water bodies providing more than 10 m³ of water per day

68. Wellfields abstracting more than 10 m³ of groundwater per day are registered with the Register of the Earth Entrails

Identification of water bodies intended for future use

69. The Lithuanian Geological Survey under the Minister of Environment of the Republic of Lithuania has commissioned a project “Assessment of groundwater resources in Lithuania”. The targets of the project are as follows:

69.1. to determine the volume of the available groundwater resources, to analyse their quality and potential use in 2007–2025, taking into account the requirements set for the quality of drinking water;

69.2. to develop measures for protection, improvement and quality control of water resources in wellfields;

69.3. to develop a system of information on relations between institutions which analyse and supply groundwater for human consumption and control the quality thereof, and those which design water supply objects and manage resources of water bodies.

As at the end of 2008, the available resources of three groundwater bodies as well as the current and prospective use thereof were assessed. Groundwater resources in the entire territory of Lithuania are planned to be assessed during 2009-2010

Monitoring of water bodies which provide more than 100 m³ of water a day

70. Following the Procedure for Groundwater Monitoring by Economic Entities, all economic entities which abstract more than 100 m³ of groundwater a day are subject to groundwater monitoring requirements. Every economic entity shall develop a monitoring programme for a period of 3-5 years providing information on the economic entity, type of activity, hydro-geological conditions, etc. The programme shall also indicate the monitoring methodology, frequency, and analysis methods. Economic entities are fulfilling the requirements laid down in relevant legislation and providing information to the Lithuanian Geological Survey in due manner.

Establishment and authorisation of sanitary protection zones of wellfields

71. This measure has been described in the analysis of the implementation of the Drinking Water Directive (Paragraph 13 of the Programme of Measures).

Controls over point source discharges and other activities with an impact on the status of water

72. The key pieces of legislation which regulate control over point pollution sources are the Rules for the Issuing, Renewal and Revocation of Integrated Pollution Prevention and Control Permits, Wastewater Management Regulation and the Surface Runoff Management Regulation approved by Order No. D1-193 of the Minister of Environment of the Republic of Lithuania of 2 April 2007 (Žin., 2007, No. 42-1594).

Measures to prevent or control potential input of pollutants from diffuse sources

73. Legislation:

73.1. Law of the Republic of Lithuania on Water;

73.2. Law of the Republic of Lithuania on Drinking Water Supply and Wastewater Management;

73.3. Requirements for the Protection of Waters against Pollution with Nitrogen Compounds from Agricultural Sources approved by Order No. 452/607 of the Minister of Agriculture of the Republic of Lithuania and the Minister of Environment of the Republic of Lithuania of 19 December 2001 (Žin., 2002, No. 1-14);

73.4. Environmental Requirements for Manure Management approved by Order No. D1-367/3D-342 of the Minister of Environment of the Republic of Lithuania and the Minister of Agriculture of the Republic of Lithuania of 14 July 2005 (Žin., 2005, No. 92-3434; 2010, No. 85-4492);

73.5. Programme on the Reduction of Water Pollution from Agricultural Sources;

73.6. Lithuanian Hygiene Norm HN 44:2006 “Delineation and maintenance of sanitary protection zones of wellfields”;

73.7. Rules for the Establishment of Protection Zones for Surface Water Bodies and Protection Belts for Shores approved by Order No. 540 of the Minister of Environment of the Republic of Lithuania of 7 November 2001 (Žin., 2001, No. 95-3372).

The legislation above has provided for general requirements for the protection of surface water bodies and groundwater bodies against pollution from diffuse sources. The requirements are revised on a regular basis and amended if necessary.

Controls over the abstraction of water and measures for promoting an efficient and sustainable water use in order to avoid compromising the achievement of the objectives specified in Article 4

74. Legislation:

74.1. Rules for the Issuing, Renewal and Revocation of Integrated Pollution Prevention and Control Permits;

74.2. Building Technical Regulation STR 2.02.04:2004 “Water abstraction, water preparation. Basic provisions” approved by Order No. No. D1-156 of the Minister of Environment of the Republic of Lithuania of 31 March 2004 (Žin., 2004, No. 104-3848);

74.3. Regulations of the Register of the Earth Entrails. The Regulations were drafted with a view to register underground resources and to collect, accumulate and analyse information on the resources. Groundwater resources are attributed to underground resources hence they are registered in accordance with the provisions of the Register;

74.4. Form 1-PV for quarterly reports on groundwater abstraction and explanation of its compilation approved by Order No. 1-10 of the Director of the State Geological Survey under the Ministry of Environment of the Republic of Lithuania of 19 February 2003 (Žin, 2003, No. 19-849);

74.5. Procedure for the Use of Surface Water Bodies for Water Abstraction Purposes approved by Order No. D1-302 of the Minister of Environment of the Republic of Lithuania of 2 June 2008 (Žin., 2008, No. 64-2439).

IPPC permits

75. IPPC permitting requirements are applicable to companies which abstract, consume or supply groundwater and surface water (including for hydropower purposes). The permits shall specify the water source, water abstraction capacity of the facilities, m³/s, the volume of the water abstracted, presence of water accounting equipment, etc. The permits shall also provide for measures for the rational use and protection of water.

Controls over the abstraction and sustainable use of surface water

76. Water abstraction sites must be designed taking into account the relevant category, hydrological characteristics of the water body, the maximum and the minimum water levels according to estimated probabilities, the requirements laid down by institutions engaged in the protection and use of water, the Centre of Hygiene, as well as the requirements set for the protection of fish resources and waterways. Water abstraction sites shall not be established within ship movement zones, zones of sedimentation of outwash materials, fish wintering and spawning places, potential shore erosion sites, places of accumulation of plants and floating materials, places of formation of ice and trash-ice, and beaches. Water abstraction sites must be selected upstream of a wastewater discharger, settlement, or site of intensive economic activities.

Entities engaged in water abstraction shall declare the abstracted amount. The Environmental Protection Agency accumulates the information received in its data bases.

With a view to ensure good status of waters within the Dauguva RBD, the amount of surface water abstracted may not exceed the critical values: 1) the aggregate volume of water abstracted and not returned to a catchment may not be higher than 5% of the

average annual river discharge in the river cross-section downstream of the water abstraction site; 2) depending on water abstraction periods, the aggregate volume of water abstracted may not account for more than 10% of the annual average river discharge of the 30 driest days during a summer or winter season in the water abstraction site.

Controls over groundwater abstraction and sustainable use

77. Control of groundwater use falls within the responsibility of the Lithuanian Geological Survey. All economic entities which abstract more than 10 m³ of groundwater per day for the purposes of drinking water supply or for industrial needs must fill in forms of quarterly water abstraction reports pursuant to the Procedure for the Submission of Reports on Groundwater Abstraction. The Lithuanian Geological Survey registers the information on water consumption received in its data bases.

Controls over the impoundment of water

78. Controls over the impoundment of water can be preventive, i.e. restricting the use of water in ponds (e.g. requiring to provide environmental flow, abstain from violating the specified fluctuation of water levels in a pond) and/or prohibiting any kind of dams (ponds), and those which require investments, such as building environmental facilities in impounded places (e.g. fish passes, fish diversion screens, automatic meters of water levels) and removal of old dams for improving conditions for fish migration.

The controls over the impoundment of water are provided for in the below-listed Lithuanian legislation.

78.1. Law of the Republic of Lithuania on Water

No separate permit for a water use is needed for the construction and use of waterworks. No permit is required when a water use does not have a significant impact on the physical, chemical and biological characteristics of a water body. Limits for a water use and/or impact above which a permit is required are established by an institution which is empowered by the law to regulate the issuance of permits. A procedure for the use and maintenance of ponds is laid down by the Minister of Environment who issues respective legal acts. Construction and use of waterworks is subject to a number of measures regulating the regime of water levels, environmental flow, water accounting, management of erosion processes, and fish protection.

78.2. Law of the Republic of Lithuania on Environmental Impact Assessment of the Proposed Economic Activity

This Law regulates the process of environmental impact assessment of the proposed economic activity and relationships between the participants in this process.

Waterworks – dams and ponds – are contained in two lists of economic activities:

The following activities are subject to an environmental impact assessment:

78.2.1. construction of dams and other installations designed for the holding back or permanent storage of water (where the amount of water exceeds 5 million m³ or the area of water surface exceeds 250 hectares);

78.2.2. transfer of the flow between river basins (where the amount of water transferred is equivalent to or exceeds 100 million m³/year) or transfer of water resources between river basins (where the multi-annual average flow of the basin of abstraction is equivalent to or exceeds 2 000 million m³/year and where the amount of water transferred is equivalent to or exceeds 5% of this flow);

Economic activities subject to screening for an environmental impact assessment:

78.2.3. construction of dams and other installations designed for the holding back or permanent storage of water (the amount of water less than 5 million m³ but exceeding 200 000 m³, or the area of the water surface less than 250 hectares but exceeding 10 hectares);

78.2.4. construction of hydropower plants (hydroelectric power plants, windmills, sawmills or other power plants using the accumulated hydropower) (with an output of more than 0.1 megawatts);

78.3. Law of the Republic of Lithuania on Protected Areas

It is prohibited to dam natural rivers and to set up larger water bodies in reserves which are areas of conservational protection priority. It is allowed to re-erect former dams, to set up ponds and other waterworks structures only in cases when this is required for the restoration and management of the objects of cultural heritage (immovable heritage properties) located in a reserve (unconditionally, in strict reserves), and when implementing natural disaster prevention measures in cities, towns and villages.

78.4. Standard Rules for the Use and Maintenance of Ponds (LAND 2-95) (hereinafter – the Standard Rules) approved by Order No. 33 of the Minister of Environment of the Republic of Lithuania of 7 March 1995 (Žin., 1995, No. 70-1790; 2004, No. 96-3563; 2006, No. 101-3915)

The Standard Rules is the main piece of legislation regulating the use and maintenance of ponds, impounded lakes and respective waterworks. It is intended for the owners, operators and users of these ponds. A separate section discusses ponds designated for hydropower. The last amendment of the Standard Rules has set a deadline for the introduction of automatic devices for the measurement and registration of the water level, and requires performing control measurements of discharges and water levels.

78.5. Resolution No. 1144 of the Government of the Republic of Lithuania of 8 September 2004 on the approval of the List of Ecologically or Culturally Valuable Rivers or River Stretches (Žin., 2004, No. 137-4995)

This is a piece of secondary legislation pursuant to paragraph 3 of Article 14 of the Law of the Republic of Lithuania on Water, which unconditionally prohibits construction of dams for any purposes in 169 rivers and their stretches (recently, this List has been slightly reduced). The key legal bases are as follows: fish species listed in the Red Book of Lithuania; species protected under the Directive on the conservation of natural habitats and of wild fauna and flora; species protected under the Bern Convention on the Conservation of European Wildlife and Natural Habitats; rivers where salmons in Lithuania are protected under the Programme of Restoration and Conservation of Salmons of HELCOM, International Baltic Sea Fishery Commission and Lithuania. This List also includes rivers where no reserves are situated.

78.6. Procedure for the Estimation of the Environmental Water Flow approved by Order No. D1-382 of the Minister of Environment of the Republic of Lithuania of 29 July 2005 (LAND-22-97) (Žin., 2005, No. 94-3508)

This legal act has laid down the procedure for the estimation of the environmental flow in water bodies and for the provision thereof into the tail bay of ponds or impounded lakes, which is mandatory for all natural and legal persons designing, building and reconstructing, repairing, and operating waterworks. The environmental flow is needed to ensure discharges required for the existence of ecosystems in water bodies.

78.7. List of Dams where Facilities for Fish Migration are Required and List of Former Dam Remains where Barriers for Fish Migration Have to Be Removed approved by Order No. 3D-427 of the Minister of Agriculture of the Republic of Lithuania of 25 September 2007 (Žin., 2007, No. 102-4180)

The lists contain 28 dams and dam remains of 33 former watermills where conditions for fish migration should be improved as described above.

78.8. Order No. 68 of the Minister of Environment of the Republic of Lithuania of 23 February 2000 on measures for fish protection in small hydropower plants (Žin., 2000, No. 19-471)

This piece of legislation provides a number of fish allowed to be injured in hydro turbines, recommends power generators to select turbines which have the least potential impact on hydrobiont species when constructing new or reconstructing former hydropower plants, specifies various fish protection measures, and proposes to restrict operation of HPP during fish migration.

78.9. Building Technical Regulation STR 2.02.03:2003 “Fish bypass facilities. Basic provisions” approved by Order No. 565 of the Minister of Environment of the Republic of Lithuania of 17 November 2003 (Žin., 2003, No. 119-5449)

The Building Technical Regulation establishes technical requirements for fish bypasses. The main purpose of fish bypasses is to let actively migrating fish pass from one bay to another during their migration period thus ensuring conditions necessary for their life in Lithuanian water flows. The most important actively migrating fish include salmonid fishes (salmon and sea trout) as well as other fish contained in the list of preserved and protected fish.

78.10. Regulations of the State Cadastre of Rivers, Lakes and Reservoirs of the Republic of Lithuania approved by Resolution No. 1114 of the Government of the Republic of Lithuania of 19 September 2000 (Žin., 2000, No. 80-2422; 2009, No. 103-4318)

The State Cadastre of Rivers, Lakes and Reservoirs of the Republic of Lithuania was officially established in 2001. Before that, data on ponds (dams) was published by various organisations. This Cadastre requires publishing the data of ponds larger than 0.5 ha. The Cadastre contains more than 1 100 ponds and their dams and does not include, due to the said area restriction, ruined dams of old watermills, or remains of other waterworks.

Controls over hazardous substances provided for in Article 16 of the WFD

79. Article 16 of the WFD requires providing for specific measures against pollution of water with individual pollutants or groups of pollutants presenting a significant risk to or via the aquatic environment, including such risks to waters used for the abstraction of

drinking water. For those pollutants measures shall be aimed at the progressive reduction and, for priority hazardous substances, at the cessation or phasing out of discharges, emissions and losses.

80. Legislation:

Wastewater Management Regulation regulates discharge of hazardous and priority hazardous substances in wastewater.

Establishment of the maximum allowable concentrations

81. The Wastewater Regulation requires that all economic entities discharging wastewater polluted with hazardous substances abide by the requirements set for the concentration of hazardous substances. Different maximum allowable concentrations (MAC) have been set for wastewater discharged into the natural environment and for wastewater discharged into wastewater collection systems. The Regulation has also laid down a requirement to reduce discharge of hazardous substances in wastewater to the maximum extent. The annexes to the Regulation contain tables which specify:

- 81.1. the maximum allowable concentrations for priority hazardous substances;
- 81.2. the maximum allowable concentrations for hazardous and other regulated substances;
- 81.3. controlled parameters of industrial discharges by types of pollution sources.

Monitoring of hazardous and priority hazardous substances by economic entities

82. Depending on the type of economic activity, economic entities have to conduct monitoring of discharge of hazardous substances every two or three years.

Monitoring of hazardous substances in surface waters

83. Monitoring is carried out under the National Environmental Monitoring Programme for 2005-2010 approved by Resolution No. 130 of the Government of the Republic of Lithuania of 7 February 2005 (Žin., 2005, No. 19-608) and amended by Resolution No. 830 of the Government of the Republic of Lithuania of 27 August 2008 (Žin., 2008, No. 104-3973). The latter document envisages specification and maximum improvement of the measures developed for the period 2008-2010.

Measures to reduce the impact of accidental pollution incidents

84. These measures are designed to prevent, respond to and investigate large-scale industrial accidents and to promote safe use of dangerous installations, to protect people and the environment in case of accidents in such installations, and to limit consequences of industrial accidents on people and the environment.

85. Legislation:

- 85.1. Regulations of the Prevention, Response to and Investigation of Industrial Accidents;
- 85.2. Programme on the Inspection of Dangerous Installations of the Republic of Lithuania approved by Order No. 1-528 of the Director of the State Fire and Rescue Department of 29 December 2006 (Žin., 2007, No. 3-143).

86. Measures for the prevention and response to industrial accidents are as follows:

86.1. Drafting of safety reports and emergency plans

The Regulations of the Prevention, Response to and Investigation of Industrial Accidents provide for that all installations which store a certain amount of dangerous substances must prepare safety reports. Such safety reports must also contain plans of measures for accident prevention. The List of Potentially Dangerous Installations includes 21 installations in Lithuania subject to the requirements of the Major Accidents Directive.

86.2. Selection of a suitable place

The Regulations of the Prevention, Response to and Investigation of Industrial Accidents require that a place for the construction of all new dangerous installations is selected ensuring a safe distance from other dangerous objects, residential areas, roads with intensive traffic, recreational zones, and other public or frequently visited places.

86.3. Controls over the fulfilment of the requirements

Programmes on the inspection of dangerous installations which are approved by the Director of the State Fire and Rescue Department on the annual basis specify a schedule of inspection of dangerous installations. The main purpose of these programmes is to introduce a regular system of control and to ensure safe operation of dangerous installations.

Measures prohibiting unauthorised discharges of pollutants directly into groundwater

87. Legislation:

The issuance of permits is regulated pursuant to the Procedure for the Inventory of Discharges of Hazardous Substances into Groundwater and Collection of Information Thereon approved by Order No. 1-06 of the Director of the Lithuanian Geological Survey under the Ministry of Environment of 3 February 2003 (Žin., 2003 No.17-770).

The Lithuanian Geological Survey issues permits for companies abstracting hydrocarbons and thermal water in western Lithuania. Water is discharged into the same geological strata from which hydrocarbons and/or thermal water have been extracted ensuring that these strata will never be suitable for any other purposes due to natural reasons. Such discharges should not contain any other substances but those which are formed during the said activity.

Summary of controls over point source discharges and other activities with an impact on the status of water

88. Legislation:

88.1. Wastewater Management Regulation;

88.2. Rules for the Issuing, Renewal and Revocation of Integrated Pollution Prevention and Control Permits.

Measures for flood control

89. Legislation:

89.1. Civil Protection Law of the Republic of Lithuania (Žin., 1998, No. 115-3230; 2009, No. 159-7207);

89.2. Procedure for Flood Risk Assessment and Management approved by Resolution No. 1558 of the Government of the Republic of Lithuania of 25 November 2009 (Žin., 2009, No. 144-6376). Pursuant to the said Resolution, the Ministry of Environment has to:

89.3. draw up and approve preliminary flood risk assessment reports not later than by 22 December 2011;

89.4. discuss and approve, if required, preliminary flood risk assessment reports and amendments thereof not later than by 22 December 2018, and afterwards – every six years;

89.5. draw flood threat maps and flood risk maps and submit these to the Government of the Republic of Lithuania for approval not later than by 22 June 2013;

89.6. prepare flood risk management plans and submit these to the Government of the Republic of Lithuania for approval not later than by 22 June 2015.

Measures which ensure that hydromorphological conditions of water bodies are consistent with the required ecological status or good ecological potential for artificial or heavily modified water bodies

90. Legislation:

90.1. Procedure for the Estimation of the Environmental Water Flow (LAND-22-97) approved by Order No. D1-382 of the Minister of Environment of the Republic of Lithuania of 29 July 2005 (Žin., 2005, No. 94-3508)

This legal act has laid down the procedure for the estimation of the environmental flow in water bodies and for the provision thereof into the tail bay of ponds or impounded lakes, which is mandatory for all natural and legal persons designing, building and reconstructing, repairing, and operating waterworks. The environmental flow is needed to ensure discharges required for the existence of ecosystems in water bodies.

90.2. Order No. 3D-427 of the Minister of Agriculture of the Republic of Lithuania of 25 September 2007 on the approval of the List of Dams where Facilities for Fish Migration are Required and the List of Former Dam Remains where Barriers for Fish Migration Have to Be Removed (Žin., 2007, No. 102-4180)

These lists contain 28 dams and dam remains of 33 former watermills where conditions for fish migration should be improved. Taking into account a remark of the Lithuanian Hydropower Association on preservation of old dams which are objects of heritage, before the removal of dam remains it is recommended to check whether these stand on the list of objects of cultural heritage.

90.3. Order No. 68 of the Minister of Environment of the Republic of Lithuania of 23 February 2000 on measures for fish protection in small hydropower plants (Žin., 2000, No. 19-471)

This legal act provides the number of fish allowed to be injured in hydro turbines, recommends power generators to select turbines which have the least potential impact on hydrobiont species when constructing new or reconstructing former hydropower plants, specifies various fish protection measures, and proposes to restrict operation of HPP during fish migration.

Until now, a potential impact of waterworks (dams) and other morphological alterations on river ecosystems and river bed processes has not been adequately studied in Lithuania. The present Programme of Measures recommends a number of measures ensuring conformity of hydromorphological conditions of water bodies with the required ecological status or good ecological potential in water bodies designated as artificial (AWB) or heavily modified (HMWB).

Measures for water bodies which are unlikely to achieve the environmental objectives set out under Article 4

91. Lithuanian legislation provides for certain exceptions for water bodies where water protection objectives cannot be achieved or achievement would be disproportionately expensive:

91.1. postponing of an objective (maximum until 2027) if the accomplishment thereof is prevented by technical possibilities, disproportionate costs or natural conditions;

91.2. in the procedure laid down by the Minister of Environment, water bodies heavily modified by anthropogenic activities may be subject to less stringent water protection objectives ensuring that such less stringent objectives will not decrease the status of a water body in question.

The exceptions may be applied only in rare cases upon completion of an economic analysis and well-founded proof of the necessity of the derogation.

Details of supplementary measures identified as necessary to meet the environmental objectives

92. Supplementary measures will be proposed for water bodies which will be failing the good water status requirements after the implementation of the basic measures, and environmental and economic efficiency of these measures will be evaluated. Supplementary measures have been defined for reduction of point and diffuse pollution, improvement of hydromorphological status, and reduction of an impact of recreation. These are described in Chapter 3 below.

Details of measures to avoid increase in pollution of marine waters in accordance with Article 11 (6)

93. This provision is relevant only for water bodies within the Nemunas RBD and, partially, within the Venta RBD.

Measures to mitigate temporary deterioration in the status of water bodies if this is the result of circumstances of natural cause or force majeure which are exceptional or could not reasonably have been foreseen

94. Measures to prevent and mitigate pollution arising from unforeseen accidents (which are always unpredictable) have been provided for in the following legislation:

94.1. Regulations of the Prevention, Response to and Investigation of Industrial Accidents;

94.2. Programme on the Inspection of Dangerous Installations.

Emergency plans provide for ensuring protection of people and the environment in the event of emergencies as well as mitigation of negative impacts of accidents on people and the environment.

Controls over artificial recharge or augmentation of groundwater bodies

95. These measures are not relevant for Lithuania because there is no artificial recharge/augmentation of groundwater in our country.

Other basic measures

96. In addition to the above-listed basic measures, other programmes which correspond to the basic measures and which will affect the improvement of the status of water bodies in the Dauguva RBD are being planned and have to be implemented.

96.1. Programme on the Reduction of Water Pollution from Agricultural Sources

The objective of the Programme is to reduce pollution of surface waters and groundwater with nutrients, especially nitrogen and phosphorus compounds coming from agricultural sources with a view to continuously improve the status of water bodies and prevent eutrophication of surface water bodies.

Implementation period: 2008-2012.

Measures:

96.1.1. training of farmers, provision of information thereto, promotion of environment-friendly farming technologies, and encouragement of participation in activities under the Lithuanian rural development measures for 2007-2013;

96.1.2. enhancement of legal regulation ensuring the implementation of the EU and international requirements to reduce agricultural pollution;

96.1.3. continuous monitoring of the status of the soil and water bodies, identification of possibilities to improve the surface water monitoring network;

96.1.4. scientific research aimed at solving the issues of optimal capacities of manure storages and rational use of fertilisers in agriculture;

96.1.5. collection of information on fertilisers use, which would enable accurate assessment of the agricultural impact on water bodies;

96.1.6. provision of conditions for the construction of manure, slurry and wastewater storages on farms holding from 10 to 300 LSU.

Financing sources of the Programme: funds of natural and legal persons, EU funds, allocations from the state budget of the Republic of Lithuania, and other funds.

96.2. Groundwater Use and Protection Strategy for 2002–2010 approved by Resolution No. 107 of the Government of the Republic of Lithuania of 25 January 2002 (Žin., 2002, No. 10-362)

The objective of the Strategy is to ensure provision of drinking water of high quality to the public and to preserve it for future generations.

Implementation period: 2002-2010.

Measures:

96.2.1. analysis of groundwater resources, their quality and possibilities of use (analysis of regional resources of fresh water, possibilities of provision of good quality drinking water to rural population, etc.);

96.2.2. analysis of natural protection of groundwater resources, assessment of the anthropogenic impact on groundwater and preparation of adequate management programmes (inventory of polluted areas and other potential pollution sources, identification of their impact on groundwater and preparation of reclamation programmes for these areas; inventory of bore wells which are no longer in use and which are in a bad technical condition, development of adequate rehabilitation programmes, etc.);

96.2.3. collection of information necessary for the use and protection of groundwater resources (transboundary, national and municipal monitoring; management of the Register of the Earth Entrails, etc.);

96.2.4. settlement of issues related to the development of the use and protection of groundwater (drafting of documents required for the preparation of water management plans of different levels as well as for various other regional and territorial activities in relation to the use and management of groundwater resources, etc.);

96.2.5. dissemination of information on groundwater resources, their quality, use, and protection (publishing geological and hydro-geological information, preparation of a map of the Lithuanian groundwater resources, etc.).

96.3. Programme on the Assessment and Use of Groundwater Resources for the Provision of Drinking Water for 2007–2025

The main objective of this Programme is to update, taking into account the global practice, information on water resources and their proper use while expanding and designing new water supply systems every 20-25 years; to create a new database for information on raw groundwater resources intended for the provision of good quality drinking water to the Lithuanian population during the coming 20-25 years; to create a database of systematised new data on groundwater resources which is necessary for the development of projects on the expansion of water supply systems in Lithuanian towns and rural settlements, and management thereof on the basin level.

Tasks provided for in the Programme:

96.3.1. to quantify the available groundwater resources, to assess their quality (taking into account changes in the water quality due to its use) and a possibility to use these resources in the period 2007–2025 on the basis of the latest hydro-geological information collected during the last 25 years, applying advanced mathematical modelling methods and taking into consideration the EU requirements for the quality of drinking water;

96.3.2. to develop measures for the protection, improvement and quality control of the resources of wellfields (to identify the actual area of formation of groundwater bodies (impact zones) and potential changes therein during their use period 2007-2025; to

identify all potential points of pollution of the underground hydrosphere and to examine the scope of a threat for the quality of groundwater bodies, etc.);

96.3.3. to create an interdepartmental information system connecting institutions engaged in water analysis, supply and quality control as well as those which design waterworks and manage water basin resources (to identify and define groundwater resources and various activities related to their assessment and use as well as information structures and flows, and to include new institutions; to design an information system providing for its connection with other information systems and links with the sub-systems of the information system GEOLIS of the Lithuanian Geological Survey);

96.3.4. to conduct scientific research focused on regional problems of the formation of the chemical composition of groundwater (to determine the origin of chloro-organic compounds and polycyclic aromatic hydrocarbons in groundwater, the amount of boron and pesticides therein and their impact on the quality of drinking water resources, etc.).

This Programme is financed with funds allocated for its implementation from the state budget of the Republic of Lithuania to the manager of the appropriations – the Lithuanian Geological Survey and, if possible, with funds allocated for this purpose by international organisations or other funds, following the procedure laid down in relevant legislation.

96.4. Drinking Water Supply and Wastewater Management Development Strategy for 2008-2015

The objectives of the Strategy are as follows:

96.4.1. to provide for favourable conditions for the improvement of accessibility and quality of drinking water supply and wastewater management services;

96.4.2. to protect the environment from an adverse impact of discharges into the environment.

The Strategy is to be implemented in two stages: during 2008–2009 and 2010-2015.

Tasks for 2008–2009:

96.4.3. to improve legislation which regulates drinking water supply and wastewater management services and development of infrastructures and which lays down environmental requirements for wastewater management;

96.4.4. to inform consumers about safety and quality of publicly supplied water;

96.4.5. to approve a list of water supply and wastewater management projects financed from the EU Structural Funds.

In 2009, the Ministry of Environment of the Republic of Lithuania developed the Plan of Measures for 2010-2015 and submitted it to the Government of the Republic of Lithuania.

The measures for implementing this Strategy are financed from general appropriations approved for relevant institutions in the Law on the Approval of the Financial Indicators of the State and Municipal Budgets of a respective year, and with other funds received in the procedure laid down in the relevant legislation of the Republic of Lithuania.

96.5. National Strategy for the Implementation of the United Nations Framework Convention on Climate Change by 2012 approved by Resolution No. 94 of the Government of the Republic of Lithuania of 23 January 2008 (Žin., 2008, No. 19-685)

The main objective of this Strategy is to fulfil the requirements of the United Nations Framework Convention on Climate Change and Kyoto Protocol and to reduce greenhouse gas emission in 2008–2012 by 8% below 1990 levels.

The main tasks:

96.5.1. to organise and to conduct continuous and ongoing monitoring of the Lithuanian climate indicators, to provide data on hydro-meteorological conditions and phenomena which is necessary for the assessment of the current state and preparation of forecasts, to accumulate and store necessary data on the climate state and changes;

96.5.2. to conduct assessments of the landscape, ecosystems and biological diversity (including protected areas) for the purpose of evaluating impacts of the changing climate on various ecosystems and parts thereof, to develop plans for the mitigation of impacts of climate change, to provide for specific adjustment measures for the conservation of the landscape, ecosystems and biological diversity (including the development and implementation of river renaturalisation projects, measures for wastewater treatment, safe handling of sludge, etc.);

96.5.3. to draft legislation, recommendations, promotion measures and assistance programmes which facilitate reduction of greenhouse gas emissions and help these sectors to adjust to alterations caused by climate change as well as to increase energy efficiency;

96.5.4. to introduce measures which reduce greenhouse gas emissions in wastewater management and to adjust their storage facilities to potential climate changes;

96.5.5. to develop scientific research, including technologies designed for the assessment and mitigation of consequences of climate change;

96.5.6. to provide information to the public on climate change, potential threats, measures for the mitigation of consequences, to raise public awareness on combating climate change.

The measures provided for in this Strategy are financed from the general appropriations allocated for institutions in the state budget of the Republic of Lithuania.

96.6. Lithuanian Rural Development Programme for 2007-2013. Measures provided for under Axes I and II

Table 22. Environmental measures under the Lithuanian Rural Development Programme for 2007-2013

Measure	Description
AXIS I “Improving the competitiveness of the agricultural and forestry sector”	
“Vocational training and information actions” (Articles 20(a)(i), Article 21, Article 52(c) and Article 58 of the Council Regulation (EC) No. 1698/2005)	Special focus is given to trainings introducing mandatory legislation, economy management and agri-environmental requirements.
“Use of advisory services” (Article 20(a)(vi) of the Council Regulation (EC) No. 1698/2005)	This measure covers assessments of farms and consultation of farmers on conformity of farms to good agri-environmental practice as well as consultation of farmers on the implementation of agri-environmental measures.
“Modernisation of agricultural holdings“	One of the areas under this Measure is intended for the

Measure	Description
(Article 20(b)(i) and Article 26 of the Council Regulation (EC) No. 1698/2005) (including obligations under the Measure “Agri-environmental commitments”, RDP 2004–2006 (Article 21(b) and Article 21(c) of the Council Regulation (EC) No. 1257/1999)	implementation of the requirements of the Nitrates Directive on farms with less than 10 LSU, reducing water pollution and focusing on nitrates and other chemical factors which are likely to have an adverse impact on public health, biological diversity and to change the traditional landscape. Another objective is to protect water bodies in the Republic of Lithuania against eutrophication.
AXIS II “Improving the environment and the countryside”	
“Agri-environment payments“ (Article 36(a)(iv) and Article 39 of the Council Regulation (EC) No. 1698/2005) (including obligations under the Measure “Agri-environment payments”, RDP 2004–2006 (Articles 22-24 of the Council Regulation (EC) No. 1257/1999)	The objective is to promote sustainable use of land, prevent deterioration of biological diversity and degradation of ecosystems, to preserve natural shores of rivers and lakes, to preserve and properly maintain natural and semi-natural grasslands and extensively used wetlands, recreational environment, to ensure effective use of natural resources, to protect the landscape and biological diversity, to reduce an adverse impact of agriculture on the environment in water bodies which have been identified as water bodies at risk of failing to achieve good status by 2015.
Landscape Stewardship Scheme	The objective is to preserve and properly maintain natural and semi-natural grasslands, wetlands, recreational environment, to preserve or, if needed, to restore extensive farming systems in grasslands and wetlands, to reduce farming intensiveness in intensively used grasslands, to protect biological diversity and water bodies against pollution.
Organic Farming Scheme	The objective of the Scheme is to support ecological farming as a production system which ensures production of quality food products with good prospects on the market. It is an important agri-environmental measure because it helps maintain and improve the soil quality, reduce air and water pollution, and preserve stability of ecosystems as well as biological diversity.
Scheme for Improving the Status of Water Bodies at Risk	The objective of the Scheme is to achieve good status in water bodies which have been identified as water bodies at risk of failing to achieve good status by 2015 (as required under the WFD and the Republic of Lithuania Law on Water) because of a highly significant adverse impact of agriculture (pollution of water with nutrients and organic matter).
Natura 2000 payments and payments linked to the WFD (support to agricultural land in Natura 2000 areas) (Article 38 of the Council Regulation (EC) No. 1698/2005)	The measure is important for the implementation of the WFD. The implementation of the WFD is postponed until the approval of the river basin management plans and establishment of comprehensive rules of support. The objective is to address specific difficulties encountered in relevant places in relation to the implementation of the Birds Directive, Habitats Directive and WFD, thus enhancing living quality in rural areas and raising ecological awareness of local communities. A specific objective is to implement environmental requirements in Natura 2000 areas with a view to protect wild birds, natural habitats, protected species and their habitats.

96.7. Cohesion Promotion Action Programme approved by the Commission Resolution of 30 July 2007 (not published)

This Programme corresponds to the third priority of the use of the EU structural support “Life quality and cohesion”. The total amount of the EU structural funds allocated for the Programme under the Convergence objective is EUR 2 648 332 571 (the allocation for “Environment and sustainable development” totals to EUR 1 128 119 555). The Programme is financed from the European Regional Development Fund and Cohesion Fund (for the protection of the environment).

The objectives of the Cohesion Promotion Action Programme:

96.7.1. to provide for conditions necessary for strengthening and unlocking local potential;

96.7.2. to offer accessible quality public services provided by institutions which implement health, education, and state support for employment policies, ambulatory social services, and services for the disabled;

96.7.3. to seek better quality of the environment, with particular emphasis on especially increasing energy efficiency.

The attainment of the third objective focuses on the improvement of the status in water bodies and implementation of the provisions of the WFD, Urban Wastewater Treatment Directive, and other directives which regulate water protection and use. The following tasks have been set:

96.7.4. to renovate and develop water supply and wastewater treatment systems;

96.7.5. to identify water protection and management measures: to develop management plans, programmes of measures for the Nemunas, Venta, Lielupė, and Dauguva River Basin Districts, as well as other documents necessary for the establishment of water protection objectives; to carry out preliminary assessments of flood risks in the Nemunas, Venta, Lielupė, and Dauguva River Basin Districts; to develop maps of flood threats and risks and flood risk management plans;

96.7.6. to improve the ecological and/or chemical status of surface water bodies – to implement measures designed for the improvement of the status of water bodies (transitional waters, rivers and lakes), such as treatment and handling; restoration of a more natural hydrological regime; reduction of the input of pollutants into water bodies; environmental cleanup and rehabilitations of banks).

CHAPTER III. SUPPLEMENTARY MEASURES

97. Supplementary measures have been proposed for the bodies of water which will be failing the good status requirements after the implementation of the basic measures, and their environmental and economic efficiency has been assessed.

Supplementary measures to reduce the impact of point pollution sources and their costs

98. An assessment of the impact of diffuse pollution sources and the status of surface water bodies demonstrated that there are no water bodies at risk due to the impact diffuse pollution within the Dauguva RBD. However, this RBD will benefit from the diffuse pollution reduction measures to be applied throughout Lithuania irrespectively of the present status in water bodies. Such measures will play a preventive role in the Dauguva RBD protecting the soil and water bodies against excessive amounts of nutrients in future. In addition, they facilitate implementing the polluter pays principle.

Measures, including those approved by Resolution No. 1098 of the Government of the Republic of Lithuania of 21 July 2010, are described in detail below.

99. Diffuse agricultural pollution pressures should be first of all subject to measures which help introducing the polluter pays principle common in many EU Member States.

Such measures are proposed for the entire country independently of the intensity of agricultural activities because these measures also play a preventive role. They would also become a reference point for the application of other measures indicating the amount and type of substances entering the soil. The following are measures recommended throughout Lithuania.

100. Drafting and enactment of normative standards comprising a legal and methodical basis for the development of fertilisation plans covering:

100.1. maximum allowable amounts of nitrogen and phosphorus fertilisers per hectare, irrespective of whether organic or mineral fertilisers are used;

100.2. general fertilisation recommendations;

100.3. a methodology for estimating the economically optimal amount of fertilisers.

The methodology should define fertiliser norms by plant species, taking into account nutrient needs for standard crop yield, give formulas enabling to calculate fertiliser needs depending on the soil physical and agrochemical properties established by the analysis of the soil in a particular field, as well as the correction coefficient for the absorption of substances from different fertilisers.

Similar normative standards have already been prepared by scientists of the Lithuanian Institute of Agriculture. They have established the standard productivity of 12 plant species and nutrient needs for standard crop yield, as well as correction coefficients on the basis of soil physical and agrochemical properties. It is recommended to review and enact these normative standards.

One of the proposed substantial changes is to increase the coefficient of nitrogen absorption from manure. The current coefficient of 0.45 does not reflect the process of nitrogen accumulation in the soil in the long run. It is proposed to increase this coefficient to 0.65. In practice, this would mean reduced fertilisation norms for farmers. The major impact of the measure would be felt on the farms where organic fertilisers make up a considerable share of fertilisers. It is important that the coefficient is changed in parallel with training courses for farmers intended to help them to introduce methods allowing the maximum utilisation of substances accumulated in the soil. Transition to more advanced farming methods is expected to help avoid losses that could result from inefficient farming practices when plants are not allowed to take up substances from the soil.

101. Mandatory development and implementation of fertilisation plans for farms utilising ten and more hectares of land.

Enactment of normative standards as such would not have any direct impact on the reduction of diffuse pollution. The effect of the measure would be visible when preparing and implementing fertilisation plans, which, in their turn, would not only ensure balanced fertilisation but would also become a reference point for the application of many other measures related to fertilisation norms. Information would be obtained on the amount and type of substances entering the soil – at least in the area which belongs to farms fertilising ten or more hectares of utilised agricultural land. The introduction of the measure in smaller farms would be complication due to its acceptability and relatively high costs meanwhile its application only in large farms would facilitate control of only a small area of land (and a respective amount of fertilisers therein).

Following observations and estimations, it can be stated that the major problem in Lithuania arises from unbalanced fertilisation rather than over-fertilisation. Some areas are not fertilised at all, whereas in other locations, based on the experience of the Agri-Information and Rural Business Centre, the spread of fertilisers is much too high. Farmers mostly use nitrogen fertilisers seeking to increase productive capacity without considering amounts of other elements and their interaction. In the event of a lack or surplus of a certain element, the absorption of other elements is obstructed, i.e. plants cannot take them from the soil. Therefore, the preparation of a fertilisation plan requires knowing nutrient stocks in the soil in a particular field. Analyses of the amounts of the main substances should be a must every spring, while soil acidity, humus percentage, phosphorus and potassium contents, which are less variable, could be tested every five years. The application of optimal fertilisation norms calculated in accordance with the approved norms and methodology would help to balance the ratio of nutrients (N, P, K), i.e. the amount of fertilisers used would be the minimum amount needed by plants, without leaving surplus nutrients in the soil which usually leach into deeper soil layers.

The costs of the implementation of fertilisation plans would be borne by farmers. According to the existing rates based on the data of the Agricultural Advisory Service, the average costs of a fertilisation plan (including sampling) is LTL 100 per field. The number of fields is very different on farms, though an average farm statistically has five fields (this number was derived from the data of farms using the services of the Agricultural Advisory Service). Hence, the average estimated price for the development of a fertilisation plan for a farm was equalled to LTL 500, which makes up 0.3-1.3% of the profit of farms ranging from 10 ha to 150 ha, including subsidies.

102. At present, fertilisation plans can be developed by any person having agricultural education. It is proposed to limit the list of institutions allowed to develop fertilisation plans because a large number of plans are of a poor quality. One of possible solutions could be licensing of institutions which develop fertilisation plans.

103. Mandatory observance of manure and slurry management recommendations set forth in the Good Farming Rules and Guidelines by farms with less than 10 LSU

It is proposed to enact the requirement for all Lithuanian farms with less than 10 LSU (i.e. farms which are not subject to the requirements of the Nitrates Directive) to manage manure and slurry in line with the recommendations set forth in the Good Farming Rules and Guidelines and in compliance with the Environmental Requirements for Manure Management. The Good Farming Rules provide for that solid manure may be temporarily stored in field heaps in accordance with the following recommendations:

103.1. temporary manure storage sites must be installed in higher locations to avoid any risk of getting flooded or waterlogged by rain;

103.2. the storage site must be confined with a 50 cm embankment;

103.3. prior to starting stockpiling manure, the storage site must be covered with a 5 cm thick layer of dry peat substrate or a 70 cm thick layer of chopped straw or leaves to absorb manure runoffs;

103.4. the stockpiled manure must be covered with a plastic sheet or a 20 cm mixed layer of peat and chopped straw.

The costs of the installation and maintenance of such manure field heaps for a farmer would be minimal. The required resources include small quantities of straw and peat and

a period of working time of a farmer necessary for installation. It is assumed that maintenance would cost about LTL 10 per livestock unit a year (peat, time for maintenance). Such costs should be acceptable to small farms. For example, the average costs on a farm with nine hectares of land and five LSU would make up 0.4% of the gross profit of the farm, including subsidies.

Supportive measures to reduce diffuse pollution

104. Supportive measures usually do not produce any direct effects, but they are very important in implementing other measures. Their introduction is proposed throughout Lithuania, focusing on areas affected by significant diffuse pollution from agriculture. The implementation of educational and information measures falls under the responsibility of the Ministry of Agriculture.

104.1. Education and information of farmers and implementing institutions

Educational measures are usually very effective, but their effect is hard to be measured directly, particularly because this effect is evidenced indirectly and only after a while. The main areas of information and training are as follows:

104.1.1. information campaigns for farmers throughout Lithuania on the maximum allowed fertilisation norms, procedure of the development of fertilisation plans and benefits of the plans;

104.1.2. trainings for developers of fertilisation plans throughout Lithuania.

104.2. Additional control of farms

Control is one of the key mechanisms helping to ensure the implementation of measures. However, a number of gaps have been observed, which is mainly due to a lack of human and financial resources. While exercising control over both the measures currently being implemented and the recommended ones, the reallocation of resources is recommended in a way ensuring adequate control at least in the areas which suffer from significant agricultural pollution.

The most effective measures for reducing the amounts of nutrients in water bodies have already been introduced in Lithuania. These include manure storages in large farms, restrictions on animal density and on the use of organic fertilisers, fertilisation plans in large farms, protection zones and belts of water bodies, and other measures. However, control must be increased over the implementation of measures designed to reduce diffuse pollution in addition to education of farmers and other ways of promoting reduction of diffuse pollution. Checks of compliance with the requirement to develop and introduce fertilisation plans should cover not only formal verification of relevant documents but also analyses of the soil and neighbouring water bodies. More intensive surveillance is required as well as sanctions for farms which fail to meet the requirements concerning water protection zones or belts should be applied to a larger extent, for example, limiting eligibility of farmers for payments. The implementation of the basic measures is especially important in areas suffering from significant agricultural pollution. Otherwise, if the basic measures are not implemented, the supplementary measures alone will not be sufficient for reducing agricultural pollution to the required level and hence good water status would not be achieved. Since the state is already supposed to be implementing the said measures (not only enact them in relevant legislation but enforce their introduction), no additional funds for control and related activities have been provided for in the present Programme of Measures.

It is recommended to conduct additional checks on 5% of all small farms in Lithuania having up to 10 LSU; 10% of farms utilising 10 and more hectares of agricultural land (which will also have to develop fertilisation plans pursuant to this Programme of Measures) in areas where supplementary measures are required to reduce diffuse pollution from agriculture; and 2% of farms of the same size in the remaining territory of Lithuania.

It is assumed that a check on a large farm will cost LTL 200 on average and on a small one – LTL 49. Checks on large farms take more time; they may cover not only fertilisation plans but also the implementation of other measures and related requirements (such as contracts on manure transference or sales). Moreover, larger farms are usually located at a considerable distance from each other. Checks carried out on small farms cost less because they usually concern just the storage of manure and slurry and thus are less time-consuming, as well as farms are situated closer to each other.

The responsibility for the implementation of this measure would rest with relevant competent institutions exercising control over agricultural activities. It is suggested to start exercising control as from 2012.

104.3. Additional accountability of farms

Since the major problem at the moment is local and not general over-fertilisation in districts of intensive agriculture, it is important to establish the amounts of fertilisers used and specific fertiliser application places. Currently, only a small number of farms are obligated to have documents on the use of fertilisers. It is recommended to amend the Environmental Requirements for Manure and Slurry Management approved by Order No. D1-608/3D-651 of the Minister of Environment and the Minister of Agriculture of the Republic of Lithuania of 14 July 2010 introducing the requirement for farms with 50 and more LSU to keep documents proving legal use, transfer or sale of manure and/or slurry at least two years.

Measures to reduce diffuse pollution

105. An assessment of the impact of diffuse pollution sources and the status of surface water bodies demonstrated that there are no water bodies at risk due to the impact diffuse pollution within the Dauguva RBD. However, this RBD will benefit from the diffuse pollution reduction measures to be applied throughout Lithuania irrespectively of the present status in water bodies. Such measures will play a preventive role in the Dauguva RBD protecting the soil and water bodies against excessive amounts of nutrients in future. In addition, they facilitate implementing the polluter pays principle.

Table 23. Costs of measures required to reduce diffuse pollution in the Dauguva RBD

Measures in the Dauguva RBD	Measure application scope, ha/LSU/unit	Effect of the measure in reducing N, kg/year	Annual costs, LTL
Manure management in small farms	8 873 LSU	0	88 730
Fertilisation plans on farms from 10 ha	4 954 ha	0	436 810
Additional control	-	-	7 860
Total:	-	0	533 410

Source: experts' estimations

Annual costs of the measures required to reduce diffuse pollution in the Dauguva RBD would total to around LTL 533.4 thousand. The major amount would have to be borne

by farmers with more than 10 ha of land who will have to develop fertilisation plans (LTL 437 thousand) and farmers which keep up to 10 LSU (LTL 89 thousand). The burden to the state would total to LTL 8 thousand for the control of the farms.

Measures to reduce pollution with hazardous and priority hazardous substances

106. During the project “Identification of substances dangerous for the aquatic environment in Lithuania”, concentrations of di-(2-ethylhexyl) phthalate (DEHP) were found to be exceeding the established norms in water as well as high concentrations in sediments of the Dysna River.

Hazardous substances were detected in the Dysna during one-time measurements, therefore the concentrations of the hazardous substances detected will be analysed in the surveillance intensive monitoring site with a view to identify the actual pollution level. It is proposed to postpone the achievement of water protection objectives in the Dysna until sufficient data is collected proving a significant level of pollution with hazardous substances and allowing to plan pollution reduction measures.

Measures to reduce the impact of HPP

107. River stretches downstream of hydropower plants are proposed to be assigned to water bodies at risk due to unnatural fluctuation of their water level and runoff. Besides, turbines of certain types injure by-passing fish. There is one water body at risk identified in the Dysna River due to a significant impact of HPP. Operational monitoring has been envisaged in order to obtain additional data on the status of this water body.

Remeandering of rivers

108. The length of straightened rivers and streams in the Dauguva RBD, established using GIS methods, totals to 58.8 km. Five water bodies (with the total length of 46.8 km) in the Dauguva RBD have been identified as water bodies at risk due to a significant impact of straightening. One water body (12 km) has been assigned to heavily modified water bodies.

Remeandering is an expensive process and may lack justification as compared to its benefits. Hence, the following is proposed for the Dauguva RBD:

108.1. to leave the stretches of rivers flowing in the upper reaches of rivers, in hilly, springy, laky and protected areas which already are in the process of the natural regaining of their original state for complete self-naturalisation;

108.2. to perform renaturalisation of rivers only in areas with a clear public demand as well as in places where the naturalisation can have a significant effect of minimising floods, capturing pollutants and increasing/restoring biodiversity (habitats of plants and animals);

108.3. to leave the stretches of rivers in non-agricultural areas for self-naturalisation controlling this process with regard to drainage needs in the upstream and downstream areas.

109. The studies “Preparation of a feasibility study and recommendations on the establishment/restoration of wetlands aiming to reduce the input of organic and biogenic emissions into water bodies” (2009) and “Preparation of a feasibility study on the restoration of morphological and ecological conditions close to the natural ones in straightened rivers and streams and development of practical recommendations for the

activities to restore the said conditions” analysed remeandering costs. Although such costs depend on the river width, slope of the depth and other characteristics, the average demand of investment costs for one kilometre is about LTL 100 thousand (including land acquisition costs).

The total length of straightened rivers within the Dauguva RBD is 58.8 km. Of these, straightened rivers at risk in plains make up 23.8 km. Remeandering of these stretches to the maximum extent would cost approximately LTL 2.4 million. Operating costs can be equated to zero. The total annual costs would be LTL 150 thousand. However, no funds for renaturalisation are available at the moment. In addition, the acceptability of the measures to the public is still very low. As a result, no river renaturalisation measures are proposed at this stage.

Research

110. There are a number of water bodies in the Dauguva RBD where the available data on the causes of their poor status is not sufficient. Hence supplementary research is required in these water bodies prior to proposing specific measures for their status improvement.

The ecological status of Lake Imbradas is poorer than good; however, causes which condition such status are not known. Mathematical pollution load modelling results indicate that the status of the lake should be high. A lake study suggests that the lake may be (could have been) suffering from pollution with wastewater from Imbradas settlement. Impacts of historic pollution are also likely. To be able to identify the origin of pollution this lake at risk (to find out whether the lake suffers from anthropogenic pressures due to historic or present pollution, investigative monitoring (including the monitoring in the near-bottom layer of the lake) and inventory of pollution sources is required.

Studies required are provided in Table 24 below.

Table 24. Studies

Study or investigative measure	Required costs		
	Investment costs / one-time, LTL	Operating costs, LTL/year	Annual costs*, LTL/year
Investigative monitoring of Lake Imbradas (including the near-bottom layer) and inventory of pollution sources	23 000		3 000
Total	23 000		3 000

Source: experts' estimations

* Estimations of annual costs were based on the assumption that the operating time of investigative monitoring is 10 years and the discount rate is 6%.

Summary costs of the supplementary measures and of the whole Programme of Measures

Table 25. Costs of supplementary measures for the Dauguva RBD

Group of measures	Investment costs, LTL	Operating costs, LTL/year	Annual costs, LTL
Diffuse pollution	0	533 400	533 400
- costs to be borne by farmers		525 500	525 500
- costs of state control		7 900	7 900
Studies	23 000	0	2 000
Total ~	23 000	533 000	540 000

Source: experts' estimations

111. The total costs of the whole Programme of Measures, including both the basic and the supplementary measures, are provided in Table 26 and Figure 1.

Table 26. Implementation costs of the Programme of Measures for the Dauguva RBD until 2015

Group of measures	Investment costs, LTL	Operating costs, LTL/year	Annual costs, LTL
Basic measures			
Bathing Water Directive	0	18 160	18 160
Birds Directive	1 866 000	347 540	601 540
Drinking Water Directive	together with the costs of the Nitrates Directive		
Major Accidents Directive	50 000		7 000
Environmental Impact Assessment Directive		70 000	70 000
Sewage Sludge Directive	9 800 000	294 000	1 148 000
Urban Wastewater Treatment Directive	0	0	0
Plant Protection Products Directive	544 000	5 000	89 000
Nitrates Directive	5 325 000	53 250	517 250
Habitats Directive	126 200	305 500	322 500
IPPC Directive	10 000	0	1 000
Basic measures in total	17 720 000	1 090 000	2 770 000
Supplementary measures			
Point pollution	0	0	0
Diffuse pollution	0	533 400	533 400
Hydromorphological changes	0	0	0
Studies	23 000	0	3 000
Supplementary measures in total ~	23 000	533 000	540 000
Basic and supplementary measures			
GRAND TOTAL ~	17 743 000	1 623 000	3 310 000

Source: experts' estimations

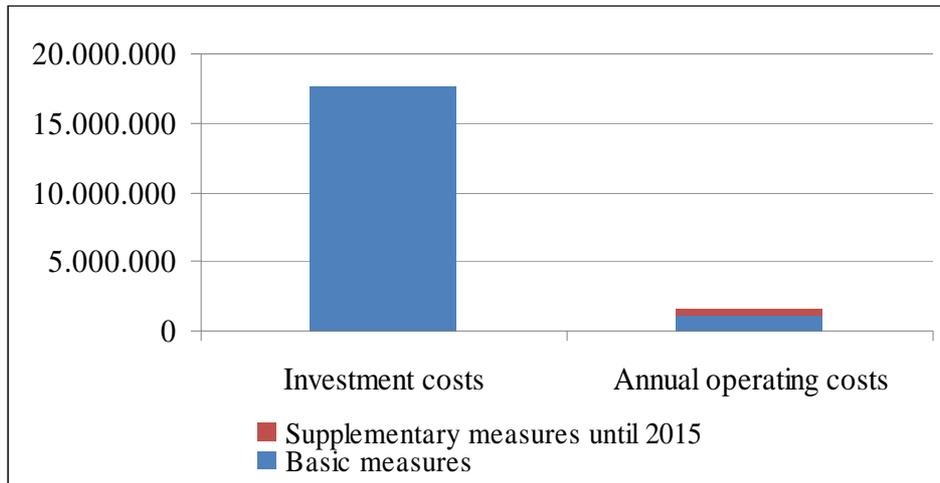


Figure 1. Investment and operating costs of the implementation of the basic and supplementary measures in the Dauguva RBD until 2015

Source: experts' estimations

CHAPTER IV. AFFORDABILITY ANALYSIS

112. An affordability analysis is very important in providing rationale for a possibility and deadline to achieve the proposed ecological status in water bodies. Even when measures are feasible technically, they can be too expensive for the specific implementer – household, agricultural unit, municipality, or the state.

An affordability analysis requires information on two things: demand of costs and supply of potential funding sources.

It should be pointed out that the option of redistributing public finances among sectors (when the usual allocations for environmental measures are found to be insufficient for the implementation of the programme) is not to be considered at the present stage of the development of the Programme of Measures and RBD Management Plan due to the persisting consequences of the financial crisis, which started back in 2008, and therefore ways to continue reducing the budget deficit are still sought at the state level. One option is to cut down various expenditure of the public sector.

Affordability to the state

113. The text below contains comparisons of the demand of investment costs against the existing and future funds from potential financing sources by every measure required:

- 113.1. EU funds,
- 113.2. state budget,
- 113.3. municipal budgets,
- 113.4. other state or municipal funds.

114. The basic measures already have respective funding sources and are already being implemented. Affordability of these measures was assessed in each individual case when planning certain investment objects or providing for the budgets of respective state institutions. Accordingly, the present Programme of Measures has to assess the affordability of supplementary measures.

Wastewater management

115. No additional investments are required for wastewater management in the Dauguva RBD.

Measures to restore hydromorphology

116. No measures to improve the hydromorphological status by constructing fish passes are required in the Dauguva RBD at the first stage of the Dauguva RBD Management Plan.

117. Remeandering costs in the Dauguva RBD, if decided to restore meanders, would total to about LTL 2.4 million. If these investment costs are distributed for a five years' period (until 2015), the annual demand of additional costs would be about LTL 480 thousand. However, it is not clear where such additional funds could be obtained because it has been established that potential funding sources already have their respective investment objects planned. At present, the state would not be able to afford such measure. Besides, an impact of the remeandering on the status of a stream in question is not known yet. Hence it is recommended that actions until 2015 are limited to the implementation of a pilot project on renaturalisation in the Grūda River in the Merkys Sub-basin of the Nemunas RBD.

Agriculture

118. As already said in the sub-section on supplementary agricultural measures, diffuse pollution does not have any significant impact in the Dauguva RBD. However, the key measures – development of fertilisation plans for farms with ten and more hectares and manure management in small farms (with less than 10 LSU) – have been envisaged for the whole of Lithuania, hence additional state funds for controls over the implementation of these activities would amount to about LTL 8 thousand every year. This means a demand of additional 0.3 of an employee's time, if the average wage in the public sector in 2009 is applied. Should this function be divided among the municipalities which occupy the largest areas in the Dauguva RBD and which have agricultural land, the employees responsible for the supervision of fertilisation plans of the respective environmental agencies in each of these municipalities would have to devote additional 0.15 of their working time for this task. This would require revising the functions of the specialist in charge of control over the implementation of agricultural measures and redistributing these functions in a way to include inspection of the development and implementation of fertilisation plans.

Research

119. In addition to investment costs, one-time costs will be required in the Dauguva RBD for supplementary investigative monitoring totalling to around LTL 23 thousand. In the event of rational planning and use of funds, the financing of supplementary measures is not expected to constitute a burden to the state budget, i.e. the budget of the Ministry of Environment.

However, it is proposed to envisage EU support for this measure in plans for the next financing period, at least for 2015, when LTL 10 thousand will be required from the total amount of LTL 23 thousand. If such support accounts for 75% of single projects on average, this would require only as little as LTL 2.5 thousand from the national budget.

Municipal affordability
Wastewater management

120. No additional investments are required for wastewater management in the Dauguva RBD at the first stage of the implementation of the Management Plan.

Measures to restore hydromorphology

121. There is no demand for constructing fish passes and removal of dam remains in the Dauguva RBD.

Affordability to households

122. No additional costs will be required for wastewater management in the Dauguva RBD therefore affordability of this measure to households has not been estimated.

Other supplementary measures do not have any effect on the burden for households.

Affordability to the energy sector

123. There is no demand for replacing HP turbines in the Dauguva RBD.

Affordability to the agricultural sector

124. The number of farms which will have to develop fertilisation plans in the Dauguva RBD totals to more than 800 (data of 2007). Pursuant to the Environmental Requirements for Manure and Slurry Management, as from 2011 fertilisation plans will also have to be developed by farms with 100 ha and more. There were only 22 such farms in the Dauguva RBD in 2007. Consequently, only a small number of farms are preparing fertilisation plans at the moment, so the effect of the measures and costs were estimated for all farms with 10 ha and more, which occupy a major share of utilised agricultural land.

The annual costs of all farms with less than 10 LSU in the Dauguva RBD total to approximately LTL 89 thousand. This amount has been based on the assumption that the annual costs of manure management following the good practice requirements on a small farm will be as low as LTL 10 per one livestock unit. The total annual costs of the development of fertilisation plans in the Dauguva RBD amount to LTL 437 thousand assuming that the development of one fertilisation plan for an average farm costs about LTL 500.

The share of expenses of a farm with 5 fields and 5 LSU for the envisaged measures in variable and fixed costs and profit with subsidies would account for about 0.4-1.5%. Hence the costs of both development of fertilisation plans and implementation of the manure management requirements are deemed to be acceptable, even when these two measures have to be implemented together.