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Financing of the Establishment of the Minimum Stocks of Liquid Fuels in Baltic States

Final Report
by
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Letter of Thanks

Hereby I would like to thank Mr. Vladas Gagilas and Mr. Kumpys Algirdas from the Ministry of Economy of the Republic of Lithuania, Mr. Vladas Atkociunas from the Lithuanian Petroleum Products Agency, Mr. Ansis Teteris from the Ministry of Economic of the Republic of Latvia for their help in completing this first and common report about the oil stockpiling systems in Baltic States, both from the point of view of providing the initial details of their compulsory stockpiling systems and also for responding to my, in some cases numerous, follow-up questions.

I would also like to thank those Estonian, Latvian and Lithuanian oil companies and oil associations which also gave up their time to discuss the broader issues concerning the compulsory oil stocks.

Alan Vaht
Project Manager

Nordic Council of
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Financing of the Establishment of the Minimum Stocks of Liquid Fuels in Baltic States

All Baltic States have signed the Europe Agreement and applied for the membership of the EU. According to it Baltic States committed itself to fulfil the requirements of the EU directives 68/414/EEC and 98/93/EC that impose an obligation to maintain 90 days' minimum stocks of crude oil and/or petroleum products based on last year consumption. Based on EU directives the Estonian Minimum Stocks of Liquid Fuel Act (RT I 2001, 36, 202; 88, 531; 2002, 63, 387; 2003, 81, 548; 88, 594), Latvian Regulation No 138 "Procedure for the Establishment and Storage of Petroleum Product Reserves" from 26th March 2002 and Lithuanian Law On State Stocks of Petroleum Products and Crude Oil (No. IX-986 from 25.06.2002) were entered into force.

The following categories of liquid fuel shall be included in the stocks:

Category I	motor gasoline and aviation gasoline;
Category II	diesel fuel, light heating oil, kerosene and jet fuel (aviation kerosene);
Category III	fuel oils.

There are different situations in Baltic States, as all Baltic States have achieved the transitional period until the year 2010 with different gradual building of compulsory oil stocks (see Figure 1). Lithuania from all Baltic States has its local refinery. It must be noted that all Baltic States as also other current Member States of EU have very high dependence on oil import. There is a strong link between Baltic States concerning to the oil import. Nowadays more than 90% of oil products consumed in Estonia and Latvia have imported from the Lithuanian refinery. At the same time Lithuania has the dependence on crude oil import from Russia.

The goal of the project is to find economically most feasible solution for financing of the establishment of compulsory oil stocks according to the different transitional periods and different ways for establishment of oil stocks in all three Baltic States. The main aim is to analyse the different scenarios in financing of the establishment of oil stocks.

It should be noted that in establishing of security stocks as well as in establishing and administrating of the security stock-holding system the co-operation between all Baltic States is very important, especially because Baltic States have never had security stocks. At the moment all these three countries are at the beginning of the transitional period during which security stocks must be formed. It's necessary to find out different possibilities of the establishment of security stocks in each Baltic States as well as available tank capacity and the ways how to be useful to each other. There are many ways for the establishment of compulsory oil stocks system. Existing compulsory stock-holding systems in the EU fall under two broad categories: "centralised", with a separate stock-holding entity; and "de-centralised", where the oil companies are responsible for holding compulsory stocks co-mingled with their operating inventories. During this project there will be analysed the current compulsory stock-holding system together with other possibilities in each Baltic States

Due to the heavy costs arising from establishment of security stocks and administrating of the security stock-holding system, it is very important to analyse different scenarios

for establishment of the compulsory oil stocks. This will be good base to find economically most feasible solution for financing of the establishment of oil stocks in all three Baltic States.

Based on the above the biggest and the most important task of the project will be to carry out an in-depth and comprehensive analysis of the structure of the actual stockpiling regime in all Baltic States.

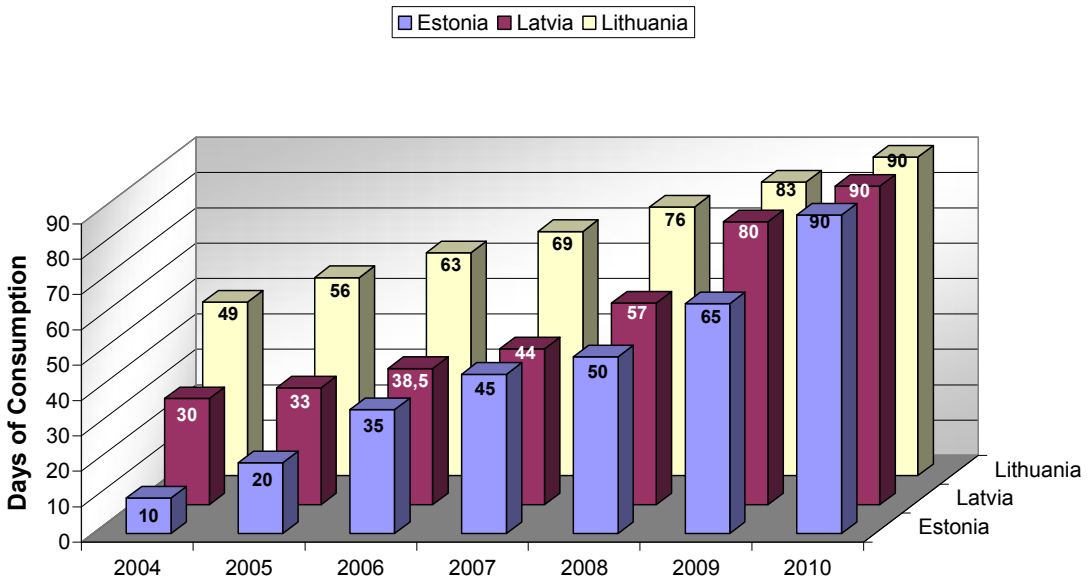


Figure 1. The Time Schedule for the Establishment of Oil Reserves in Baltic States

I. OIL MARKET AND OIL STOCKPILING SYSTEMS IN BALTIC STATES

This chapter gives the overview of the oil market and oil stockpiling systems in Baltic States. The overview of each Baltic States is set out in the following sequence:

- **Oil Import Dependence and Market Structures**
  - Supply of Energy Resources and Oil Consumption
  - Country's Oil Transit
- **Harmonisation of Legislation with the EU Directives Concerning to Oil Stocks**
- **Stockpiling System**
  - Supervision and Data Collection
  - Stockdraw during Energy Crises
  - Compliance Issues

1.1 Estonia

Estonia's transition from a planned to market economy has had significant effects on the country's energy demand as well as supply structures and liquid fuels storage. The primary energy demand and the final consumption today are almost half the level of that of 1990. These reductions stem mainly from the slow down of economic production experienced by most economies in transition of Central and Eastern Europe. In Estonia's case, the decrease in oil shale production (the country's major energy source which accounts for nearly 60% of the primary energy supply) was further accelerated by the rapid decrease in energy exports to Russia and Latvia and a crisis in oil-shale based chemical industry.

In 1998, Estonian long term energy goals were formulated in the Long-term National Development Plan for the Fuel and Energy Sector[1] [1] (hereinafter the *Development Plan*) and approved by the Riigikogu, the Estonian parliament. The Development Plan set targets for the development of the fuel and energy sector up to the year 2005 and gave principal development trends to 2018. The establishment of oil stocks was directly affected by a number of strategic goals, the most important ones were:

- To provide the sufficient and stable fuel and energy supply in conformity with the required quality and with optimal prices for the consistent regional development and for reaching the economic growth required for the accession to the European Union,
- To provide the political and economic independence of the state by the fuel and energy supply as a strategic branch of the economy; to establish the strategic security reserves in conformity with the requirements of the European Union and the International Energy Agency (IEA).

As Estonia has neither refineries nor oilfields, the task of establishing and storage oil stocks is a very important one.

1.1.1 Oil Import Dependence and Market Structures

It should be noted that on the one hand Estonia depends on imports for all of its common oil requirements but at the same time the oil import dependence is approx. 70% if the shale oil production is taken into account (see Table 1). Estonia is unique among nations in its heavy use of oil shale (*"põlevkivi"*) that gives 90% Estonian electricity. The shale oil produced from oil shale is only the produced oil in Estonia that can effectively replace the heavy fuel oil (the calorific value of shale oil is 39-40 MJ/kg compared with 40-41 MJ/kg of heavy fuel oil), but not other fuels. In 2002 the oil production was 275 000 tonnes, of which 58% were exported and the rest 42% were used for production of heat (114 000 tonnes) and electricity (7 000 tonnes).

[1] Development Plan was updated in 2003 by Estonian Ministry of Economic Affairs and Communication in a report titled *"Long-term National Development Plan for the Fuel and Energy Sector until the Year 2015 (with vision 2030)"* [2] that is not yet approved by the Parliament.

Table 1. Key Oil Data of Estonia, 1000 tonnes

	1993	1995 *	1997	1999	2000	2001	2002
Production	266	313	367	151	238	255	275
Imports	1542	1535	1550	1664	892	843	947
Exports	-128	-474	-691	-722	-138	-127	-160
Bunkers	-190	-90	-102	-113	-107	-102	-120
Net Imports	1224	971	757	829	647	614	667
Total Supply	1490	1284	1124	980	885	869	942
Import Dependence (%)	82,1%	75,6%	67,3%	84,6%	73,1%	70,7%	70,8%
Stock Changes	18	-49	58	77	-14	29	20
Domestic Supply	**1508**	**1235**	**1182**	**1057**	**871**	**898**	**962**
Transfers	0	0	7	11	2	2	0
Inland consumption	**1508**	**1235**	**1189**	**1068**	**873**	**900**	**962**

Remarks: 1) * Until year 1995, the bunkers include volumes used by inland waterway transport;
2) In this table, the import dependence has been calculated by using oil volumes in natural units. For higher accuracy the calorific value of oil must be used. Taking into account that the calorific value of shale oil is a little bit lower than compared with other liquid fuels, the actual import dependence is higher by few percentages.

Source: Statistical Office of Estonia

The origin of oil import in 2003 is given in Table 2. In 2003 petroleum products were imported mainly from Lithuania, Russia and Belarus. Because all statistical data of oil products concerning to the year 2003 is not available yet, the key oil data in Table 1 are given only until the year 2002.

Table 2. Origin of Oil Import in Estonia in 2003, tonnes

Country	Gasoline	Gasoil	HFO	Jet Fuel	Other	Total
Lithuania	228 827	74 342	0	3 336	0	**306 506**
Russia	5 953	236 692	11 228	22 217	0	**276 091**
Belarus	12 447	180 815	3 853	3 728	0	**200 844**
Finland	19 398	1 017	0	0	187	**20 602**
Norway	8 190	5 085	0	0	0	**13 275**
Latvia	2 847	6 478	0	0	0	**9 324**
Other	784	15 281	0	0	16	**16 081**
Total	**278 447**	**519 711**	**15 082**	**29 282**	**203**	**842 724**

Source: Statistical Office of Estonia

1.1.1.1 Supply of Energy Resources and Oil Consumption

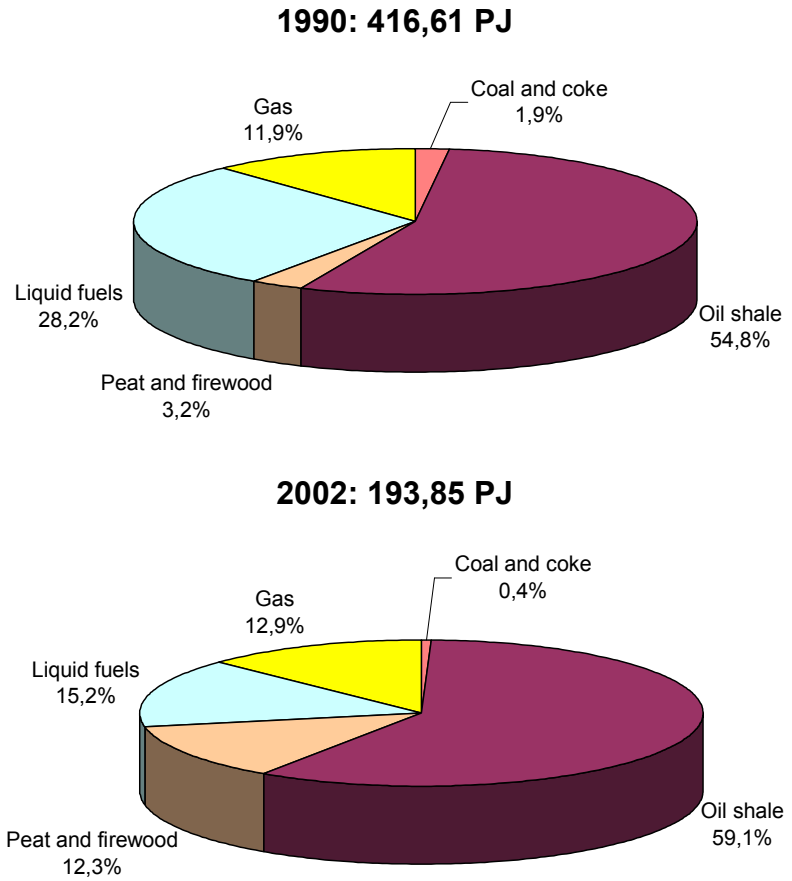
Current energy supply of about 194 PJ comprises 59% oil shale, 15% liquid fuels, 13% natural gas, 12% peat and firewood and less than 1% coal and coke (see Figure 2). The Estonian energy demand today is 47% of that of 1990. Detail data about the supply of energy resources are given in Table 3. Since 1990 the supply of the liquid fuels has decreased by 76% from 124 PJ to approx. 30 PJ in 2002. The share of liquid fuels in total energy supply has decreased from about 28% to 15%, where the biggest decrease has caused by drop in heavy fuel oil consumption (see Figure 3) that is replaced by natural gas or domestic fuels.

Table 3. Supply of Energy Resources in Estonia, 1990-2002, PJ

Year	Coal and coke	Oil shale	Peat and firewood	Liquid fuels	Gas	Electri-city	Total
1990	8,412	242,013	13,952	124,685	52,758	-25,207	**416,613**
1995	1,382	140,840	24,978	35,685	24,812	-2,726	**224,971**
1996	1,581	145,331	28,642	37,134	27,285	-3,087	**236,886**
1997	1,202	143,730	29,713	34,868	26,584	-3,494	**232,603**
1998	1,063	124,714	24,276	39,996	25,274	-1,389	**213,934**
1999	1,560	114,467	23,444	35,326	24,636	-2,129	**197,304**
2000	1,667	120,459	22,816	21,089	28,181	-3,322	**190,890**
2001	2,311	118,080	23,972	28,177	30,299	-2,212	**200,627**
2002	0,829	116,071	24,193	29,873	25,342	-2,460	**193,848**

Remarks: in stocks at the beginning of the year + production + imports - exports - marine bunkering - in stocks at the end of the year; **peat and firewood** (firewood, wood chips and wood waste, peat briquette in stocks at the beginning of the year); **liquid fuels** (heavy fuel oil and light fuel oil, motor gasoline, diesel, jet fuel and aviation gasoline); **gas** (natural gas, liquefied gas and biogas); **electricity** (the export of electricity exceeds the import).

Source: Statistical Office of Estonia



Source: Statistical Office of Estonia

Figure 2. Supply of Energy Resources in Estonia in 1990 and 2002, PJ

During last four years the consumption of liquid fuels has increased by 10% from 873 000 tonnes in year 2000 to 967 000 tonnes in 2003 (Figure 3). The consumption of motor fuels has risen about 23% compared to 2000. During last year the considerable decrease, from 60 000 tonnes in 2002 to only some 8 000 tonnes in 2003, has taken place in consumption of heavy fuel oil (replaced by natural gas and domestic fuels). At the same time the consumption of gasoil (diesel and light fuel oil) has increased about 7% from 484 000 tonnes in 2002 to 520 000 tonnes in 2003. Because all statistical data about 2003 is not available yet, the following information is given only for 2002. In 2002 about two thirds of motor gasoline was used by households. 67% of gasoil was consumed by transport sector, 15% by agricultural sector, 10% by households, 6% by industry and 2% by commercial and public services.

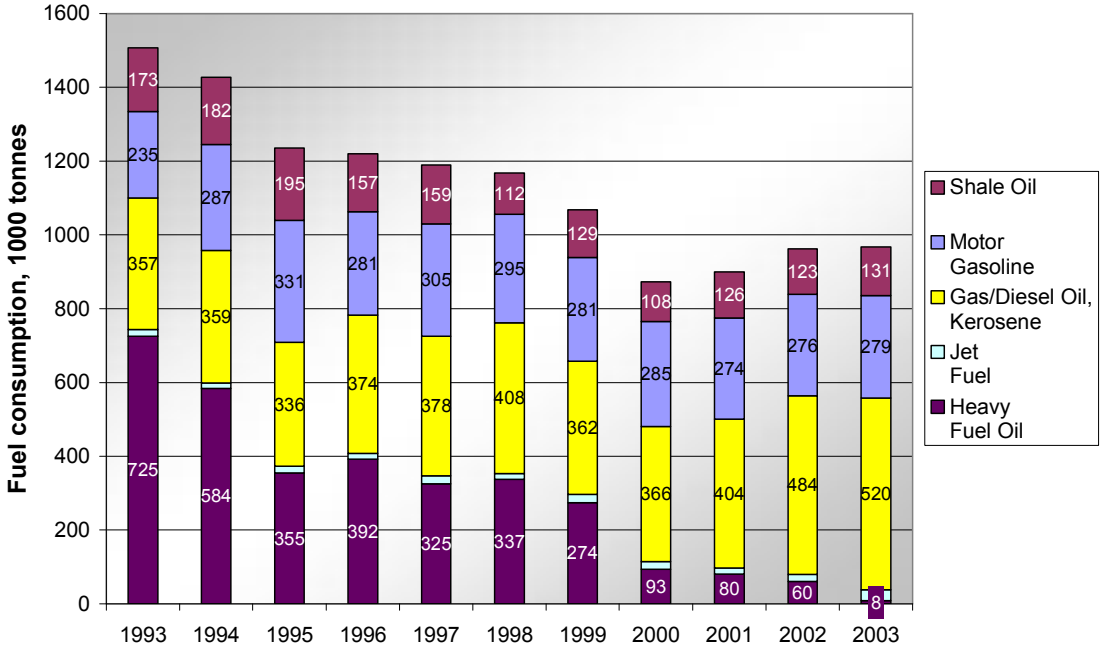


Figure 3. Liquid Fuel Consumption in Estonia, 2000-2003

The long-term energy projections were updated in 2003 by Estonian Ministry of Economic Affairs and Communication in a report titled "Long-term National Development Plan for the Fuel and Energy Sector until the Year 2015 (with vision 2030)" that is not yet approved by the Parliament. This project the motor gasoline and gasoil demand to grow accordingly to 330 and 560 thousand tonnes in 2010 due to the increase of number of motor vehicles.

1.1.1.2 Oil Transit Through Estonia

Due to its favorable economic and geographical position and deep, ice-free ports along the Baltic Sea coast, Estonia is the ideal transit route for shipments between east and west especially for oil transit from Russia to Europe and other parts of the world. Good railway existence makes the oil products transit very attractive. Very big oil transit volumes is the reason why it should be stressed that annually transhipped oil volumes

exceed the Estonian annual oil consumption (about 0,8 million tonnes without the shale oil) more than 35 times. Compared to 1997, in 2001 the total volume of petroleum handled in Estonian ports increased 33% from 11,6 million tons to 30 million tons, of which 7,5 million tons were crude oil and 22,5 million tons oil products.

1.1.2 Harmonisation of Legislation with the EU Directives Concerning to Oil Stocks

According to the obligations taken during the accession negotiations with the EU, the Republic of Estonia committed itself to fulfil the requirements of the EU directive 68/414/EEC (amended with the directive 98/93/EC) that imposes an obligation to maintain 90 days' minimum stocks of crude oil and/or petroleum products based on last year consumption. As other new Member States, so also Estonia achieved the agreement for transitional period to form the oil stocks.

For establishing the oil stocks the Minimum Stocks of Liquid Fuel Act (RT I 2001, 36, 202; 88, 531; 2002, 63, 387; 2003, 81, 548; 88, 594) was adopted by the Estonian parliament on March 21, 2001. According to this the obligation to create oil stocks has been divided between the state, importers of liquid fuel, and large-scale consumers of liquid fuel (hereinafter the **"companies"**) . Companies have an obligation to create 60 days' oil stocks by January 1, 2010. The state has an obligation to create 30 days' stocks by January 1, 2009.

On July 31, 2001 the Government adopted the regulation No 267 "Regulation for Using the Minimum Stocks of Liquid Fuel" (RTI, 03.08.2001, 69, 422) that fully transposes EU directive 73/238. The release of the stocks will be decided by the Government on the proposal of the Minister of Economic Affairs and Communications.

On June 26, 2001 the Minister of Economic Affairs and Communications adopted the regulation No 56 "The Format of Statistical Summaries of Minimum Stocks of Liquid Fuel" (RTL 2001, 83, 1143) for companies to submit their statistical returns.

1.1.3 Stockpiling System

As mentioned above the Minimum Stocks of Liquid Fuel Act (hereinafter the **"MSLF Act"**) regulates the formation of oil stocks which obliges importers of liquid fuel and large-scale consumers of liquid fuel as well as the state to gradually create oil stocks. According to the MSLF Act the companies shall establish 60 days' stocks by January 1, 2010. The state shall establish 30 days' oil stocks by January 1, 2009.

The obligation of the importers is based on quantity of liquid fuels imported by respective importer during preceding calendar year. The large-scale consumers shall calculate their obligation on the bases of their consumption during preceding calendar year whereby the MSLF Act stipulates that the large-scale consumer is a person consuming at least 10 000 tons per year of one type of liquid fuel. The state is required to maintain the stocks at the level equivalent to the difference between 90 days' average

internal consumption in the preceding calendar year and the quantity of stocks maintained by importers and large-scale consumers.

For creating oil stocks the law provides a schedule with intermediate stages according to which, by May 1, 2004 the state has to have stocks for at least 5 days. According to current legislation the time schedule for the creation of oil stocks by the state is as follows

1) 5 days' stocks by May 1, 2004
2) 10 days' stocks by January 1, 2005
3) 20 days' stocks by January 1, 2006
4) 25 days' stocks by January 1, 2007
5) 30 days' stocks by January 1, 2009

Companies must keep 5 days' oil stocks from January 1, 2003 already. For the companies, the time schedule for creating stocks is as follows:

1) 5 days' stocks by January 1, 2003
2) 10 days' stocks by January 1, 2005
3) 15 days' stocks by January 1, 2006
4) 20 days' stocks by January 1, 2007
5) 25 days' stocks by January 1, 2008
6) 35 days' stocks by January 1, 2009
7) 60 days' stocks by January 1, 2010

Both abovementioned time schedules for establishing oil stocks are shown together in Figure 4 that gives clear and integral picture about the proportions of state and companies stocks as well as transitional period during which the oil reserve shall be created.

The importers shall have the import licence for having the rights to operate in the oil market. There are approx. 40 importers and 3 large-scale consumers today, which have the obligation to establish and store the oil reserves. Regarding to MSLF Act the companies shall store the stocks only within the territory of Estonia. This is basically caused by the intention to protect the Estonian fuel market and not to destroy the good competition in the market. Allowing the companies to store their stocks abroad gives a significant advantage to the companies based on foreign capital and having their parent oil company abroad. At the same time the state has the right to store its stocks abroad. The first bilateral agreement was concluded with Sweden in April 30, 2004. Respective negotiations started in December 2003. There are also negotiations uncompleted with Finland for signing the bilateral agreement. These negotiations started at the end of 2000. Delegations have met twice, but the negotiations are still underway as there are certain provisions in the Estonian Minimum Stocks of Liquid Fuel Act that prohibit companies to keep their stocks abroad.

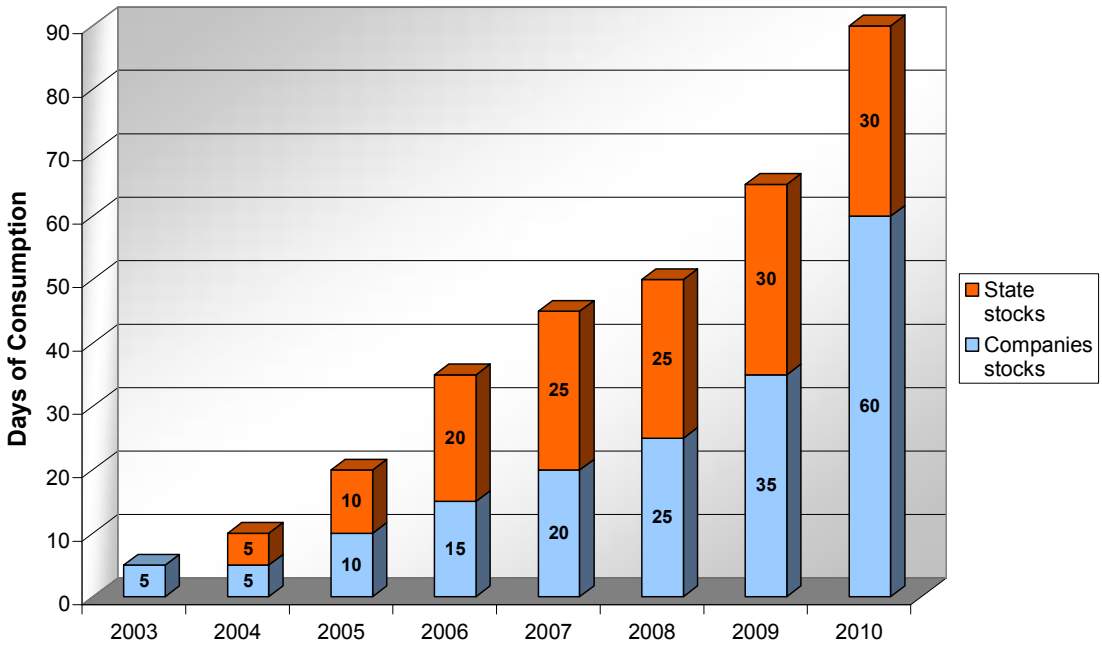


Figure 4. Projected State's and Companies' Oil Stocks in Estonia

Due to the active transit business there is limited availability of free tank capacity in Estonia that makes the storage very expensive. For instance the storage in Estonia is 3-4 times more expansive than in Sweden.

The tickets (also called as the delegation) are allowed for fulfilling the stockpiling obligation.

One of the biggest disadvantages of the system is the circumstance that the large-scale consumers shall create the stocks in addition to the oil importers. In situation where the oil importer supplies the large-scale consumer with the oil, the latter as well as the oil importer shall both establish the stoks for the same imported and consumed quantity.

No financial support is planned to give to companies for creating and maintaining of oil stocks. Thus companies' compulsory stockholding costs are passed onto consumers through market prices. The state's stockholding costs are being covered from the state budget.

1.1.3.1 Supervision and Data Collection

Calculation of the internal consumption of liquid fuel, and establishment, maintenance, replenishment and checking of the stocks is administered by the Ministry of Economic Affairs and Communications.

At the beginning of each calendar year and by 31 March at the latest, companies shall re-calculate their stockholding obligation, and they shall ensure that they comply with their new obligations at the latest by 31 July of the same year. The calculations shall be

submitted to the Ministry of Economic Affairs and Communications for verification by 15 April at the latest.

An official authorised by the Minister of Economic Affairs and Communications has the right at any time to check the existence, maintenance and replenishment of stocks and the compliance thereof with the established quality requirements.

The Ministry of Economic Affairs and Communications prepares by the 25th day of each month a statistical summary showing the quantity of stocks existing at the end of the previous month and specifying the number of days of average consumption in the preceding calendar year which those stocks represent. In order for a statistical summary to be prepared, the companies shall submit a summary showing their stocks existing at the end of the previous month to the Ministry of Economic Affairs and Communications by the 5th day of each month.

The first statistical summary was submitted by the Ministry of Economic Affairs and Communications to the European Commission in March 2003 for showing the stocks existing at the end of January 2003.

1.1.3.2 Stockdraw during Energy Crises

On July 31, 2001 the Government adopted the regulation No 267 "Regulation for Using the Minimum Stocks of Liquid Fuel" (RTI, 03.08.2001, 69, 422) that fully transposes EU directive 73/238. This regulation prescribes the rules for using the security stocks to ensure national security and the survival of the population of the state, to perform obligations assumed under international agreements relating to the supply of energy and fuel, and to continue production in the event of disturbances in the import of petroleum products. During the supply crises the Government may decide to prefer consumers who ensure the functioning of the sectors of vital national importance within the meaning of the Emergency Preparedness Act (RT I 2000, 95, 613; 2002, 61, 375; 63, 387). The release of the stocks will be decided by the Government on the proposal of the Minister of Economic Affairs and Communications. In necessary the Ministry of Economic Affairs and Communications co-ordinates the application of stock release with the crises commission of the Government. Ministry of Economic Affairs and Communications shall prepare the draft of the regulation for leaving the supply crises with minimum time and minimum costs and submit it to the Government.

1.1.3.3 Compliance Issues

Companies which maintain the oil stocks in a lesser quantity than the minimum quantity prescribed by law, or unauthorised use the oil stocks, shall have a penalty. Also the failure to submit statistical data concerning the oil stocks, or submission of false information concerning the oil stocks, is punishable as well. It should be noted that the penalty for such breaches is only up to 3 200 Euros.

1.2 Latvia

1.2.1 Oil Import Dependence and Market Structures

Latvia depends on import for all of its oil requirements (Table 4).

Table 4. Key Oil Data of Latvia, 1000 tonnes

	1996	1997	1998	1999	2000	2001 *	2002
Production	0	0	0	0	0	0	0
Imports	2348	1534	1672	1167	933	1269	1147
Exports	-106	-61	-120	-182	-109	0	0
Bunkers	0	0	0	0	0	-197	-194
Net Imports	2242	1473	1552	985	824	1072	953
Total Supply	2242	1473	1552	985	824	1072	953
Import Dependence (%)	100%	100%	100%	100%	100%	100%	100%
Stock Changes	-253	179	-40	250	72	-19	25
Domestic Supply	**1989**	**1652**	**1512**	**1235**	**896**	**1053**	**978**
Transfers	0	0	0	0	0	0	0
Inland Consumption	**1989**	**1652**	**1512**	**1235**	**896**	**1053**	**978**

* According to international methodology, since 2001 bunkering is included

Source: Central Statistical Bureau of Latvia

1.2.1.1 Supply of Energy Resources and Oil Consumption

Current energy supply of about 185 PJ comprises 33% natural gas and LPG, 29% peat and firewood, 26% liquid fuels (motor gasoline, diesel, light fuel oil, heavy fuel oil and other oil products), 10% electricity and hydro energy (including import of electricity) and 2% coal and coke (see Figure 5). Detail data about the supply of energy resources are given in Table 5.

During last 7 years the biggest changes in energy supply are occurred between the consumption of gas and liquid fuels that are shown in Figure 5. During 1996-2002 the share of gas has increased from 20% in year 1996 to 31% in year 2002. At the same time the share of liquid fuels has dropped by 15% from 42% in 1996 to 27% in 2002. Such big change is influenced basically from the rapid and sharp drop of the consumption of heavy fuel oil that has decreased more than by 1 million tonnes during 1996-2002. For instance in 1996 the consumption of heavy fuel oil was 1,141 million tonnes that by year 2002 was dropped to only 0,117 million tonnes (see Figure 6).

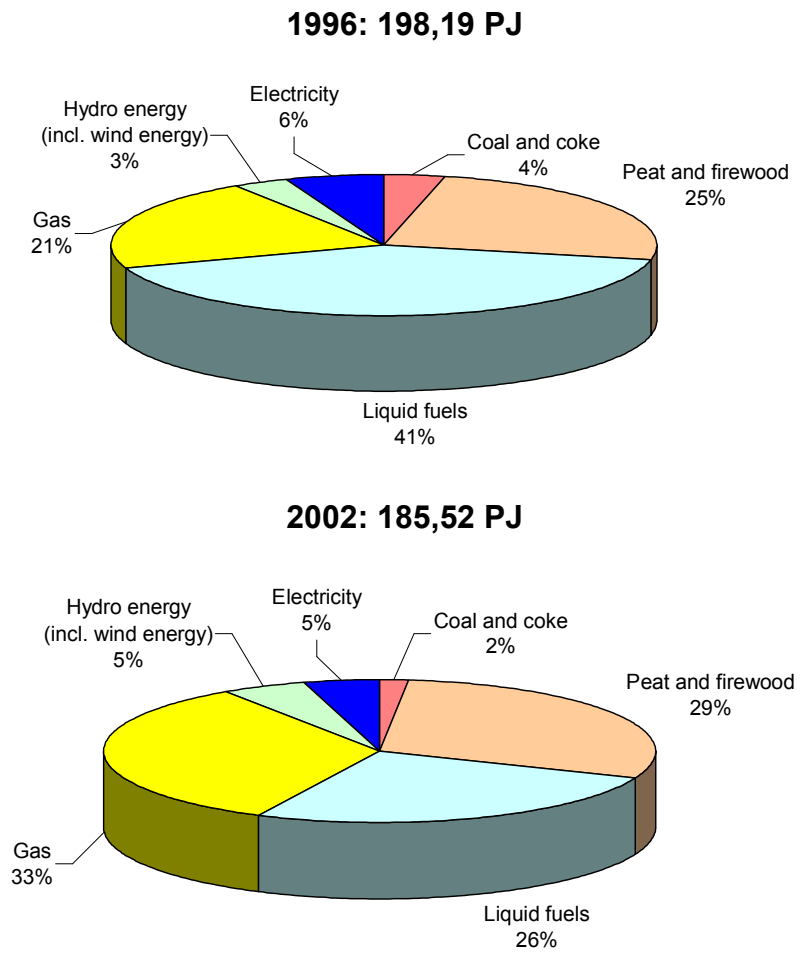
In 2001 it was projected that the share of gas in the total energy consumption of Latvia will increase even more in near future. It was estimated that by year 2005 the gas consumption will reach to 2 billion m^3 a year. In the same time frame, consumption of heavy fuel oil will go down further. Today the Riga region accounts for 82% of the total natural gas consumption. The biggest users of heavy fuel are heat generation and industry. Consumption is basically concentrated in the biggest cities where the natural gas is not available (Ventspils, Rēzekne).

Table 5. Supply of Energy Resources in Latvia, 1996-2002, PJ

Year	Coal and coke	Peat and firewood	Liquid fuels	Gas	Hydro energy (incl. wind energy)	Electricity	Total
1996	7,0	49,0	82,0	41,8	6,7	11,6	**198,2**
1997	5,9	51,9	69,2	50,8	10,6	6,6	**195,0**
1998	4,4	52,2	63,4	50,1	15,5	1,9	**187,5**
1999	3,9	53,4	58,3	47,8	9,9	7,0	**180,4**
2000	3,2	51,6	47,0	52,8	10,2	6,4	**171,3**
2001	3,9	53,9	49,6	60,9	10,2	6,8	**185,3**
2002	3,2	54,8	48,0	62,2	8,9	8,5	**185,5**

Remarks: in stocks at the beginning of the year + production + imports - exports - marine bunkering - in stocks at the end of the year; **peat and firewood** (firewood, peat and peat briquette); **liquid fuels** (heavy fuel oil and light fuel oil, motor gasoline, diesel, jet fuel, aviation gasoline, kerosene and shale oil); **gas** (natural gas and liquefied gas).

Source: Central Statistical Bureau of Latvia



Source: Central Statistical Bureau of Latvia

Figure 5. Supply of Energy Resources in Latvia in 1996 and 2002, PJ

The oil and oil products market is fully liberalized and has many strong local and foreign market participants. Statoil, Neste, Lukoil and Hydro-Texaco are well-known international brand names in Latvia's petrol retail and wholesale market. The two largest local oil product retailers are Viada and Dinaz.

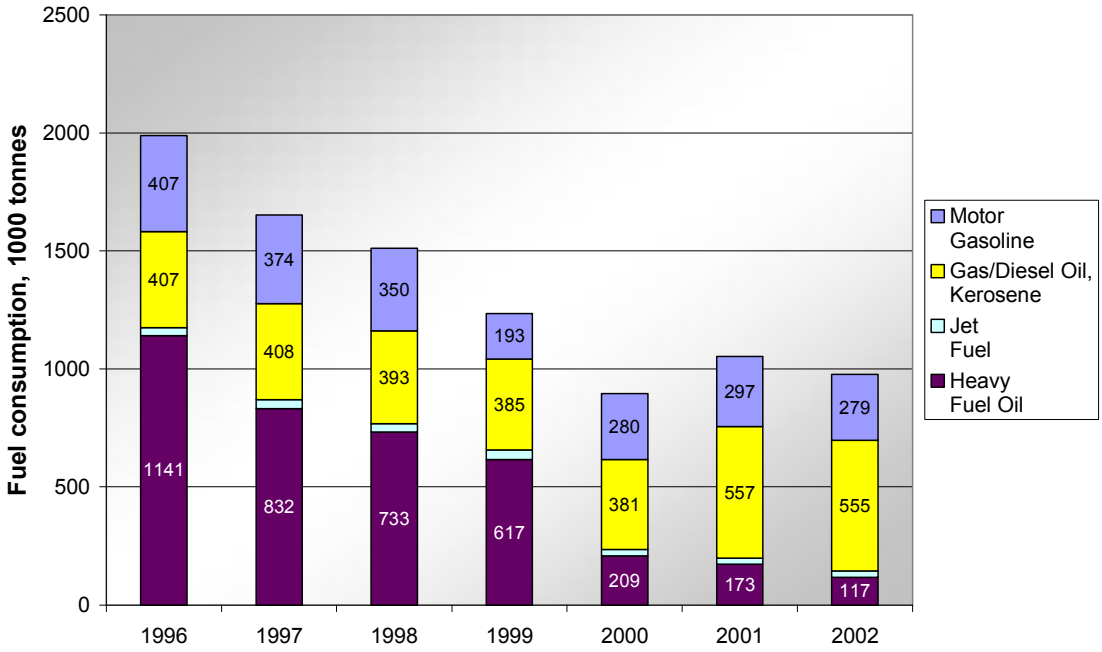


Figure 6. Liquid Fuel Consumption in Latvia, 1996-2002

1.2.1.2 Oil Transit Through Latvia

Due to a favorable geographical location and historical links Latvia plays a very important role in the Baltic Sea area for oil and oil products supplies from Russia and other CIS countries to the Northern and Western European markets. Taking into an account the orientation of big ports towards reloading of transit cargo - more than half of total cargo structure consists of oil and oil products. The oil transit corridor comprises pipeline and railway transport objects in the territory of Latvia, as well as the port of Ventspils.

Latvia is crossed by the following crude oil and oil product pipelines (see Figure 10 on the page 31 under the section of Lithuania):

- crude oil pipeline Polotsk - Ventspils (334 kilometers in Latvia). The projected throughput is 16 million tonnes annually, but its actual throughput is evaluated at about 15 million tonnes annually. In 2001, it transported 14,98 million tonnes, which is almost 100 percent;
- also the Polotsk - Mazeikiai (102 kilometers in Latvia) with an actual capacity of 16,2 million tonnes a year supplies crude oil from Russia to the Mazeikiai Refinery;
- oil product pipeline Polotsk - Ventspils (329 kilometers in Latvia). The projected throughput of the pipeline is 5 million tonnes but actually it can handle

less because of many narrow curves. The pipeline brought 4 million tonnes of oil products to Ventspils in 2001.

In 2002 oil transit volumes via the Port of Ventspils decreased by 8%. Since January 2003, oil transit via Polotsk – Ventspils pipeline has been cut off due to the Russian Government Commission Decision of December 2002. This decision was one of the most important problems for Latvian transit. Latvia's oil transit infrastructure suffers heavy losses amounting to revenues of more than USD 100 million per annum. This situation has seriously affected economical development of Latvia in general. At the moment, oil transportation through the Port of Ventspils still continues due to deliveries by railway.

Like in 2003, in this year Ventspils Nafta Termināls, Ltd. as the largest company of Ventspils Nafta Holding is planning to receive crude oil and petroleum product supplies from rail road, as well as to continue with the search for a potential strategic partner to enable possible resumption of crude oil flows by pipeline in Ventspils direction [10].

Ventspils Nafta as one of the biggest oil export terminals in Baltic States handles around 70% of total cargo reloaded in Latvian ports and 10% of total Russia's oil export. In 2002, export of Russian crude oil through Ventspils accounted for about 6% of total Russian crude exports and almost 9% of Russian oil product exports. In 2001, 22.3 million tons of oil and oil products were shipped through the Ventspils Nafta port of which 15 million tons was oil and 7.3 million tons - oil products. The future of Ventspils oil terminal doesn't look bright partly due to opened Primorsk terminal near St. Petersburg (Russia) and Russia's market protectionism and subsidies' policy.

1.2.1.3 Latvian Oil Fields

Latvia has some off-shore oil fields which need to be explored. The estimation has been made for 300 million barrels of oil in the Latvian areas of the Baltic Sea. The Latvian Development Agency has published a more optimistic estimate of 733 million barrels. In April 2002 Latvia awarded a 5-year oil exploration license to TGS-Nopec, an American-Norwegian joint venture. This licence covers only exploration and not extraction.

In the 1950's evidence of oil on shore in the west part of Latvia was found. To prepare for such exploration, the Latvian parliament adopted changes to the law which set that the owner of the land is also the owner of the resources. However, oil exploration has not started, yet, as financially feasibility has not been proven.

1.2.2 Harmonisation of Legislation with the EU Directives Concerning to Oil Stocks

Creation of the oil stocks is one of the most important issues of the energy sector in the context of accession to the EU.

On August 14, 2001 the Cabinet of Ministers adopted the Concept "Formation of the State Oil Product Reserve" providing the bases for the Government policy concerning the oil stocks and oil supply crisis management. According to the Concept, a package of regulations and amendments to the current legislation had to be drafted.

Regulation No 138 "Procedure for the Establishment and Storage of Petroleum Product Reserves" was adopted by the Government on 26th March 2002. This Regulation stipulates the obligations of the oil importers and producers to establish gradually 60 days' oil stocks by 1st July 2009. According to the Concept "Formation of the State Oil Product Reserve" the Government is responsible for the establishment of 30 days' oil stocks by 31st December 2009.

To ensure development of oil stocks and Energy Emergency Management measures the Government has adopted regulations and amendments to existing legislation. In order to harmonise regulations of energy supply in case of an energy crisis, on 9th March 1999, the Cabinet of Ministers adopted amendments in the following Regulations: "Supply and Use of Electrical Energy", "Supply and Use of Gas" and "Supply and Use of Heat".

On 12th March 2002 the Government adopted the Regulation No 106 "Procedure of Energy Supply and Fuel Sale to Users during Energy Crisis" which transpose EU directive 73/238.

On 28th May 2002 the Cabinet of Ministers adopted the Regulation No 218 "Energy Information System" which obliges the Ministry of Economy to establish an energy database in order to ensure balanced energy consumption and demand, planning and management of energy crisis prevention, and diminish the harmful effects of an energy crisis.

1.2.3 Stockpiling System

According to the obligations taken during the accession negotiations with the EU, the Republic of Latvia committed itself to establish 90 days' oil stocks. For this reason the Concept "Formation of the State Oil Product Reserve" was adopted by the Cabinet of Ministers. As mentioned above this was the main base for the Government policy concerning the oil stocks and oil supply crisis management. Based on this Concept the Government adopted the Regulation "Procedure for the Establishment and Storage of Petroleum Product Reserves" (hereinafter *Stocks Regulation*). This Regulation obliges the companies, which import petroleum products within the meaning of release for free circulation and produce petroleum products (Latvia has no refinery), to establish gradually 60 days' oil stocks by July 1, 2009. The calculation is based on the average domestic sales (inland consumption) of petroleum products in the previous year. As the first step, the oils stocks equal to 23 days were established by the companies already by July 1, 2003.

According to the Concept "Formation of the State Oil Product Reserve", the Government is responsible for the establishment of 30 days' oil stocks by December 31, 2009. For clearance it should be noted that despite of the fact that the State is responsible for the establishment of 90 days' oil stocks, the obligations of the Government (State) to built up additional 30 days' stocks (addition to 60 days of companies stocks) is not regulated by the abovementioned Stocks Regulation.

For creating oil stocks the Concept provides a schedule with intermediate stages according to which, by 31st December 2005 the state has to have oil stocks for at least 2,5 days. According to Concept the time schedule for the establishment of oil stocks by the state is as follows:

1) 2,5 days' stocks by December 31, 2005
2) 5 days' stocks by December 31, 2006
3) 10 days' stocks by December 31, 2007
4) 20 days' stocks by December 31, 2008
5) 30 days' stocks by December 31, 2009

In accordance with the Stocks Regulation the companies must keep 23 days' oil stocks from 1st July 2003 already. For the companies, the time schedule for establishing stocks is asfollows:

1) 23 days' stocks from July 1, 2003
2) 30 days' stocks from July 1, 2004
3) 33 days' stocks from July 1, 2005
4) 36 days' stocks from July 1, 2006
5) 39 days' stocks from July 1, 2007
6) 47 days' stocks from July 1, 2008
7) 60 days' stocks from July 1, 2009

Both abovementioned time schedules for establishing oil stocks are shown together in Figure 7 that gives clear and integral picture about the proportions of state and companies stocks as well as transitional period during which the oil reserve shall be created.

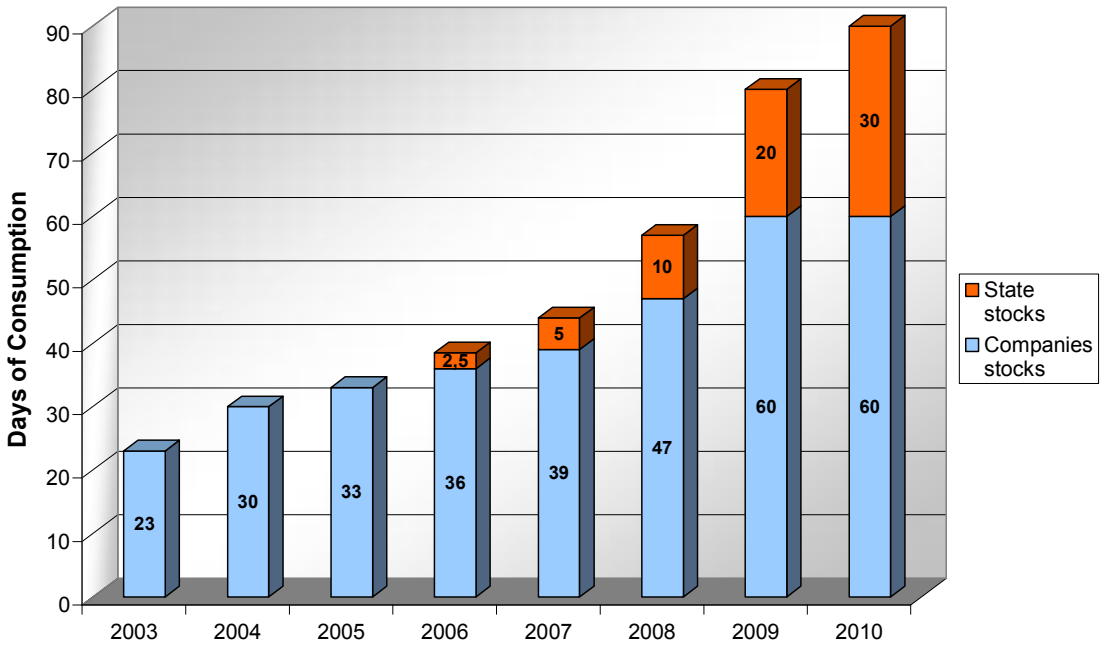


Figure 7. Projected State's and Companies' Oil Stocks in Latvia

For the rights to operate in the oil market the companies shall have the import licence. There are approx. 75 importers today, which have the obligation to establish and store the oil reserves. Regarding to the Stocks Regulation the companies shall store the stocks only in the places specified in the licence that decrease the responsiveness to move the stocks if necessary for instance due to the technical or business reasons. This also reduces the flexibility of the total system. From the aspect of security it should be pointed out that the oil stocks will not be maintained at all times at the obligatory level as stipulated in the Stocks Regulation because during the cleaning of oil tanks the companies are allowed to reduce their obligatory stocks if the Minister for Economics has been informed four working days prior to this. Under the energy chapter in Position Paper of the Republic of Latvia [6], it was stated that for strategic reasons Latvia has no plans to maintain the oil stocks outside its territory. Therefore this is not also regulated by the Stocks Regulation and no any bilateral agreements have been concluded with other Member States of EU. By the time being this standpoint has changed due to the limited availability of free tank capacity for storing compulsory oil stocks. In addition to this there are also other reasons have caused the necessity for working out the amendments to the current Stocks Regulation. Currently the biggest concern of the Ministry of Economy (responsible authority for oil stocks) is the definition of the stockpiling obligation based on the imported volumes of petroleum products within the meaning of release for free circulation. Due to the accession to EU this definition as well as the stockpiling obligation apply only to those oil volumes brought (imported) to the territory of Latvia from outside of EU – trading between the member states is not considered as import. Caused from these complications the amendments to the current Stocks Regulation are under the discussion. Instead of the imported oil volumes the new stockpiling obligation is planned to be based on the wholesale volumes as well as in certain cases on the retail sale volumes if at the same time the wholesaler is also the retail trader. These amendments is planned to enter into force during May this year.

Regarding to the Stocks Regulation it is important to stress that a newly established company shall, during their first year of operation, establish reserves in the amount of 50% of the above shown companies' obligation and on the basis of the amount of petroleum products sold (consumed) during the previous month.

The fulfilling of the stockpiling obligation is not allowed to cover with the tickets (also called as the delegation).

No financial support is planned to give to the companies for creating and maintaining of oil stocks. Thus companies' compulsory stockholding costs are passed onto consumers through market prices. The state's stockholding costs are being covered from the state budget.

1.2.3.1 Supervision and Data Collection

The State Revenue Service under the Ministry of Finance supervises fulfilment of oil stock obligations. The State Revenue Service is responsible for accounting, identification and verification of the oil stocks on the basis of the monthly reports of companies. These reports shall consist of the data regarding the consumption (sales) and amount of reserves of the previous month. The reports of companies shall be submitted to the State Revenue Service at the latest by the 15th date of the following month. On

the basis of the data provided by the State Revenue Service, the Ministry of Economics prepares monthly reports on the level of oil stocks. The first monthly report on the level of oil stocks according to the requirements of the Directive 68/414/EEC was sent by the Ministry of Economy to the European Commission in June 2002.

1.2.3.2 Stockdraw during Energy Crises

On 12th March 2002 the Government adopted the Regulation No 106 "Procedure of Energy Supply and Fuel Sale to Users during Energy Crisis" (hereinafter *Energy Crises Regulation*) which transpose EU Directive 73/238. This regulation prescribes the procedures by which energy users are supplied with energy during announced State or local energy crises as well as procedures by which energy supply undertakings sell heating fuel belonging to them upon a request from the State Energy Crisis Centre or local government energy crisis centre during an announced energy crisis.

There are three levels of energy crises:

- first level energy crisis – capability of ensuring the supply of energy is reduced by 7-12% of the daily (average) energy consumption;
- second level energy crisis – capability of ensuring the supply of energy is reduced by 12-17% of the daily (average) energy consumption; and
- third level energy crisis – capability of ensuring the supply of energy is reduced by more than 17% of the daily (average) energy consumption.

A draft decision regarding the level of a State energy crisis shall be prepared by the State Energy Crisis Centre who has the right to regulate the fuel price during the energy crises (a fixed pre-crises price, a specified price, a specified price to a person presenting a purchase voucher). Depending on the level of the energy crises the Energy Crises Regulation stipulates the groups of energy users which shall be supplied with the fuel.

1.2.3.3 Compliance Issues

Companies not complying with the requirements of the regulations stipulated in the Stocks Regulation or in any other way hindering the fulfilment of the regulations shall have a penalty applied in accordance with the procedures prescribed by law.

1.3 Lithuania

The energy sector of Lithuania, according to its importance, the number of employees (about 14% of industrial employees), the total value of capital assets of energy enterprises (about 25% of the total assets of the enterprises in the country) and the amount of expenses for the acquisition of energy resources, which are imported into Lithuania, is one of the most significant sectors in the country. The energy sector comprises interrelated energy systems (electricity, district heat supply, oil, natural gas, coal, as well as indigenous fuel and renewable energy resources), which consist of the entirety of enterprises and equipment intended for the extraction, generation, transformation, transmission, distribution and consumption of different energy resources. The inherited extensive energy sector, which is oriented towards substantial, yet inefficient consumption of electricity and oil products, as well as towards considerable exports, does not conform to the current requirements in its essential characteristics (efficiency, management principles, structure, etc.). Therefore, the recent national policy is primarily focused on substantial restructuring of the energy sector, the reorganisation and privatisation of the energy sector, as well as the implementation of the European Union (EU) directives.

Lithuania possesses the only oil refinery in the Baltic states region with the annual crude oil refining capacity amounting to 7-8 million tonnes, also the oil terminal for oil import-export via the Baltic Sea with the capacities equal, accordingly, to 6 and 8 million tonnes, and the petroleum products transhipment terminal in Klaipėda, reconstructed in 2001, the capacity of which reaches 7 million tonnes. At the present time Lithuania possesses all technical possibilities for importing crude oil and petroleum products, but the biggest concern and also defined as one of the biggest threats to the energy sector is that about 90% of primary energy is imported from a single supplier.

Lithuanian long term energy goals and the key provisions of the Government on the restructuring and development of the energy sector for the period until 2020 were formulated in the National Energy Strategy, which was approved by the Seimas, the Lithuanian parliament, in October 5, 1999. Due to the results of the accession negotiations with the EU, this Strategy was revised and updated in 2002 and approved by the Seimas in October 10, 2002. Deriving from the vulnerability of the energy supply to Lithuania, the necessity to establish 90 days' oil stocks is considered in the Strategy as one of the main strategic objectives of the Lithuanian energy sector.

1.3.1 Oil Import Dependence and Market Structures

Lithuania depends on import for 78% of its oil requirements (Table 6). Indigenous oil resources are not very plentiful, however, oil production from them can be continued for several decades, maintaining the annual oil extraction level of 0.3-0.5 million tonnes.

For this reason the sector of crude oil and petroleum products will remain, in the near future and in later years, dependent on the import of crude oil and partly on the import of petroleum products.

Table 6. Key Oil Data of Lithuania, 1000 tonnes

	2000	2001	2002
Product. from own sources	316,8	470,8	434,2
Production from imp. crude	4273	5739,8	5453,4
Imports	214	188,1	173,1
Exports	-2623	-4157,6	-4022,9
Bunkers	-94	-96,8	-104,1
Net Imports	1770	1673,5	1499,5
Total Supply	2086,8	2144,3	1933,7
Import Dependence (%)	84,8%	78,0%	77,5%
Stock Changes	-151	27	100
Domestic Supply	**1935,8**	**2171,5**	**2034**
Transfers	24	40,6	47,2
Inland consumption	**1959,8**	**2212,1**	**2081,2**

Remarks: In this table, the import dependence has been calculated by using oil volumes in natural units. In theory the calorific value of oil must be used for this calculation. Considering that the calorific value of both crude oil and petroleum products is in the same range, this simplification does not reduce the accuracy of the calculation.

Source: Statistics Lithuania

The origin of oil import in 2003 is given in Table 7. In 2003 petroleum products were imported mainly from Belarus, Latvia, Estonia and Russia, and crude oil was imported only from Russia. Because all statistical data of oil products concerning to the year 2003 is not available yet, the key oil data in Table 6 are given only until the year 2002.

Table 7. Origin of Oil Import in Lithuania in 2003, 1000 tonnes

Country	Crude Oil	Gasoline	Gasoil	Fuel Oil	Jet Fuel	Total
Belarus	0,0	0,2	9,7	7,7	25,6	43,2
Latvia	0,0	1,2	13,7	0,0	0,0	14,9
Estonia	0,0	0,0	0,3	12,7	0,0	13,0
Russia	7 035,0	0,0	5,8	3,2	0,0	7 044,1
Other	0,0	0,6	0,2	0,0	0,2	1,0
Total	**7 035,0**	**2,0**	**29,7**	**23,6**	**25,8**	**7 116,1**

Source: Statistics Lithuania

1.3.1.1 Supply of Energy Resources and Oil Consumption

Current energy supply of about 363 PJ comprises 41% nuclear, hydro- and geothermal energy, 27% liquid fuels (crude oil and other input to refinery, petroleum products and orimulsion), 24% natural gas, 7% peat and firewood and 1% hard coal and lignite (see Figure 8). Detail data about the supply of energy resources are given in Table 8.

Primary energy supply is dominated by inputs from one country: crude oil, natural gas, nuclear fuel and almost all the coal are imported from the Russia. Due to this the energy supply to Lithuania is vulnerable that is also stressed in the Lithuanian energy strategy "National Energy Strategy" to be as one of the main threats of the Lithuanian energy sector. It is mentioned that this vulnerability will significantly decrease through membership in the European Union, the European Energy Charter, political and economic developments in neighbouring countries, as well as alternative supply sources of electricity and petroleum products [11].

Table 8. Supply of Energy Resources in Lithuania, 1995-2002, PJ

Year	Hard coal and lignite	Peat and firewood	Liquid fuels	Gas	Nuclear, hydro- and geothermal energy	Electri-city	Total
1995	9,334	9,118	156,646	85,052	132,908	-9,667	**383,4**
1999	7,515	22,894	122,657	76,451	109,080	-9,655	**328,9**
2000	6,940	23,164	93,514	86,453	93,070	-4,810	**298,3**
2001	3,317	27,845	107,842	101,015	125,136	-14,271	**350,9**
2002	5,680	28,053	103,653	91,961	157,551	-23,353	**363,5**

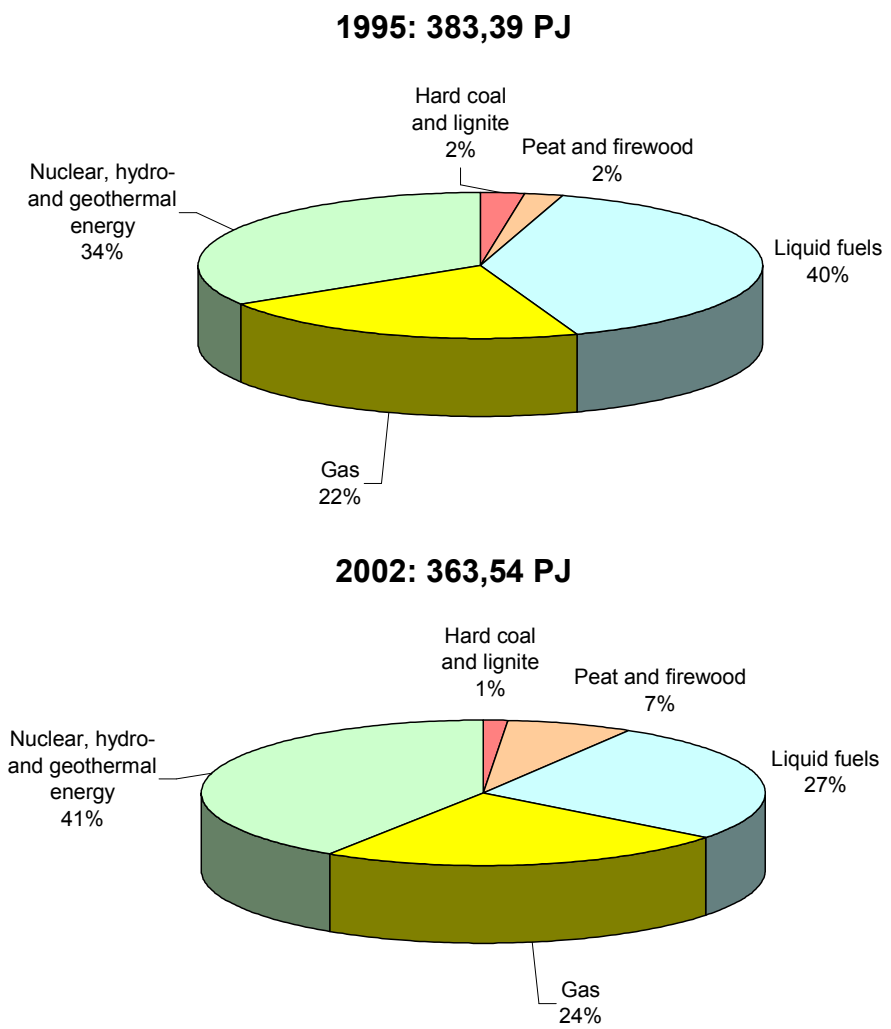
Remarks: in stocks at the beginning of the year + production + imports - exports - marine bunkering - in stocks at the end of the year; **hard coal and lignite** (hard coal, lignite, secondary solid fuel and other primary solid fuel); **peat and firewood** (firewood, peat and wood waste); **liquid fuels** (crude oil and other input to refinery, heavy fuel oil and light fuel oil, motor gasoline, diesel, jet fuel, aviation gasoline, kerosene and other petroleum products and orimulsion); **gas** (only natural gas); **electricity** (the export of electricity exceeds the import).

Source: Statistics Lithuania

During last 8 years the primary energy demand and the energy balance has not much changed. The biggest change took place at the beginning of '90s when due to the slow down of economic production, the energy supply dropped sharply from 686 PJ in the year 1990 to 382 PJ in 1993 and has been stable at the latter level until today. During 1995-2002 the biggest change in energy resources has occurred between the supply of liquid fuels and nuclear energy. Compared to 1995, in 2002 the share of liquid fuels has decreased by 13% from 40% to 27%, where the biggest decrease has caused by huge drop in heavy fuel oil consumption (see Figure 9) that is replaced by domestic fuels and natural gas. The increase of both domestic fuels by 5% and nuclear energy by 7% is also shown in Figure 8 as well as in Table 8. The supply of natural gas has been stable during last 8 years.

The changes in the structure of liquid fuels consumption (excluding LPG) during 1996-2003 are shown in Figure 9. During that time the liquid fuels consumption was at the highest level in 1998 and lowest in 2003 resulting in the total decrease more than 50%. Compared to 1998 the heavy fuel oil consumption has dropped from 1666 thousand tonnes to 423 thousand tonnes in 2003. As mentioned above and also shown in Figure 8, this decline has replaced by domestic fuels and natural gas. During last 3 years the consumption of motor fuels has been stable resulting in the increase only 0,3%.

Beside the petroleum products the consumption of liquefied petroleum gas is considerable. In 2000, 190 thousand tonnes LPG were consumed, of which 57% were used by transport. Compared to 2000, in 2003 the consumption of LPG increased 36% to 259,3 thousand tonnes.



Source: Statistics Lithuania

Figure 8. Supply of Energy Resources in Lithuania in 1995 and 2002, PJ

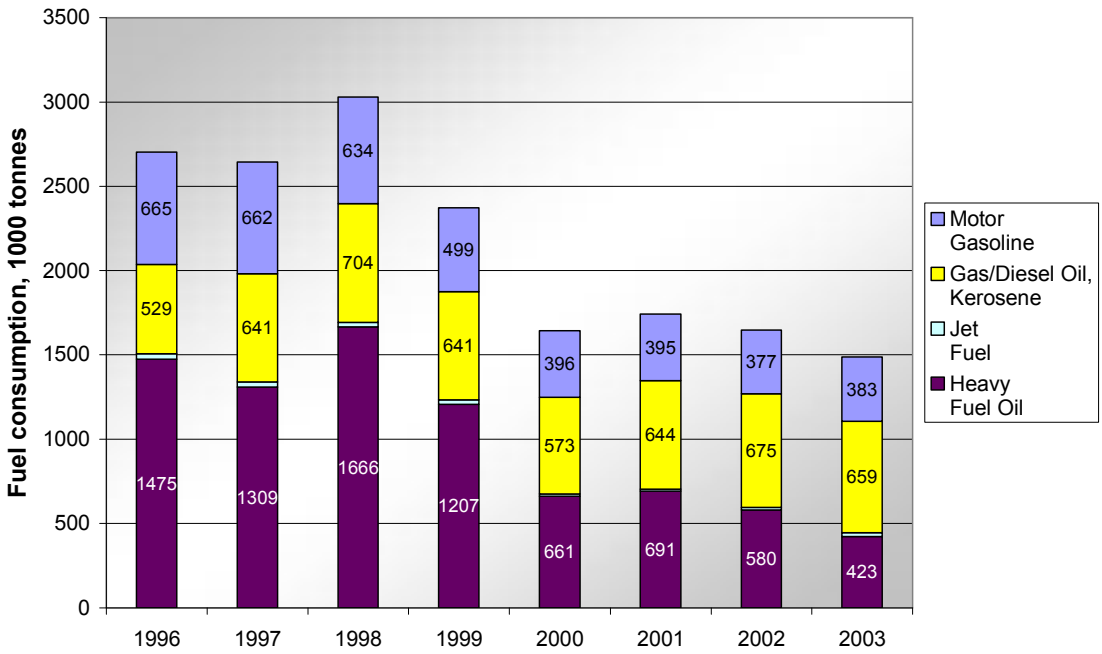


Figure 9. Liquid Fuel Consumption in Lithuania, 1996-2002

In terms of output and sales, the oil industry dominates the energy sector. Since 1993, the oil and petrochemicals sector has been de-monopolised and currently comprises approximately 600 operating companies.

The main company in the sector is AB Mazeikiu Nafta, the only crude oil refinery in the Baltics and one of the largest refineries in Eastern Europe.

Mazeikiai Refinery

The Mazeikiai Refinery, whose first refining complex was put into operation in 1980, is situated in the North-West of Lithuania, not far (about 90 kilometers) from the terminals in Butinge, Klaipeda, and Ventspils.

The design capacity of the Mazeikiai Refinery is 15 million tonnes of crude oil per year. Given the existing technologies and current marketing conditions, the efficient refining volume is 8 million tonnes a year. In order to utilize the refining capacities more efficiently, the Mazeikiai Refinery also processes other feedstock including gas condensate, fuel oil, and middle distillates. The primary feedstock processed by the Mazeikiai Refinery is Russian crude oil shipped by the trunk pipeline system Druzhba. These supplies are supplemented by crude oil and other feedstocks delivered by railway. Mazeikiu Nafta also purchases for the Refinery truck shipments of crude oil produced in Lithuania.

In 2000, Mazeikiu Nafta launched a comprehensive modernization program aimed at achieving future EU fuel quality requirements, increasing flexibility of operations, improving refining efficiency, and reducing operational costs. Technologies applied at

the Mazeikiai Refinery and constant process improvements allow Mazeikiu Nafta to make high-quality products in compliance with specific standards of the countries Mazeikiu Nafta operate in. These investments have constantly improved the facility's refining and economic efficiency – light refined products yield is now 72,5 percent compared to 68,9 percent in 1999.

Lithuanian Oil Pipeline System

Mazeikiu Nafta owns and operates a system of pipelines with a total length of about 500 kilometers. This system includes two pump stations near Birzai and another near Joniskis, crude oil pipelines to the Mazeikiai Refinery and Butinge Terminal, a crude oil pipeline leading to Ventspils, and a products pipeline supplying diesel fuel to Ventspils (seeFigure 10).

Construction of pipelines in Lithuania started in 1966, with crude oil starting to flow through the pipelines in 1968. In 1992, the company Naftotiekis was founded for the operation of Lithuanian pipelines, which became part of Mazeikiu Nafta in 1998.

The pipeline Polotsk - Mazeikiai with an actual capacity of 16,2 million tonnes a year supplies crude oil from Russia to the Mazeikiai Refinery (length of the Lithuanian part of this line is 225,5 kilometers). A 91,5-kilometer pipeline originating at a pump station at the Refinery brings crude oil to the Butinge Terminal – this pipeline is capable of transporting up to 13 million tonnes a year.

Mazeikiu Nafta owns and operates Lithuanian parts (each is 87 kilometres long) of the crude oil pipeline Polotsk - Ventspils, which can transport 15 million tonnes a year (in 2001, it transported 14,98 million tonnes, which is almost 100 percent), and products pipeline Polotsk - Ventspils with an annual throughput of up to 4 million tonnes of diesel fuel a year. The projected throughput of the pipeline is 5 million tonnes but due to the many narrow curves it can handle less.

Figure 10. Lithuanian Oil Pipeline System

1.3.1.2 Oil Transit Through Lithuania

In 2002, the total volume of crude oil and petroleum products transported by pipeline system was 23,4 million tonnes, of which 25 percent was transported to Mazeikiai Refinery, 25 percent to Butinge Terminal and 50 percent to Ventspils Terminal (in 2001 it was 30,6 million tonnes).

Compared to 2001, in 2002 the transshipment volumes of crude oil and petroleum products through the Butinge terminal increased from 5,1 million tonnes to 6,1 million tonnes. There is also another terminal for the petroleum products transhipment in Klaipėda reconstructed in 2001, the capacity of which reaches 7 million tonnes.

1.3.1.3 Lithuanian Oil Fields

In Soviet time geologists discovered oil in Lithuania's territory; estimated oil resources on land were at the level of 120-140 million tons out of which oil in accessible regions accounted only for 20-60 million tons. Even less has been assessed for commercial value, i.e. about 5-6 million tons.

Although oil fields have been discovered in at least 16 locations, recoverable reserves are considered to be very modest. Oil production began in 1990 and, although gradually rising, is still of very slender proportions.

It's necessary to mention that Lithuanian oil is located quite deep underground, although crude oil is of rather high quality and almost without sulphuric impurity. However, according to Lithuanian oil-extracting enterprise Geonafta former director Richardas Vajtekunas' statement it is possible, at best, to extract about 30-50% of the stocks available.

1.3.2 Harmonisation of Legislation with the EU Directives Concerning to Oil Stocks

According to the results of the accession negotiation with the EU, the Republic of Lithuania committed itself to fulfil the requirements of the EU directive 68/414/EEC (amended with the directive 98/93/EC) and therefore establish 90 days' minimum stocks of crude oil and/or petroleum products based on last year consumption. Deriving from the vulnerability of the energy supply to Lithuania, the necessity to establish 90 days' oil stocks is considered in the National Energy Strategy as one of the main strategic objectives of the Lithuanian energy sector.

For fulfilling the obligation to establish oil stocks the Law on State Stocks of Petroleum Products and Crude Oil (No IX-986) was adopted by the Lithuanian parliament on June 25, 2002. This law stipulates the general provisions for creating and storing of stocks as well as use of stocks. According to this law all stocks shall be created by the companies producing and importing petroleum products as well as by the state enterprises or an

institution assigned by the Government. All stocks shall be formed gradually by July 31, 2009.

Based on abovementioned law, on December 5, 2002 the Government adopted a Resolution No 1901 on the Procedure of Building, Maintenance, Accumulation and Control of State Stocks of Petroleum Products and Crude Oil, and Approval of Minimum Amounts of Petroleum Products. This is the regulation with detailed procedures for fulfilling the provisions of the Law on State Stocks of Petroleum Products and Crude Oil.

1.3.3 Stockpiling System

As described in last section the Lithuanian stockpiling system and creation of 90 days' oil stocks is regulated by the Law on State Stocks of Petroleum Products and Crude Oil as well as by governmental resolution with detailed procedures for fulfilling the provisions of mentioned law. According to the stockpiling regulation the oil stocks in all three categories shall be established by the companies importing and producing petroleum products (companies stocks) as well as by the state enterprises assigned by the Ministry of Economy. It is regulated that 50% of stocks shall be created and stored with state funds. For the establishment of state stocks, on December 31, 2001 the Lithuanian Petroleum Product Agency was established (agency stocks). In addition to the companies and the agency, also the power plants with a capacity of 50MW or more using heavy fuel oil for producing heat or electricity have the stockpiling obligation.

The regulation does not apply to the companies which annually produce, import or use less than 500 tonnes of petroleum products. Currently there are 56 companies with the oil import licence, of which approx. 45 companies import less than 500 tonnes of petroleum product.

Under the existing system, the stockpiling obligation of the companies producing petroleum products is based on their produced and sold (inland sales) volumes concerning to all three categories taking into account the ratio between these volumes and the total internal consumption. With the same approach the stockpiling obligation of the importers and the power plants depend on their imported volumes. The obligations for each company having the stockpiling obligation must be determined by the Ministry of Economy at the latest by 31st March each year. In the period from 2003 to 2008, the companies producing petroleum products and the agency must ensure that they comply with their new obligations as soon as possible starting from 31st March but at the latest by 31st December in each year, whereas starting from 2009, the period set for fulfilment shall be from 31st March until 31st July, as also provided in EU regulations. The companies importing petroleum products and power plants must establish their stocks within 15 days after the importation.

Companies importing petroleum products, which terminate their import activities by 31st July of the respective year, shall be obliged to keep oil stocks at least until 31st July of the next year, whereas in case of termination of the import activities at a later time, stocks must be stored for at least a year's period after the termination of import activities.

For the establishment of oil stocks the governmental resolution provides a schedule with intermediate stages according to which, by December 31, 2003 Lithuanian first stocks at the level of 49 days' average daily consumption were formed. According to the legislation the time schedule for the creation of 90 days' oil stocks is as follows:

1) 49 days' stocks by December 31, 2003
2) 56 days' stocks by December 31, 2004
3) 63 days' stocks by December 31, 2005
4) 69 days' stocks by December 31, 2006
5) 76 days' stocks by December 31, 2007
6) 83 days' stocks by December 31, 2008
7) 90 days' stocks by July 31, 2009

Formation both the agency's and companies' oil stocks are shown together in Figure 11 that gives the clear picture about the proportions of these stocks as well as transitional period during which the oil reserve shall be created.

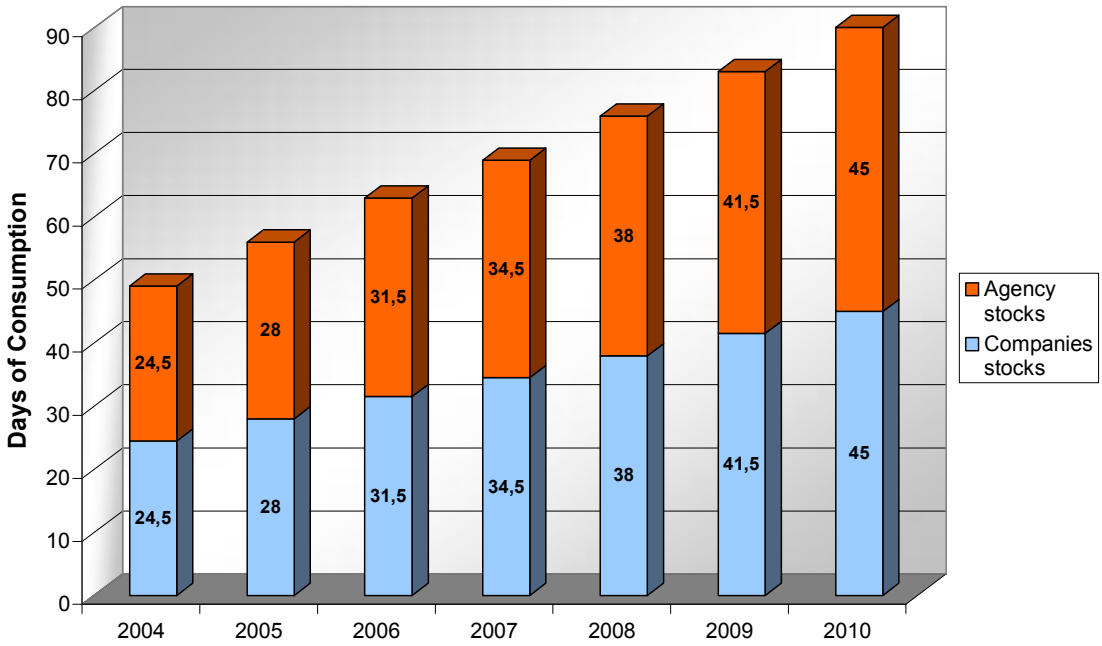


Figure 11. Projected Agency's and Companies' Oil Stocks in Lithuania

Considering the actual state of the current oil market, where in 2003 the total import of petroleum products amounted approx. 4,8% of the consumption of petroleum products, and that the stockpiling obligation of the companies producing petroleum products is based on their produced and sold (inland sales) volumes, it's not hard to see that among the companies the Mazeikiai Refinery, as a single one producer, has the biggest stockpiling obligation covering approx. 47,6% of the total 90 days' obligation. 50% of the oil stocks are being created by the agency.

It should be noted that in accordance with governmental resolution oil stocks will not be maintained at all time at required level, because in case of a contingency, when carrying

out urgent repairs or other works, companies are allowed to reduce the level of stocks for the period up to one month. It should be added that this reduction is allowed only upon written consent of the Ministry of Economy.

The stockholding regulation provides that with the decision of Government part of stocks may be held abroad. By the time being no any bilateral agreements have been concluded.

The fulfilling of the stockpiling obligation is not allowed to cover with the tickets (also called as the delegation).

Companies stocks shall be created and maintained with their own resources. Thus companies' compulsory stockholding costs are passed onto consumers through market prices. These costs are under the supervision of the Ministry of Economy. For carrying out such supervision the companies are obliged once a year to render the statement of costs concerning the storage of oil stocks to the Ministry of Economy. The agency's stockholding costs are being covered from the state budget.

1.3.3.1 Supervision and Data Collection

The State Energy Inspectorate under the Ministry of Economy is responsible to inspect the fulfilment of the companies' stockpiling obligation. Upon completing the inspection, the State Energy Inspectorate shall draw up a report indicating all the shortcomings detected during the inspection and giving mandatory instructions to be carried out. The State Energy Inspectorate shall notify the Ministry of Economy of the inspection results and present it with a copy of the report.

The inspection of the quality of oil stocks is the subject to the competence of the State Non Food Product Inspectorate under the Ministry of Economy. Control shall be exercised concurrently with the inspection of the fulfilment of the companies' stockpiling obligation carried out by the State Energy Inspectorate.

The calculation of the average daily consumption of petroleum products as well as the calculation of the amount of stocks to be stored and the determination of the companies stockpiling obligation is the subject to the competence of the Ministry of Economy. For these calculations the companies are obliged to render to the Ministry of Economy detailed information regarding to the production, import, export, trade in, consumption, creating and maintaining of stocks (incl. crude oil stocks).

For distinguish the obligatory oil stocks from the operational stocks as well as for simplifying the supervision over the oil stocks, companies are obliged to keep clear and proper accounting for security stocks.

1.3.3.2 Stockdraw during Energy Crises

Stocks may be used only in an emergency in the energy sector. When the emergency is over, the companies with the stock obligation must replenish the stocks to the required

level. Upon assessing the quantity of stocks used, the Ministry of Economy shall set the time limits for their replenishment.

If it is discovered upon drawing up the balance that the quantity of stocks is above the level, corresponding to 90 days' consumption, the companies with the stock obligation, upon the authorisation of the Ministry of Economy, may reduce the quantity of stocks to the level corresponding to 90 days' consumption and dispose of surplus stocks at its own choice.

1.3.3.3 Compliance Issues

Failure to furnish information or rendering the false information as well as storing oil stocks in a lesser quantity than regulated by law, or unauthorised use of stocks, is punishable.

II. SCENARIOS OF CREATION OF OIL STOCKS

The current chapter gives an in-depth and comprehensive overview about the analysis of alternative ways of creating security stocks with the purpose of finding the best method for that as well as economically most feasible solution for financing of the establishment of those stocks in all three Baltic States. As known from last chapter, the obligation to establish oil stocks is, in each Baltic States, divided between the companies and the state (in Lithuania the state stocks are being created by the Lithuanian Petroleum Product Agency). It was shown that the stockpiling systems in Estonia and Latvia are more or less the same, but which are totally different from the Lithuanian system due to the latter oil refinery situated in the North-West of Lithuania. For comparing as well as for analysing different stockpiling systems, even if some of them are similar, the actual oil market situation and especially the storage possibilities should be taken into account. Currently there have been analysed the formation of both the state and companies stocks together and separately, taking into account an evaluation of the expenses associated with the creation and storage of oil stocks and its influence on the price of fuel and the end consumers.

Despite of the some differences between Estonian, Latvian and Lithuanian stockpiling systems and oil markets it is possible to use several general costs and rates for analysing the expenses of the establishment of oil stocks in respective countries. These general costs and rates are indicated in Table 9.

Table 9. General Costs and Rates used in analysis

	Price and rate	Unit
Fuel prices:		
Gasoline	350	USD/ton
Middle distillates	310	USD/ton
Heavy fuel oil	150	USD/ton
Crude oil	32	USD/barrel
Storage fees outside of Baltic States:		
Gasoline	12	EUR/m^3/year
Middle distillates	9	EUR/m^3/year
Heavy fuel oil	15	EUR/m^3/year
Crude oil	10	EUR/m^3/year
Other:		
Currency Euro/dollar	1,232	EUR/USD
Insurance (all risks)	0,03%	per year
Interest rate for the companies	12%	
Building costs of new tanks	125	EUR/m^3

The particular details about the costs and rates used in the analysis of each stockpiling system are given in text hereinafter.

2.1 Estonia

In Estonia the Minimum Stocks of Liquid Fuel Act regulates the formation of oil stocks which obliges importers of liquid fuel and large-scale consumers of liquid fuel (companies) as well as the state to gradually create oil stocks. According to the MSLF Act the companies shall establish 60 days' stocks by January 1, 2010. The state shall establish 30 days' oil stocks by January 1, 2009.

In the analysis of Estonian stockpiling system, the following schemes for establishing of 90 days' oil stocks were considered:

Scenario I **30 days' stocks will be created by the state, and 60 days' stocks will be created by the companies**

a. *The state will create its stocks abroad and companies will create the oil stocks in Estonia, i.e., the plan described in the Minimum Stocks of Liquid Fuel Act will be implemented.*
b. *Not only the state, but also the companies can create stocks abroad.*

Scenario II **A central institution created by the state and the companies will create stocks for 90 days**

- *Stocks for 30 days will be created in Estonia and stocks for 60 days abroad.*

2.1.1 Scenario I

With the first scenario it is considered to follow the MSLF Act where 30 days' stocks will be created by the state and 60 days' stocks by the companies. As stipulated in the MSLF Act only the state can establish its oil stocks abroad. The second variant of scenario I provides that also the companies may create the oil stocks in another country.

2.1.1.1 Creation of 60 days' oil stocks by the companies

According to scenario I, the state will create 30 days' stocks and the companies will create 60 days' stocks. Current legislation stipulates that the companies are not allowed to keep their stocks in another country, therefore, according to estimations, **resources for storage the companies stocks will become exhausted in year 2006**, when the companies will have an obligation to keep stocks for 15 days. Also, this estimation is valid only if the state will store its oil stocksabroad .

Further increase of oil stocks means intensive and very capacious building of additional storage facilities with considering the growth of both the inner market and the storage capacity of oil stocks (provided that the capital for investments, proper locations, plans for storage facilities, logistic infrastructure etc. exist). Investments into additional storage facilities for keeping compulsory oil stocks should take place in parallel with investing into the creation of gas return systems in existing fuel terminals.

As an example, from year 2010, the total capacity of storage facilities for storing oil stocks must be minimally 190 000 m^3 – this corresponds to the total capacity of storage tanks owned by AS Pakterminal (one of the biggest oil transit company in Estonia) in the Muuga harbour. Of course, in addition to that, a sufficient storage capacity is needed for day-to-day business activities. These calculations are valid only if the state will store its oil stocks abroad.

Table 10 describes the quantity and cost of 60 days' oil stocks gradually created by the companies. All the data in the table are based on the volume of liquid fuels consumed in 2003. It can be seen that by the year 2010 the estimated volume of 60 days' oil stocks is approx. 191 000 m^3 (provided that the inland oil consumption will grow by 1-2% per year). The estimated cost of fuel for this quantity is approximately 40 million Euro (without excise duty, VAT and capital costs). Table 10 also gives the estimated building cost of tanks in amount of 24,2 million Euro minimally needed for storage of 60 days' oil stocks. Considering that up to 10 days' stocks can be stored without additional investments into new tanks, the sum of necessary investments will decrease by 3,7 million Euro (1,811+1,899). After this deduction the total sum will remain 20,5 million Euro.

Table 10. Quantity and cost of 60 days' oil stocks (Estonia, companies)

		2004	2005	2006	2007	2008	2009	2010
		5	10	15	20	25	35	60
Category I	1000 m3	5,12	10,68	16,40	22,37	28,60	40,93	71,24
Category II	1000 m3	9,06	18,41	28,03	38,00	48,28	68,45	118,40
Category III	1000 m3	0,12	0,22	0,32	0,43	0,54	0,76	1,30
Total	**1000 m3**	**14,30**	**29,30**	**44,75**	**60,80**	**77,43**	**110,14**	**190,93**
New tanks	***Million EUR***	**1,811**	**3,710**	**5,666**	**7,699**	**9,804**	**13,946**	**24,176**
Cost of fuel	***Million EUR***	**2,991**	**6,129**	**9,362**	**12,721**	**16,200**	**23,048**	**39,955**
Annual cost of fuel	***Million EUR***	**2,991**	**3,138**	**3,233**	**3,360**	**3,479**	**6,847**	**16,907**
Annual cost of tanks buid.	***Million EUR***	**1,811**	**1,899**	**1,956**	**2,033**	**2,105**	**4,143**	**10,230**

Notes:
1) the cost of fuel does not include excise duty, VAT and capital costs;
2) the building expenses of tanks are estimated to be 125 EUR/m^3.

Supposing that investments into new storage facilities described above will be covered by bank loans, the actual expenses will increase by the sum of capital costs. The same applies to the fuel to be bought for oil stocks. Also, capital costs need to be taken into account if bank loans are not taken. Furthermore, one should not forget the price of managing finances and risks collected by the companies.

The above-mentioned aspects are based on a supposition that companies will take bank loans for building new storage facilities and buying obligatory oil stocks with an interest

rate of 12%[2] for 11 years (the period 2004-2014). Therefore, the actual investments into new storage tanks will **amount to 30 million Euro** (20,5 million Euro minimally without capital costs). In that case, the purchase cost of oil stocks is **62,2 million Euro** (without excise duty and VAT) as opposed to 41,4 million Euro (without excise duty, VAT and capital costs; the 40 million Euro mentioned before is the purchase cost of oil stocks during the period 2004-2010). These expenses, from year 2004 to 2014, are given in detail in Table 11.

Table 11. Creation of 60 days' oil stocks on bank loan (Estonia, companies)

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
		5	10	15	20	25	35	60	60	60	60	60	
Category I	1000 m3	5,12	10,68	16,40	22,37	28,60	40,93	71,24	72,31	73,22	74,03	74,70	
Category II	1000 m3	9,06	18,41	28,03	38,00	48,28	68,45	118,40	119,44	120,49	121,27	121,86	
Category III	1000 m3	0,12	0,22	0,32	0,43	0,54	0,76	1,30	1,30	1,30	1,30	1,30	
Total	1000 m3	14,30	29,30	44,75	60,80	77,43	110,14	190,93	193,05	195,01	196,59	197,85	
Cost of fuel	*Million EUR*	2,991	6,129	9,362	12,721	16,200	23,048	39,955	40,400	40,812	41,145	41,410	
Annual cost of fuel	*Million EUR*	2,991	3,138	3,233	3,360	3,479	6,847	16,907	0,445	0,413	0,333	0,265	41,4
Pay back+ addit. fuel	*Million EUR*	0,504	1,059	1,666	2,342	3,104	4,770	9,460	9,905	9,873	9,793	9,725	62,2
Annual cost of tanks buid.	*Million EUR*	0,000	0,000	1,956	2,033	2,105	4,143	10,230					20,5
Pay back (tanks)	*Million EUR*	0,000	0,000	0,367	0,776	1,238	2,245	5,083	5,083	5,083	5,083	5,083	30,0
Tot. storage expenses	*Million EUR*	0,549	0,805	1,069	1,343	1,627	2,187	3,568	3,605	3,639	3,667	3,689	25,7
Total expenses	*Million EUR*	1,052	1,864	3,102	4,461	5,969	9,202	18,111	18,593	18,595	18,543	18,497	118,0

Notes: 1) *„Pay back + addit. fuel"* means repayments of the loan for buying fuel according to the annuity schedule. The bank loan includes the costs of both annual purchase of fuel (marked as *„Annual cost of fuel"*) and the purchase costs of additional fuel as a result of the increase of inland oil consumption;
2) The building plan of storage tanks proceeds from an assumption that oil stocks will be created gradually. The bank loan will be paid back according to an annuity schedule;
3) For storage of companies stocks, the storage costs are estimated to be at the same level as storage abroad – this is in case of building up new tank capacity by the companies; building cost of tanks and repayments of the loan are calculated separately.

Considering that there are about 40 companies in Estonia having the obligation to establish the oil stocks, investments into new storage tanks must be distributed all over Estonia and as a result, the oil stocks for 50 days in each three categories (160 000 m^3; 10 days' stocks can be stored without additional investments into new tanks) will primarily be stored in tanks with a volume of 1 000–2 000 m^3. **As a result, in some cases the building expenses per 1 m^3 can be up to 5 times higher[3] than considered in this analysis. Also, in case some companies lack sufficien t warranties, banks may decide not to give the loan to them in required quantity for making necessary investments into storage facilities and for purchase of oil.** In addition to the expenses mentioned above, expenses associated with the storage and rotation of stocks should be taken into account. In case of 60 days' stocks (after creation of stocks) these expenses will be approximately 3,6 million Euro per year (without capital costs but including costs of quality analysis of fuel, rotation and insurance). It means that for the period of 2004-2014 the storage expenses will be ca 22,7 million Euro. With possible capital costs[4] the costs of storing 60 days' oil stocks amounts to 25,7 million Euro for the same

[2] The choice of the interest rate was based on estimations. The interest rate can be even higher when project risks are taken into account (e.g., fluctuation of the price of liquid fuel in the international oil market).

[3] Building expenses will primarily depend on the volume of storage tanks and the number of devices (building 20-25%; devices 60%: tanks, oil pumps, loading and unloading devices, measuring devices, piping, vapour recovery unit for storage of gasoline; other 15%: electricity, automatics, fire protection, alarm and surveillance systems etc.).

[4] In these calculations, capital costs are 12% of annual storage expenses.

period (see Table 11). The total cost of creation and storage of 60 days' oil stocks in the period of 2004-2014 will be ca 118 million Euro.

2.1.1.2 Creation of 30 days' oil stocks by the state

According to law, the state as a keeper of stocks can store the stocks either within its own territory or in another Member State of EU. **Due to active oil transit business that causes the limited availability of empty storage tanks complying with environmental safety requirements, the storage of stocks in another country is 4 times cheaper than in Estonia** (i.e., this is the situation at the present moment due to the deficit of storage capacity).

Table 12 describes the quantity and cost of 30 days' oil stocks that will gradually be created by the state. It can be seen that the estimated volume of 30 days' oil stocks is approx. 95 000 m^3 (provided that the inland oil consumption will grow by 1-2% per year). The estimated cost of this quantity (without excise duty, VAT and capital costs) is 19,8 million Euro (20,7 million Euro during the period of 2004-2014). This is based on a supposition that the cost of creation and storage of oil stocks will be covered from the state budget through the excise duty (mineral oil tax) or, for example, by a possible future oil stock tax. Therefore, in case of the stocks created by the state, capital cost has not been included.

Table 12. Quantity and cost of 30 days' oil stocks (Estonia, state)

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
		5	10	20	25	25	30	30	30	30	30	30	
Category I	1000 m3	5,12	10,68	21,86	27,97	28,60	35,09	35,62	36,15	36,61	37,02	37,35	
Category II	1000 m3	9,06	18,41	37,37	47,50	48,28	58,67	59,20	59,72	60,25	60,63	60,93	
Category III	1000 m3	0,12	0,22	0,43	0,54	0,54	0,65	0,65	0,65	0,65	0,65	0,65	
Total	1000 m3	14,30	29,30	59,67	76,00	77,43	94,41	95,47	96,52	97,50	98,30	98,93	
Cost of fuel	*Million EUR*	2,991	6,129	12,483	15,902	16,200	19,755	19,978	20,200	20,406	20,573	20,705	
Annual cost of fuel	*Million EUR*	2,991	3,138	6,353	3,419	0,299	3,555	0,222	0,222	0,206	0,166	0,133	20,7
Tot. storage expenses	*Million EUR*	0,208	0,370	0,697	0,873	0,889	1,072	1,084	1,096	1,107	1,116	1,123	9,6
Total expenses	*Million EUR*	3,199	3,508	7,050	4,293	1,188	4,627	1,307	1,318	1,313	1,282	1,255	30,3

Notes: 1) In this table, the cost of fuel does not contain excise duty, VAT and capital costs;
2) The costs associated with the storage of stocks are: storage, insurance and inspection of stocks (incl. inspection of the stocks stored by the companies; inspection of the stocks stored by the state means monitoring the trend of fuel quality and respective analyses). The calculations are based on the supposition that the state will store its stocks abroad. The expenses do not contain VAT.

Provided that the state will create its stocks abroad, the state budget must contain 3,2-4,6 million Euro per year for the purpose of purchasing and storing of fuel during the period of creation of stocks (3,2 million Euro in 2004, which will increase to 4,6 million Euro by year 2009; due to the schedule of creation of oil stocks, in years 2006 and 2008 the annual cost will be 7,0 and 1,2 million Euro respectively). These calculations take into account both the 1-2% increase of the inland oil consumption and the increase of the volume of oil stocks gradually created. **From year 2010, these costs will include only storage expenses, that is ca 1,3 million Euro per year** (incl. the purchase costs of additional fuel needed to cover the increased oil consumption). **During the creation period of stocks, exact budgeting will be problematic as the volume of financial resources planned for the purchase of fuel directly depends on**

the oil prices in the international oil market. For example, during the period of 14.11.2002 to 10.03.2003, fuel prices increased by 71%. After this period (beginning of the Iraqi war) fuel prices started to decrease. Before the new growth of fuel prices the lowest level was achieved on 19.09.2003 when fuel prices were still 16% higher of the price level on 14.11.2002. By 10.05.2004 the fuel prices increased dramatically resulted in the huge growth of 73% compared with the price level on 19.09.2003. This has been caused of the problems still in Iraq as well as by the historically very low level of oil stocks in USA and also by an extraordinary huge oil demand in the world.

For the sake of comparing storage expenses in case of different scenarios it can be shown that in the period of 2004-2014 the estimated cost of storage of 30 days' oil stocks is 9,6 million Euro. Adding the purchase cost of fuel in amount 20,7 million Euro, then the total creation and storage cost of 30 days' oil stocks will be 30,3 million Euro for the same period.

On the basis of these calculations, it can be concluded that, during the period of 2004-2014, the total creation and storage cost of 60+30 days' oil stocks is approx. 148,3 million Euro (118 + 30,3 = 148,3).

Taking into account that in 2003 the total inland oil consumption was approx. 1 million m^3, and dividing the above-mentioned creation and storage expenses of 30 and 60 days' oil stocks with the total inland oil consumption, results in the cost of storing one litre of fuel (see Figure 12). There are two curves in Figure 12 – "s30+c60 (purchase of fuel+loan)" and "New tanks (c-loan)". The first characterises the total expenses of the establishment and the storage of both the state and the companies stocks per one litre of liquid fuel consumed. The other curve shows the investments by the companies into new storage tanks that is an additional burden for the end consumers through market prices. It can be seen from the figure that during the creation period of stocks the oil price will increase from ca 0,4 cents to 1,39 cents per litre (hereinafter the **„stockpiling fee"**) and will stay on the latter level till year 2014, which is the term of the bank loan taken by the companies for the purchase of liquid fuel. After year 2014, the stockpiling fee will fall to ca 0,9 cents per litre. To these expenses, investment costs of the companies into new storage tanks should be added (designated in Figure 12 as „New tanks (c-loan)"). Therefore, during the period of 2010-2014 the total stockpiling fee will be ca 1,87 cents per litre (1,39 + 0,48 = 1,87).

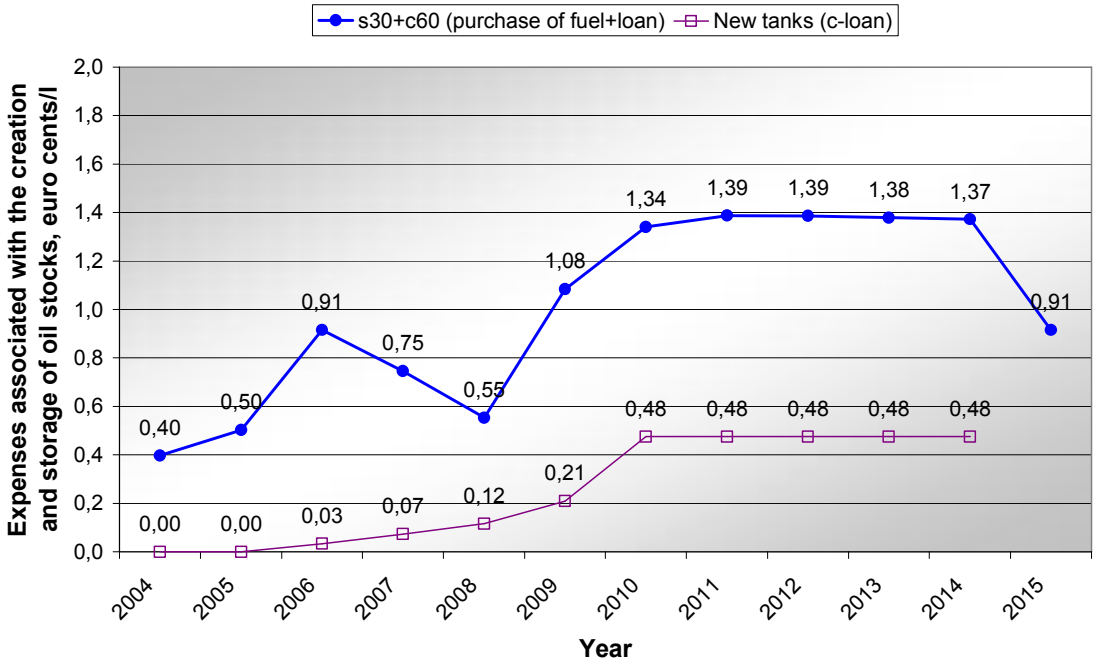


Figure 12. The total expenses of Estonian 30 and 60 days' oil stocks represented as the costs per one litre of consumed liquid fuel

The second variant of scenario I provides that not only the state but also the companies may create stocks abroad. It can be said that this scenario has both advantages and disadvantages. The main advantage is the fact that the storage expenses are 4 times smaller (in case the storage facilities needed for storing oil stocks will not be built in Estonia; i.e., the present situation). However, as for the negative side, this will give a significant competitive advantage to those Estonian companies which store their stocks abroad compared with the small companies storing small volumes within the territory of Estonia. There is another negative aspect – **due to the limited availability of empty storage tanks complying with environmental safety requirements,** those companies storing their stocks in Estonia are forced to make investments into new storage tanks. This, in its own turn, will make the competitive situation even more difficult for them as compared to those companies which store their stocks abroad. As a whole, it is quite easy to notice that **this solution is advantageous for the companiesbased on foreign capital and having their parent oil company abroad – their competitive advantage will become even bigger than at present** and, in the worst case, Estonian entrepreneurs may go into liquidation. This may raise a question – why was that scenario considered at all as a possible alternative? The reason is that, from the moment of preparing the draft of the Minimum Stocks of Liquid Fuel Act, this topic has been discussed several times. Furthermore, companies based on foreign capital that import liquid fuel have applied to the Ministry of Economic Affairs and Communications for permission to keep their oil stocks in the territory of the EU member states. **Here it is important to add that, in year 2002, the oil import by companies based on foreign capital and having their parent oil company situated in EU amounted to only 21% of the total import. For the sake of maintaining equal competitive conditions, this is a sufficient reason not to allow the companiesto store their stocks in another country.** Also in EU directive 68/414/EEC (amended with the directive 98/93/EC) in

Article 3, subparagraph 2, there is stressed that Member States shall ensure that fair and non-discriminatory conditions apply in their stockholding arrangements.

Seondly, it should be noted that for the purpose of storing oil stocks abroad, at the end of 2000 Estonia started the negotiations with Finland. Delegations have met twice, but the negotiations are still underway as there are certain provisions in the Estonian Minimum Stocks of Liquid Fuel Act that prohibit companies to keep their stocks abroad.

Conclusions:

1. The resources for storage the companies stocks will become exhausted in year 2006;
2. Further increase of oil stocks means intensive and very capacious building of additional storage facilities with considering the growth of both the inner market and the storage capacity of oil stocks. This is caused of the limited availability of empty storage tanks in the territory of Estonia complying with environmental safety requirements;
3. the cost of building new storage facilities by the companies amounts to a minimum of 30 million Euro (20,5 million Euro minimally without capital costs);
4. during the period of 2004-2014, the cost of purchasing obligatory oil stocks by the companies amounts to 62,2 million Euro (41,4 million Euro without capital costs);
5. during the period of 2004-2014, the total cost of managing 30 and 60 days' oil stocks is 35,3 million Euro;
6. to the above-mentioned expenses, 20,7 million Euro (the cost of purchasing fuel for the 30 days' oil stocks by the state) must be added;
7. during the period of 2004-2014, the total cost of creating and storing 30 and 60 days' oil stocks is 148,3 million Euro.

2.1.2 Scenario II

According to scenario II, **the whole 90 days' oil stocks will be created by a central institution** (founded according to law together with oil importers). This idea derives from several arguments (see Chapter III) that have a significant impact on the domestic market of liquid fuel, on the consumers and, through these factors, on the whole economy of the state. This is analysed in detail in the following subsection. According to scenario II, oil stocks in quantity equal to 30 days' inland consumption will be created in Estonia and stocks for 60 days abroad.

2.1.2.1 Creation of 90 days' oil stocks by a central institution

At first it should be mentioned that a stockholding body or entity which is responsible for holding all or part of the stocks is also foreseen in the directive 68/414/EEC. In

general, as also deriving from the directive 68/414/EEC (amended with the directive 98/93/EC), this should not be forgotten that the State has the responsibility for the establishment of 90 days' oil stocks and therefore the State shall take care of forming effectively working base for creating the oil stocks as well as for managing such system. Currently it is considered that for creation the 90 days' oil stocks the central institution will be formed by the state together with companies and therefore such entity will be managed both by the state and the companies, i.e. through the supervisory board. In reality, it should not matter who administers such a central institution, providing it has the backing of the state and operating companies, while meeting the compulsory stock-holding requirements efficiently and effectively. There are strong arguments for suggesting that operating oil companies should be involved in the process in some way (this is also suggested by the European Commission), since the security stocks would have to be incorporated into their supply systems in the event of an emergency.

As an example, the quantity of the security stocks of Germany is approximately 30 million tonnes and it is managed solely by the stockpiling association established by the state as entity under the public law. In Estonia, the 90 days' stocks is equal to only 0,2 million tonnes, which currently, in accordance with the MSLF Act is divided between the state and the companies. The quantity of security stocks of the EU Member States are characterised in Table 13.

From this table, it can be seen that the proportion of oil stocks of Estonia amounts to 0,17% from the total oil stocks of the EU. Compared to the quantity of oil stocks of other Member States, this proportion is mostly between 1-9%. Only as compared to Luxembourg, the Estonian oil stocks amount to almost 36%. There are also given the data in Table 13 for the proportion of the quantity of Latvian and Lithuanian 90 days' oil stocks as compared to other countries' stocks.

Table 13. Quantity of oil stocks in the European Union (31.12.2002)

Country	Quantity of oil stocks		Proportion of the quantity of Estonian, Latvian and Lithuanian 90 days' oil stocks as compared to other countries' stocks		
	days of consumption	1000 tonnes	Estonia	Latvia	Lithuania
Belgium	89	3 837	5,5%	6,5%	10,7%
Denmark	162	2 370	8,9%	10,5%	17,3%
Germany	110	29 819	0,7%	0,8%	1,4%
Greece	110	3 966	5,3%	6,3%	10,3%
Spain	106	13 602	1,5%	1,8%	3,0%
France	107	19 860	1,1%	1,3%	2,1%
Ireland	104	2 249	9,3%	11,1%	18,2%
Italia	111	17 849	1,2%	1,4%	2,3%
Luxembourg	92	576	36,5%	43,4%	71,2%
Netherlands	189	7 340	2,9%	3,4%	5,6%
Portugal	93	2 826	7,4%	8,8%	14,5%
United Kingdom	103	12 535	1,7%	2,0%	3,3%
Austria	105	2 628	8,0%	9,5%	15,6%
Sweden	134	4 071	5,2%	6,1%	10,1%
Finland	137	3 041	6,9%	8,2%	13,5%
	111	**126 569**	**0,17%**	**0,20%**	**0,32%**

At first sight, it may seem that the scenario, according to which a central institution will create 90 days' oil stocks itself, is an additional burden for the state budget. **However, this is true only if consumers will not pay for the expenses associated with the creation and storage of oil stocks.** For instance, in case of scenario I all companies' compulsory stockholding costs are passed onto consumers through market prices and the state's stockholding costs are being covered from the state budget.

Supposing that no loans shall be taken for the creation of 90 days' stocks by the central institution and that the purchase costs of fuel shall be covered by, for example, the stockpiling fee, which is paid by the oil importers on a similar basis with the excise duty (this can be also, for example, membership fee of a central institution for oil importers – this method is in use in several other EU Member States), then, **during the period of 2004-2010, the estimated purchase cost of 90 days' oil stocks is 59,9 million Euro** (ca 62,1 million Euro when the increase of the inland oil consumption in the period of 2011-2014 is included; see Table 14). For the sake of comparison, **in case of scenario I, where the companies shall create 60 days' oil stocks, the purchase costs of liquid fuel and capital costs during the same period (2004-2014) amount to 62,2 million Euro** (see Table 11). To this sum, the purchase costs of fuel for 30 days' state stocks (20,7 million Euro) should be added (see Table 12). Therefore, the difference in costs is **20,8 million Euro** (62,2 + 20,7 – 62,1 = 20,8 million Euro).

Table 14. Quantity and cost of 90 days' oil stocks (Estonia, central institution)

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
		10	20	35	45	50	65	90	90	90	90	90	
Category I	1000 m3	10,25	21,36	38,26	50,34	57,20	76,02	106,86	108,46	109,83	111,05	112,05	
Category II	1000 m3	17,16	35,41	62,91	82,25	92,90	122,30	170,85	172,36	173,87	174,99	175,84	
Category III	1000 m3	0,24	0,43	0,76	0,97	1,08	1,40	1,94	1,94	1,94	1,94	1,94	
Total	1000 m3	28,61	58,60	104,42	136,81	154,85	204,55	286,40	289,57	292,51	294,89	296,78	
Cost of fuel	*Million EUR*	5,981	12,258	21,844	28,623	32,401	42,803	59,933	60,600	61,219	61,718	62,116	
Annual cost of fuel	*Million EUR*	5,981	6,277	9,586	6,779	3,778	10,402	17,130	0,667	0,619	0,499	0,398	62,1
Tot. storage expenses	*Million EUR*	0,362	0,685	1,179	1,528	1,723	2,260	3,144	3,179	3,212	3,238	3,260	23,8
Total expenses	*Million EUR*	6,343	6,962	10,765	8,307	5,501	12,662	20,274	3,847	3,831	3,738	3,657	85,9

Notes: 1) In this table, the cost of fuel does not contain excise duty, VAT and capital costs.
2) The costs associated with the storage of stocks are: storage, insurance and inspection of stocks (inspection of the stocks means monitoring the trend of fuel quality and respective analyses). The expenses do not contain VAT.

As mentioned before, storage in another country is 4 times cheaper. This applies to the present situation where there is a deficit of storage tanks needed for compulsory oil stocks. In case of building up new tank capacity the storage cost are estimated to be at the same level as storage abroad. At present, due to the deficit of free tank capacity the central institution could create 90 days' oil stocks within the territory of EU. It should be stressed that pursuant to the preamble of the directive 98/93/EC (item nr. 15) oil stocks can, in principle, be held anywhere in EU and, therefore, it is appropriate to facilitate the establishment of stocks outside national territory. However, for reasons of state security and all kinds of potential oil supply crises, it would be reasonable to store a certain share of oil stocks in Estonia – in that case, if necessary, the stocks can immediately be used. Because of this fact, it is hereby calculated that **the central institution will create 2/3 of the stocks abroad and 1/3 in Estonia. For that purpose a suitable storage facility is neededto b uild up.** Considering the schedule for the establishment of the oil stocks, year 2009 is the only reasonable time for building up the necessary storage facility. Taking also into account the present Russian governmental politics and intention to export more and more oil through their own ports it is estimated

that by year 2009 the oil transit volumes will go down approx. 40-45%. At the same time the increase in Russian oil export volumes must be taken into account as well as the increasing competition over the oil transit volumes between Muuga port in Estonia, Ventspils in Latvia and Butinge in Lithuania. Therefore it is very complicated to predict what the actual situation will be. The aim of this sequence of thoughts is to show that in 2008 or latest in 2009 it will be clear whether it is necessary to build up new tanks for 30 day's oil stocks or not. Currently in this analysis the necessity for building up new tanks is taken into account. Hereby it is very important to note that in case of scenario I and based on above approach, the companies can make very unreasonable investments into new tanks.

Considering that the volume of 30 days' oil stocks is approx. 95 000 m^3 (see Table 12) and the building cost of new tanks 105 Euro/m^3 [5], the cost of building the storage facility will be **approx. 10 million Euro**. Compared to investments by the companies into new storage facilities described in scenario I (30 million Euro, see Table 11), **the total saving is 20 million Euro minimally[6]. When adding the saving on the creation of storage facilities to the saving on the purchase cost of oil stocks, then, in the period of 2004-2014, the total saving for end consumers is approx. 40,8 million Euro as compared to scenario I** (20 + 20,8 = 40,8 million Euro). This sum does not include the saving on the expenses associated with the storage of stocks. Hereby it is considered that under conditions described in this overview, the storage expenses of 90 days' oil stocks created by the central institution are approx. 23,8 million Euro (Table 14). As compared to the storage expenses in scenario I (35,3 million Euro – see conclusion nr 5 of scenario I on page 44) the saving is 11,5 million Euro. The higher costs in case of scenario I results from: 1) capital costs, 2) higher building cost of tanks associated with smaller tanks built by the companies, and 3) possibly faster rotation of oil stocks in case of the companies. **Under conditions described above, during the period of 2004-2014, the total saving for consumers is approx. 52,3 million Euro as compared to scenario I** (40,8 + 11,5 = 52,3). Table 15 at the end of scenario II gives an overview of the costs associated with each scenario (see the page 49).

Similarly to Figure 12, the costs associated with the storage of 90 days' oil stocks are being created by the central institution and the building expenses of planned storage facilities can be displayed as the cost per each litre of liquid fuel consumed (see Figure 13). In addition to the data given in Figure 12, Figure 13 describes the costs of the creation and storage of 90 days' oil stocks by the central institution as compared to scenario I, characterised by curve "ci90 (purchase of fuel)". It can be seen that during the creation period of oil stocks the stockpiling fee will raise from approx. 0,59 cents per litre to 1,9 cents per litre and after year 2010 will fall to approx. 0,35 cents per litre. The building expenses of the storage facilities needed for storing 30 days' oil stocks (0,93 cents/l, depicted in the figure as one point „New tanks (ci)") must be added to the above-mentioned costs. Due to the time schedule of the creation of oil stocks, it would be reasonable to build the necessary storage facility in 2009, because by 2010 the quantity of the stocks must increase from 65 to 90 days. In that case, during the period of 2004-2009, the oil stocks for 65 days will be created abroad and the stocks for 25

[5] Larger volume of oil stocks makes it possible to build bigger storage tanks the building cost of which per 1 m^3 is lower. See also note 3 on page 40.

[6] The given expenses are minimal, because this analysis proceeds from the fact that the building expenses of storage tanks by the companies are 1,2 times higher. Due to numerous tanks of small capacity, this difference can be even up to 5 times, but this difference has not been used in the present analysis.

days in Estonia. However, it should be noted that because of the increase in the oil consumption it would be reasonable to build a storage facility for 30 days' oil stocks and to avoid building several smaller tanks (however, considering that the transit volumes of liquid fuel may decrease in the future this may create a situation where there is no need to build a new storage facility).

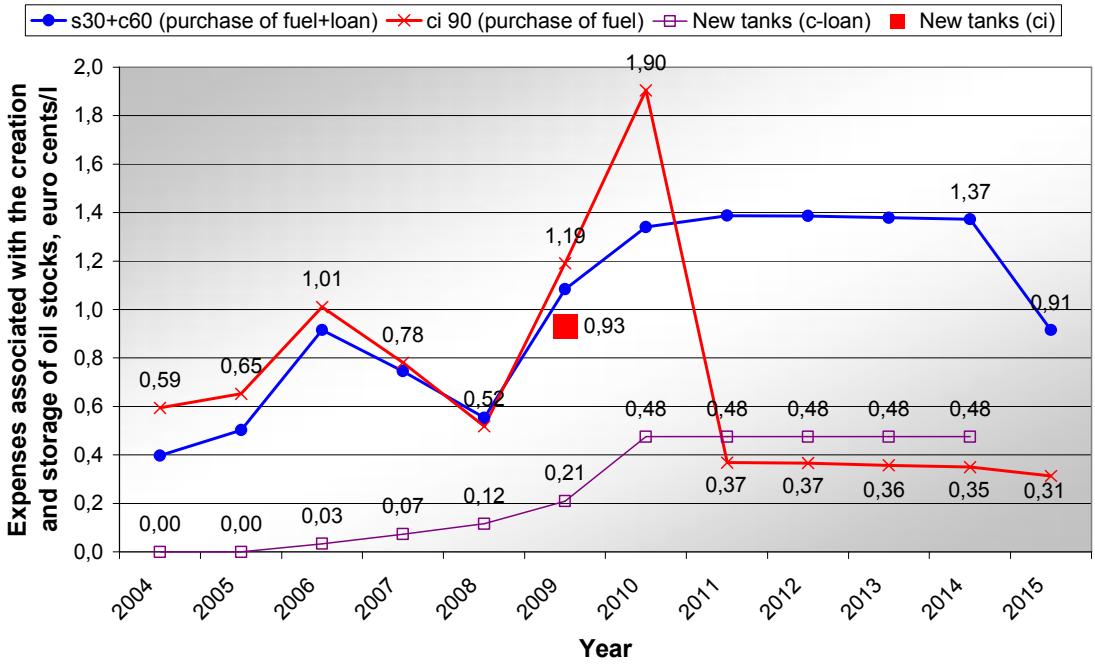


Figure 13. The total expenses of Estonian 90 days' oil stocks represented as the cost per one litre of consumed liquid fuel

It can be seen that after the repayments of the loan by the companies in case of scenario I, the difference in stockpiling fees between described scenarios is approx. 0,6 cents per litre. Considering that in 2015 the estimated Estonian annual fuel consumption will be approx. 1,2 million m^3, then after 2014 the total saving will be ca 7,2 million Euro per each year.

Conclusions:

1. 90 days' oil stocks are being created by the central institution (2/3 of the stocks in another country and 1/3 in Estonia). It is suggested that the central institution should be managed both by the state and the companies, i.e. through the supervisory board;
2. the estimated purchase price of 90 days' oil stocks created by the central institution will be 62,1 million Euro;
3. in case of scenario I, where the companies will create 60 days' oil stocks, the purchase costs of this fuel amounts to 62,2 million Euro (capital costs included). The purchase price of state oil stocks for 30 days (20,7 million Euro) must be added to this sum;

4. based on above, the cost difference is 20,8 million Euro (62,2 + 20,7 – 62,1 = 20,8 million Euro);
5. to create 1/3 of oil stocks in Estonia, a storage facility with a cost of approx. 10 million Euro is needed to build up. This gives a minimum saving of 20 million Euro as compared to the investments made by the companies in case of scenario I;
6. considering that, in case of scenario I, the total storage expensesof oil stocks would be 35,3 million Euro and in case of scenario II 23,8 million Euro, the saving on storage would be 11,5 million Euro;
7. when adding the saving on the building expenses of storage tanks to both the saving on the total storage expenses and the purchase costsof oil stocks, then under conditions described in this analysis, in the period of 2004-2014, the total saving for end consumers is approx. 52,3 million Euro as compared to scenario I (20 + 11,5 + 20,8 ≈ 52,3 million Euro);
8. in case by year 2009 the oil transit volumes will go down approx. 40-45%, giving the possibility to store the stocks in Estonia without necessity to build up new tank capacities, the total saving can be 62,3 million Euro;
9. **in addition to the saving of 62,3 million Euro during the period 2004-2014 in case of scenario II, the saving for end consumers after year 2014 minimally 7,2 million Euro per year should be taken into account.**

Table 15 gives a summary of the total cost of both scenarios during the period of 2004-2014.

Table 15. Comparison of costs of different scenarios for creation of Estonian oil stocks

	Scenario I (30+60 days' stocks)	Scenario II (90 days' stocks)
	Million Euro	Million Euro
Purchase cost of fuel	82,9	62,1
Building cost of fuel	30,0	10,0
Total storage expenses	35,4	23,8
Total	148,3	95,8
	Cost difference with sc. I	52,5

Notes: 1) Certain differences between the data in the text and in this table are caused by rounding of numbers in the text.
2) In case of scenario I and II, the costs include the building expenses of storage facilities accordingly for storing 50 days' oil stocks (with capital costs) and for 30 days' oil stocks.

2.2 Latvia

In Latvia the Regulation "Procedure for the Establishment and Storage of Petroleum Product Reserves" adopted by the Government regulates the formation of 60 days' oil stocks by importers of liquid fuel as well as by companies producing petroleum products (companies) (Latvia has no refinery). According to this regulation the companies shall establish their stocks by July 1, 2009. Regarding to the Concept "Formation of the State Oil Product Reserve", the Government is responsible for the establishment of 30 days' oil stocks by December 31, 2009.

In the analysis of Latvian stockpiling system, the following schemes for establishing of 90 days' oil stocks were considered:

Scenario I **30 days' stocks will be created by the state, and 60 days' stocks will be created by the companies**

- *Both the state and the companies will create its stocks in Latvia, i.e., the plan described in the Regulation "Procedure for the Establishment and Storage of Petroleum Product Reserves" will be implemented. It is also considered that for strategic reasons Latvia has no plans to maintain the oil stocks outside its territory.*

Scenario II **A central institution created by the state and the companies will create stocks for 90 days**

- *Stocks for 30 days will be created in Latvia and stocks for 60 days abroad.*

2.2.1 Scenario I

With the first scenario it is considered to follow the Latvian stockpiling regulation for the creation of the companies stocks for 60 days as well as the Concept "Formation of the State Oil Product Reserve" for creation of the state stocks for 30 days. As stipulated in the stockpiling regulation for the companies as well as stated under the energy chapter in Position Paper of the Republic of Latvia it is considered that for strategic reasons Latvia has no plans to maintain the oil stocks outside its territory.

2.2.1.1 Creation of 60 days' oil stocks by the companies

Based on above both the state and companies stocks will be established and maintained within the territory of Latvia. Taking into account the limited availability of free tank capacity for storing the compulsory oil stocks in Latvia, it is already now stressed that

further creation of oil stocks without investments into new storage facilities is not possible. Considering the condition of the old tanks which don't meet elementary technical requirements as well as the environmental safety requirements, building up new tanks is calculated to be economically the most reasonable way compared with the reconstruction of the old ones. Considering that currently the companies have 23 days' stocks and since July 1, 2004 their obligation is to keep 30 days' stocks, it is estimated that for the rest of 60 days' stocks new storage facilities (including storage facilities for storing state stocks for 30 days) will be gradually built up in accordance with the time schedule of creation of compulsory oil stocks.

Table 16 describes the quantity and cost of 60 days' oil stocks gradually created by the companies. All the data in the table are based on the volume of liquid fuels consumed in 2002. It can be seen that by the year 2009 the estimated volume of 60 days' oil stocks is approx. 219 000 m^3 (provided that the inland oil consumption will grow by 1-2% per year). The estimated cost of fuel for this quantity is approximately 44 million Euro (without excise duty, VAT and capital costs). In the current analysis it is supposed that the first stocks equal to 30 days of inland consumption will be created by July 1, 2004 and therefore all purchase cost of fuel are considered to be made in 2004. For comparing both two scenarios, the same approach has been used in case of scenario II. Table 16 also gives the estimated building cost of tanks in amount of 27,7 million Euro minimally needed for storage of 60 days' oil stocks. Considering that up to 30 days' companies stocks can be stored without investments into new tanks, the sum of necessary investments will decrease by 12,726 million Euro. After this deduction the total sum will remain 15 million Euro.

Table 16. Quantity and cost of 60 days' oil stocks (Latvia, companies)

		2004	2005	2006	2007	2008	2009
		30	**33**	**36**	**39**	**47**	**60**
Category I	1000 m3	31,69	35,82	40,00	44,34	54,66	71,32
Category II	1000 m3	58,80	65,88	72,96	80,37	98,46	127,29
Category III	1000 m3	10,02	11,02	12,02	13,02	15,69	20,03
Total	**1000 m3**	**100,50**	**112,72**	**124,99**	**137,74**	**168,81**	**218,64**
New tanks	***Million EUR***	**12,726**	**14,272**	**15,826**	**17,441**	**21,375**	**27,685**
Cost of fuel	***Million EUR***	**20,157**	**22,627**	**25,109**	**27,693**	**33,965**	**44,020**
Annual cost of fuel	***Million EUR***	**20,157**	**2,470**	**2,482**	**2,583**	**6,272**	**10,055**
Annual cost of tanks buid.	***Million EUR***	**12,726**	**1,547**	**1,553**	**1,615**	**3,934**	**6,310**

Notes:
1) the cost of fuel does not include excise duty, VAT and capital costs;
2) the building expenses of tanks are estimated to be 125 EUR/m^3.

Within the same approach as made in the analysis of Estonian stockpiling system, the investments into new storage facilities is also here considered to be covered by bank loans and therefore the actual expenses will increase by the sum of capital costs. The same applies to the fuel to be bought for oil stocks. For these investments the bank loan is calculated with the interest rate of 12% (see also the footnote 2 on the page 10) for 11 years (the period 2004-2014). Therefore, the actual investments into new storage tanks will **amount to 23,2 million Euro** (15 million Euro minimally without capital costs). In that case, the purchase cost of oil stocks is **76,5 million Euro** (without excise duty and VAT) as opposed to 46 million Euro (without excise duty, VAT and capital costs; the 44 million Euro mentioned before is the purchase cost of oil stocks during the period 2004-2010). These expenses, from year 2004 to 2014, are given in detail in Table 17.

Table 17. Creation of 60 days' oil stocks on bank loan (Latvia, companies)

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
		30	33	36	39	47	60	60	60	60	60	60	
Category I	1000 m3	31,69	35,82	40,00	44,34	54,66	71,32	72,41	73,49	74,42	75,25	75,92	
Category II	1000 m3	58,80	65,88	72,96	80,37	98,46	127,29	128,42	129,56	130,70	131,54	132,18	
Category III	1000 m3	10,02	11,02	12,02	13,02	15,69	20,03	20,03	20,03	20,03	20,03	20,03	
Total	1000 m3	100,50	112,72	124,99	137,74	168,81	218,64	220,87	223,09	225,15	226,82	228,14	
Cost of fuel	*Million EUR*	20,157	22,627	25,109	27,693	33,965	44,020	44,487	44,954	45,388	45,738	46,015	
Annual cost of fuel	*Million EUR*	20,157	2,470	2,482	2,583	6,272	10,055	0,467	0,467	0,434	0,349	0,278	46,0
Pay back+ addit. fuel	*Million EUR*	3,395	3,832	4,298	4,818	6,192	8,638	8,767	9,234	9,202	9,117	9,045	76,5
Annual cost of tanks buid.	*Million EUR*	0,000	1,547	1,553	1,615	3,934	6,310						15,0
Pay back (tanks)	*Million EUR*	0,000	0,274	0,565	0,890	1,752	3,287	3,287	3,287	3,287	3,287	3,287	23,2
Tot. storage expenses	*Million EUR*	2,063	2,276	2,490	2,713	3,255	4,126	4,165	4,204	4,240	4,269	4,292	38,1
Total expenses	*Million EUR*	5,458	6,382	7,353	8,421	11,200	16,051	16,219	16,725	16,728	16,672	16,624	137,8

Notes: 1) *„Pay back + addit. fuel"* means repayments of the loan for buying fuel according to the annuity schedule. The bank loan includes the costs of both annual purchase of fuel (marked as *„Annual cost of fuel"*) and the purchase costs of additional fuel as a result of the increase of inland oil consumption;
2) The building plan of storage tanks proceeds from an assumption that oil stocks will be created gradually. The bank loan will be paid back according to an annuity schedule;
3) For storage of companies stocks, the storage costs are estimated to be at the same level as storage abroad – this is in case of building up new tank capacity by the companies; building cost of tanks and repayments of the loan are calculated separately.

Considering that there are about 75 companies in Latvia having the stockpiling obligation, investments into new storage tanks must be distributed all over Latvia and as a result, the oil stocks for 30 days in each three categories (119 000 m^3; 30 days' stocks can be stored without additional investments into new tanks) will primarily be stored in tanks with a volume of 1 000–2 000 m^3 (see also the footnote nr. 3 on the page40).

In addition to the expenses mentioned above, expenses associated with the storage and rotation of stocks should be taken into account. In case of 60 days' stocks (after creation of stocks) these expenses will be approximately 4,2 million Euro per year (without capital costs but including costs of quality analysis of fuel, rotation and insurance). It means that for the period of 2004-2014 the storage expenses will be ca 33,5 million Euro. With possible capital costs[7] the costs of storing 60 days' oil stocks amounts to 38,1 million Euro for the same period (see Table 17). The total cost of creation and storage of 60 days' oil stocks in the period of 2004-2014 **will be ca 137,8 million Euro.**

2.2.1.2 Creation of 30 days' oil stocks by the state

According to the standpoint it was stated under the energy chapter in Position Paper of the Republic of Latvia that for strategic reasons Latvia has no plans to maintain the oil stocks outside its territory. By the time being this thinking has been changed due to the limited availability of free tank capacity for storing the compulsory oil stocks. Due to the very active oil transit business the actual storing possibilities are comparable with the situation in Estonia (see the description of the oil transit through Estonia and Latvia under chapter I). This is also reason for very high storage fees in Latvia.

Based on above and considering that also state stocks will be established within the territory of Latvia, the necessity to build up new tanks with the total capacity for 30 days' stocks in addition to the companies' investments should be taken into account.

[7] In these calculations, capital costs are 12% of annual storage expenses.

The formation of state stocks is described in the governmental Concept "Formation of the State Oil Product Reserve".

Table 18 describes the quantity and cost of 30 days' oil stocks that will gradually be created by the state as well as building cost of tanks. It can be seen that the estimated volume of 30 days' oil stocks in is approx. 110 000 m^3 (provided that the inland oil consumption will grow by 1-2% per year). The estimated cost of this quantity (without excise duty, VAT and capital costs) is 22,2 million Euro (23 million Euro during the period of 2004-2014). This is based on a supposition that the cost of creation and storage of oil stocks will be covered from the state budget. Therefore, in case of the stocks created by the state, capital costs have not been included. On the same bases Table 18 also gives the estimated building cost of tanks in amount of 11,7 million Euro needed for storage of 30 days' oil stocks.

Table 18. Quantity and cost of 30 days' oil stocks (Latvia, state)

		2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
		2,5	5	10	20	30	30	30	30	30	
Category I	1000 m3	2,78	5,69	11,63	23,77	36,20	36,75	37,21	37,62	37,96	
Category II	1000 m3	5,07	10,30	20,95	42,43	64,21	64,78	65,35	65,77	66,09	
Category III	1000 m3	0,83	1,67	3,34	6,68	10,02	10,02	10,02	10,02	10,02	
Total	1000 m3	8,68	17,66	35,92	72,88	110,43	111,54	112,58	113,41	114,07	
New tanks	*Million EUR*	0,916	1,863	3,790	7,690	11,653					11,7
Annual cost of tanks buid.	*Million EUR*	0,916	0,947	1,927	3,900	3,962					
Cost of fuel	*Million EUR*	1,744	3,550	7,227	14,673	22,243	22,477	22,694	22,869	23,008	
Annual cost of fuel	*Million EUR*	1,744	1,807	3,676	7,447	7,570	0,234	0,217	0,175	0,139	23,0
Tot. storage expenses	*Million EUR*	0,151	0,251	0,454	0,866	1,284	1,296	1,307	1,317	1,324	8,2
Total expenses	*Million EUR*	2,811	3,005	6,057	12,213	12,816	1,530	1,525	1,491	1,463	42,9

Notes: 1) In this table, the cost of fuel does not contain excise duty, VAT and capital costs;
2) The costs associated with the storage of stocks are: storage, insurance and inspection of stocks (incl. inspection of the stocks stored by the companies; inspection of the stocks stored by the state means monitoring the trend of fuel quality and respective analyses). The calculations are based on the supposition that the state will store its stocks abroad. The expenses do not contain VAT.

On the bases of above mentioned expenses, the state budget must contain 2,8-12,8 million Euro per year for the purpose of purchasing and storing of fuel during the period of creation of stocks (2,8 million Euro in 2006, which will increase to 12,8 million Euro by year 2010). These calculations take into account both the 1-2% increase of the inland oil consumption and the increase of the volume of oil stocks gradually created. From year 2011, these costs will include only storage expenses, that is ca 1,5 million Euro per year (incl. the purchase costs of additional fuel needed to cover the increased oil consumption). **It should be noted that due to the extremely volatile oil market, exact budgeting will be problematic.**

For the sake of comparing storage expenses in case of different scenarios it can be shown that in the period of 2006-2014 the estimated building cost of new tanks and cost of storage of 30 days' oil stocks is accordingly 11,7 and 8,2 million Euro. Adding the purchase cost of fuel in amount 23 million Euro, then the total establishment and storage cost of 30 days' oil stocks together with the investments into the new tanks will be 42,9 million Euro for the same period.

On the basis of these calculations, it can be concluded that, during the period of 2004-2014, the total creation and storage cost of 60+30 days' oil stocks is approx. 180,7 million Euro (137,8 + 42,9 = 180,7).

Taking into account that in 2002 the total inland oil consumption was approx. 1,2 million m^3, and dividing the above-mentioned creation and storage expenses of 30 and 60 days' oil stocks with the total inland oil consumption, results in the cost of storing one litre of fuel (see Figure 14). There are two curves in Figure 14 – "s30+c60 (purchase of fuel+loan)" and "New tanks (s + c-loan)". The first characterises the total expenses of the establishment and the storage of both the state and the companies stocks per one litre of liquid fuel consumed. The other curve shows the investments by the companies into new storage tanks that is an additional burden for the end consumers through market prices. It can be seen from the figure that in accordance with the time schedule for creating 90 days' stocks during 2004-2010 the oil price will increase from ca 0,44 cents to 1,75 cents per litre (hereinafter the **„stockpiling fee"**). By year 2011 the stockpiling fee will drop to the level of 1,2 cents per litre and stay on the latter level till year 2014, which is the term of the bank loan taken by the companies for purchase of liquid fuels. After year 2014, the stockpiling fee will fall to ca 0,9 cents per litre. To these expenses, investment costs of both the state and the companies into new storage tanks should be added (designated in Figure 14 as „New tanks (s + c-loan)"). Therefore, during the period of 2011-2014 the total stockpiling fee will be ca 1,46 cents per litre (1,20 + 0,26 = 1,46). During the transitional period for creating 90 days' oil stocks the stockpiling fee is highest in year 2010 amounts 2,33 cents per litre.

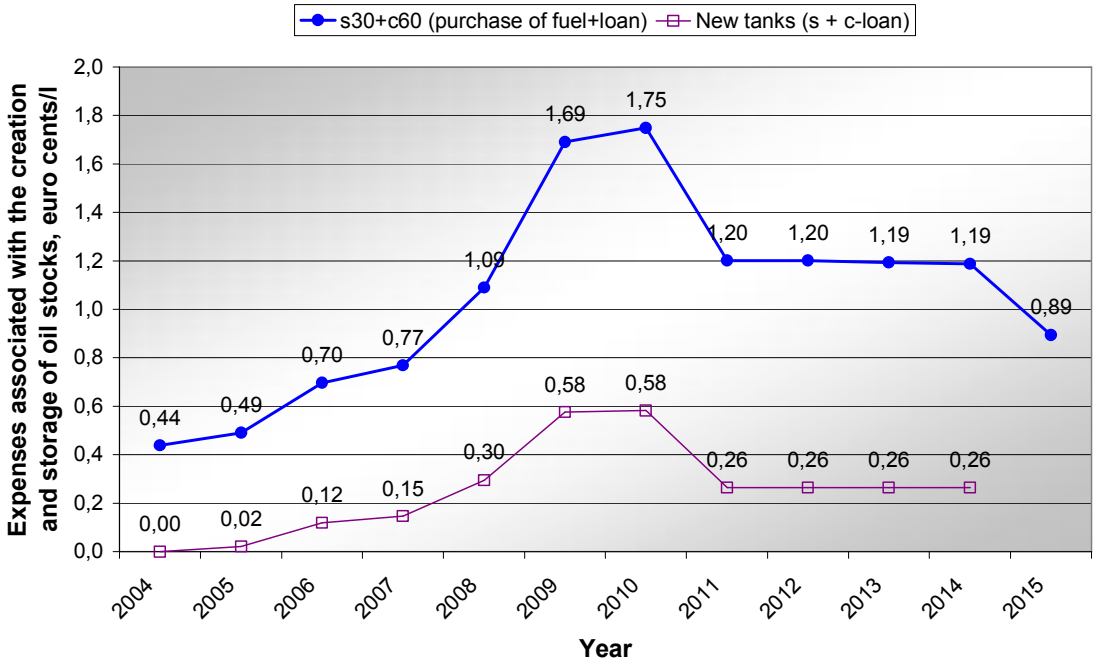


Figure 14. The total expenses of Latvian 30 and 60 days' oil stocks represented as the costs per one litre of consumed liquid fuel

It should be noted that the dynamics of the stockpiling fee depends on large scale on the way for covering the stockpiling costs (including the building cost of new tanks). As mentioned hereinbefore all costs for creating and managing state stocks as well as

building cost of tanks are being covered from the state budget and no bank loans will be taken. In case of creating companies stocks the capital costs as well as the interests of the bank loan for purchasing of oil products and building up new storage capacities are included.

Conclusions:

1. There is limited availability of free tank capacity for storing compulsory oil stocks in Latvia. Already now the resources for storage of the companies stocks are exhausted and therefore building up new tanks with the total capacity equal to 60 days' oil stocks is the most important question;
2. Further increase of oil stocks means intensive and very capacious building of additional storage facilities with considering the growth of both the inner market and the storage capacity of oil stocks;
3. the cost of building new storage facilities by the companies amounts to a minimum of 23,2 million Euro (15 million Euro minimally without capital costs);
4. the cost of building new storage facilities by the state amounts to a minimum of 11,7 million Euro;
5. during the period of 2004-2014, the cost of purchasing obligatory oil stocks by the companies amounts to 76,5 million Euro (46 million Euro without capital costs);
6. during the period of 2004-2014, the total cost of managing 30 and 60 days' oil stocks is 46,3 million Euro;
7. to the above-mentioned expenses, 23 million Euro (the cost of purchasing fuel for the 30 days' oil stocks by the state) must be added;
8. during the period of 2004-2014, the total cost of creating and storing 30 and 60 days' oil stocks is 180,7 million Euro.

2.2.2 Scenario II

Similarly as in case of Estonia, it is supposed that **wholeLatvian 90 days' oil stocks will be created by a central institution** that will be founded according to law together with oil importers. The benefits of the central institution as well as the involvement and the obligations of the oil importers are discussed in detail under scenario II of the analysis of Estonian stockpiling system on the page 44. It is also here considered that due to the limited availability of empty tank capacity for storing compulsory oil stocks, oil reserve in quantity equal to 30 days' inland consumption will be created in Latvia and the rest of the stocks abroad.

2.2.2.1 Creation of 90 days' oil stocks by a central institution

Supposing that no loans shall be taken for the creation of 90 days' stocks by the central institution and that the purchase costs of fuel shall be covered by, for example, the stockpiling fee, which is paid by the oil importers on a similar basis with the excise duty (this can be also, for example, membership fee of a central institution for oil importers – this method is in use in several other EU Member States), then, **during the period of 2004-2010, the estimated purchase cost of 90 days' oil stocks is 66,7 million Euro** (ca 69 million Euro when the increase of the inland oil consumption in the period of 2011-2014 is included; see Table 19). For the sake of comparison, **in case of scenario I, where the companies shall create 60 days' oil stocks, the purchase costs of liquid fuel and capital costs during the same period (2004-2014) amount to 76,5 million Euro** (see Table 17). To this sum, the purchase costs of fuel for 30 days' state stocks (23 million Euro) should be added (see Table 18). Therefore, the difference in costs is **30,5 million Euro** (76,5 + 23 – 69 = 30,5 million Euro). The attention should be drawn to avoidance the confusion between this difference in cost and the storage expenses because the storage expenses of 90 days' oil stocks amount also 30,5 million Euro.

Table 19. Quantity and cost of 90 days' oil stocks (Latvia, central institution)

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
		30	33	38,5	44	57	80	90	90	90	90	90	
Category I	1000 m3	31,69	35,82	42,78	50,03	66,28	95,10	108,61	110,24	111,64	112,87	113,89	
Category II	1000 m3	56,07	62,83	74,41	86,47	113,87	161,84	183,70	185,32	186,95	188,15	189,07	
Category III	1000 m3	10,02	11,02	12,86	14,69	19,03	26,71	30,05	30,05	30,05	30,05	30,05	
Total	1000 m3	100,50	112,72	133,67	155,40	204,73	291,52	331,30	334,63	337,73	340,22	342,21	
Cost of fuel	*Million EUR*	20,157	22,627	26,853	31,243	41,191	58,693	66,730	67,431	68,082	68,606	69,023	
Annual cost of fuel	*Million EUR*	20,157	2,470	4,225	4,390	9,948	17,502	8,037	0,701	0,651	0,524	0,417	69,0
Tot. storage expenses	*Million EUR*	1,175	1,310	1,543	1,785	2,334	3,300	3,742	3,779	3,813	3,841	3,863	30,5
Total expenses	*Million EUR*	21,332	3,781	5,769	6,175	12,282	20,801	11,780	4,480	4,465	4,365	4,280	99,5

Notes: 1) In this table, the cost of fuel does not contain excise duty, VAT and capital costs.
2) The costs associated with the storage of stocks are: storage, insurance and inspection of stocks (inspection of the stocks means monitoring the trend of fuel quality and respective analyses). The expenses do not contain VAT.

Based on the indications of Latvian oil companies (Neste Latvia, Statoil Latvia, Hydro Texaco and Lukoil) the storage in Latvia due to the limited availability of free tank capacity is approx. 3 times more expansive than in Western Europe and Nordic countries. This applies to the present situation where there is a deficit of storage tanks needed for compulsory oil stocks. In case of building up new tank capacity the storage cost are estimated to be at the same level as storage abroad (building cost of tanks are calculated separately). At present, due to the deficit of free tank capacity the central institution could create 90 days' oil stocks within the territory of EU. It should be stressed that pursuant to the preamble of the directive 98/93/EC (item nr. 15) oil stocks can, in principle, be held anywhere in EU and, therefore, it is appropriate to facilitate the establishment of stocks outside national territory. However, for reasons of state security and all kinds of potential oil supply crises, it would be reasonable to store a certain share of oil stocks in Latvia – in that case, if necessary, the stocks can immediately be used. Because of this fact, it is hereby calculated that **the central institution will create 2/3 of the stocks abroad and 1/3 in Latia .** In this case there is also no necessity to build up new tanks. Considering the current Russian governmental politics and intention to export more and more oil through their own ports, the decrease in oil transit volumes through Latvia is predicted. This will result in enough free tank capacity for the compulsory oil stocks. Hereby it is very important to note that in case of

scenario I, the companies as well as the state will make very unreasonable investments into new tanks.

Taking into account that there is no necessity to build up new tanks in case of scenario II and considering the building costs of tanks in case of scenario I, **the total saving is 34,9 million Euro minimally**[8] (in scenario I the investments into new tanks by the companies and the state are estimated to be accordingly 23,2 and 11,7 million Euro, that add up 34,9 million Euro). **When adding the saving on the purchase cost of oil stocks to the saving on the creation of storage facilities, then, in the period of 2004-2014, the total saving for end consumers is approx. 65,4 million Euro as compared to scenario I** (30,5 + 34,9 = 65,4 million Euro). This sum does not include the saving on the expenses associated with the storage of stocks. Hereby it is considered that under conditions described in this overview, the storage expenses of 90 days' oil stocks created by the central institution are approx. 30,5 million Euro (Table 19). As compared to the storage expenses in scenario I (46,3 million Euro – see conclusion nr 6 of scenario I on page 55) the saving is 15,8 million Euro. The higher costs in case of scenario I results from: 1) capital costs, 2) building cost of tanks, and 3) possibly faster rotation of oil stocks in case of the companies. **Under conditions described above, during the period of 2004-2014, the total saving for consumers is approx. 81,2 million Euro as compared to scenario I** (65,4 + 15,8 = 81,2). Table 20 at the end of scenario II gives an overview of the costs associated with both scenarios (see the page 59).

Similarly to Figure 14, the costs associated with the storage of 90 days' oil stocks are being created by the central institution can be displayed as the cost per each litre of liquid fuel consumed (see Figure 15). In addition to the data given in Figure 14, Figure 15 describes allcosts of the creation and storage of 90 days' oil stocks by the central institution as compared to scenario I, characterised by curve "ci90 (purchase of fuel)". It can be seen that during the creation period of oil stocks the stockpiling fee will raise from approx. 0,3 cents per litre in year 2005 to 1,67 cents per litre in year 2009, being 1,71 in year 2004. This high fee in 2004 is caused of the schedule of stock formation, where in 2004 the quantity of the compulsory oil stocks shall be at the level equal to 30 days' inland consumption that is the beginning of formation oil stocks by the central institution and therefore resulting in high purchase cost of fuel. By 2005 the growth of the stock volume is equal to 3 days' inland consumption and considering that the purchase cost of fuel play the most important roll in the stockpiling costs, therefore by 2005 the stockpiling fee drop from 1,71 to 0,3 cents per litre. After the transitional period of creation of oil stock the stockpiling fee will stay at the level approx. 0,35 cents per litre. It can be seen that after the repayments of the loan by the companies in case of scenario I, the difference in stockpiling fees between described scenarios is approx. 0,6 cents per litre. Considering that Latvian annual fuel consumption in 2015 will be approx. 1,4 million m^3, then after 2014 the total saving will be ca 8,4 million Euro per each year.

[8] Due to numerous tanks of small capacity, these costs can be even up to 5 times higher, but this difference has not been used in the present analysis (see also the footnote nr. 3 on the page 40).

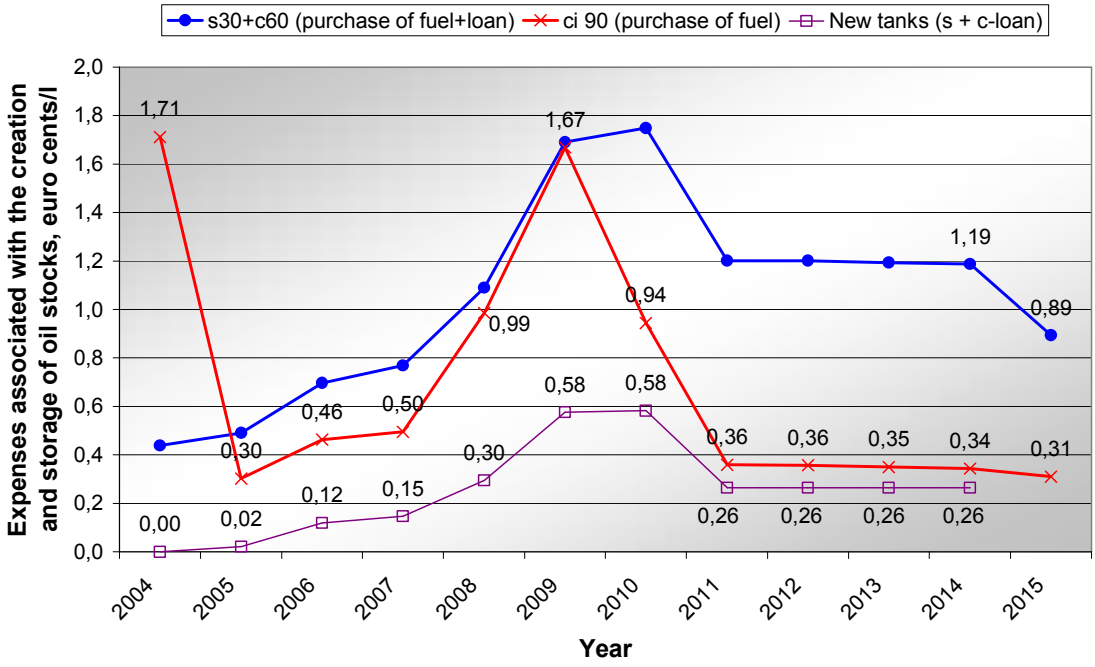


Figure 15. The total expenses of Latvian 90 days' oil stocks represented as the cost per one litre of consumed liquid fuel

Conclusions:

1. 90 days' oil stocks are being created by the central institution (2/3 of the stocks in another country and 1/3 in Latvia). It is suggested that the central institution should be managed both by the state and the companies, i.e. through the supervisory board;
2. the estimated purchase price of 90 days' oil stocks created by the central institution will be circa 69 million Euro;
3. in case of scenario I, where the companies will create 60 days' oil stocks, the purchase costs of this fuel amounts to 76,5 million Euro (capital costs included). The purchase cost of state oil stocks for 30 days (23 million Euro) must be added to this sum;
4. based on above, the cost difference is 30,5 million Euro (76,5 + 23 – 69 = 30,5 million Euro);
5. in case of scenario II there is no necessity to build up new tanks and therefore this gives a minimum saving of 34,9 million Euro that is the investment into new tanks by the companies and the state in case of scenario I;
6. considering that, in case of scenario I, the total storage expensesof oil stocks would be 46,3 million Euro and in case of scenario II 30,5 million Euro, the saving on storage would be 15,8 million Euro;
7. when adding the saving on the building expenses of storage tanks to both the saving on the total storage expenses and the purchase costsof oil stocks, then under conditions described in this analysis, in the period of 2004-2014, the total saving for end consumers is approx. 81,2 million Euro as compared to scenario I (34,9 + 15,8 + 30,5 ≈ 81,2 million Euro);

8. **in addition to the saving of 81,2 million Euro during the period 2004-2014 in case of scenario II, the saving for end consumers after year 2014 minimally 8,4 million Euro per year should be taken into account.**

Table 20 gives a summary of the total cost of both scenarios during the period of 2004-2014.

Table 20. Comparison of costs of different scenarios for creation of Latvian oil stocks

	Scenario I (30+60 days' stocks)	Scenario II (90 days' stocks)
	Million Euro	Million Euro
Purchase cost of fuel	99,5	69,0
Building cost of fuel	34,9	
Total storage expenses	46,3	30,5
Total	180,7	99,5
	Cost difference with sc. I	81,2

Notes: 1) In case of scenario I, the costs include the building expenses of storage facilities for storing 60 days' oil stocks.

2.3 Lithuania

In Lithuania the stockpiling system and creation of 90 days' oil stocks is regulated by the Law on State Stocks of Petroleum Products and Crude Oil as well as by governmental resolution with detailed procedures for fulfilling the provisions of mentioned law. According to the legislation the companies importing and producing petroleum products shall establish 50% of the 90 days' stocks. The rest of the oil stocks will be financed from the state budget and created by the Lithuanian Petroleum Product Agency. All stocks shall be established during the transitional period at latest by July 1, 2009.

In the analysis of Lithuanian stockpiling system, the following schemes for establishing of 90 days' oil stocks were considered:

Scenario I **90 days' stocks will be created equally by the agency and the companies**

- *Both the agency's and the companies' oil stocks will be created within the territory of Lithuania.*

Scenario II **All 90 days' stocks will be created only by the agency**

- *All oil stocks will be created within the territory of Lithuania.*

Due to the oil products produced indigenously in Lithuania, up to a maximum of 25% of the internal consumption may be deducted from the total stockholding obligation. Considering the oil volumes produced indigenously as well as production yield of the Mazeikiai Refinery the following reductions in each of three EN categories due to the derivatives of oil produced indigenously has been taken into account – 25% of the gasoline and jet fuel consumption; 19% of the diesel, light and heavy fuel oil consumption.

2.3.1 Scenario I

According to scenario I the current legislation will be followed where 90 days' oil stocks will be created equally by the companies and the stockpiling agency. As regulated by the law, the agency's stocks will be established and stored with state funds. Because there is enough free tank capacity for storing the compulsory oil stocks in Lithuania it is hereby considered that both the companies and agency stocks will be established within the territory of Lithuania without the investments into new tanks. Due to the necessity to modernize the storage capacities as well as installing vapour recovery systems in case of storing gasoline the investments in amount of approx. 45-54 EUR/m^3 have been taken into account.

2.3.1.1 Creation of 45 days' oil stocks by the companies

Considering the current oil market situation and the stockpiling regulation, it should be noted that approx. 47% of the total 90 days' obligation shall be covered by the Mazeikiai Refinery and the rest of 3% by approx. 10 oil importers.

Table 21 describes the quantity and cost of 45 days' oil stocks gradually created by the companies. All the data in the table are based on the volume of petroleum products consumed in 2003. It can be seen that by the year 2010 the estimated volume of 45 days' oil stocks is approx. 185 000 m^3 (provided that the inland oil consumption will grow by 1-2% per year). The estimated cost of fuel for this quantity is approximately 34,7 million Euro (without excise duty, VAT and capital costs). Table 21 also gives the estimated modernization cost of tanks in amount of 9,9 million Euro needed for storage of 45 days' oil stocks.

Table 21. Quantity and cost of 45 days' oil stocks (Lithuania, companies)

		2004	2005	2006	2007	2008	2009	2010
		24,5	28	31,5	34,5	38	41,5	45
Category I	1000 m3	25,88	29,58	34,07	38,18	43,01	48,01	52,86
Category II	1000 m3	44,61	50,98	58,22	64,84	72,60	80,29	87,84
Category III	1000 m3	23,94	27,36	30,78	33,71	37,13	40,55	43,97
Total	1000 m3	94,43	107,92	123,07	136,73	152,74	168,86	184,67
Modernizat. of tanks	*Million EUR*	5,059	5,781	6,593	7,325	8,182	9,046	9,893
Cost of fuel	*Million EUR*	17,592	20,105	22,967	25,562	28,605	31,670	34,671
Annual cost of fuel	*Million EUR*	17,592	2,513	2,863	2,595	3,042	3,065	3,001

Notes:
1) the cost of fuel does not include excise duty, VAT and capital costs;
2) the modernization cost of tanks are estimated to be 54 EUR/m ^{3} (including also investments for installing vapour recovery systems in case of storing gasoline).

Supposing that the modernization cost of storage facilities described above will be covered by bank loans, the actual expenses will increase by the sum of capital costs. The same applies to the fuel to be bought for oil stocks. Also, capital costs need to be taken into account if bank loans are not taken. Furthermore, one should not forget the price of managing finances and risks collected by the companies. The same was taken into account also in the analysis of Estonian and Latvian stockpiling systems.

The above-mentioned aspects are based on a supposition that companies will take bank loans for the modernization of storage facilities and buying obligatory oil stocks with an interest rate of 12%[9] for 11 years (the period 2004-2014). Therefore, the actual investments for the modernization of storage facilities will **amount to 17 million Euro** (9,9 million Euro without capital costs). In that case, the purchase cost of oil stocks is **60,4 million Euro** (without excise duty and VAT) as opposed to 35,8 million Euro (without excise duty, VAT and capital costs; the 34,7 million Euro mentioned before is the purchase cost of oil stocks during the period 2004-2010). These expenses, from year 2004 to 2014, are given in detail in Table 22.

[9] The choice of the interest rate was based on estimations. The interest rate can be even higher when project risks are taken into account (e.g., fluctuation of the price of liquid fuel in the international oil market).

In addition to the expenses mentioned above, expenses associated with the storage and rotation of stocks should be taken into account. In case of 45 days' stocks (after creation of stocks) these expenses will be approximately 3,7 million Euro per year (without capital costs but including costs of quality analysis of fuel, rotation and insurance). It means that for the period of 2004-2014 the storage expenses will be ca 30,7 million Euro. With possible capital costs[10] the costs of storing 45 days' oil stocks amounts to 34,8 million Euro for the same period (see Table 22). The total cost of creation and storage of 45 days' oil stocks in the period of 2004-2014 will be ca 112,2 million Euro.

Table 22. Creation of 45 days' oil stocks on bank loan (Lithuania, companies)

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
		24,5	28	31,5	34,5	38	41,5	45	45	45	45	45	
Category I	1000 m3	25,88	29,58	34,07	38,18	43,01	48,01	52,86	53,65	54,33	54,93	55,42	
Category II	1000 m3	44,61	50,98	58,22	64,84	72,60	80,29	87,84	88,62	89,39	89,97	90,41	
Category III	1000 m3	23,94	27,36	30,78	33,71	37,13	40,55	43,97	43,97	43,97	43,97	43,97	
Total	1000 m3	94,43	107,92	123,07	136,73	152,74	168,86	184,67	186,24	187,69	188,87	189,80	
Cost of fuel	*Million EUR*	17,592	20,105	22,967	25,562	28,605	31,670	34,671	35,001	35,307	35,554	35,751	
Annual cost of fuel	*Million EUR*	17,592	2,513	2,863	2,595	3,042	3,065	3,001	0,330	0,306	0,247	0,197	35,8
Pay back+ addit. fuel	*Million EUR*	2,963	3,407	3,945	4,467	5,134	5,879	6,712	7,042	7,018	6,959	6,908	60,4
Annual modern.cost of tanks	*Million EUR*	5,059	0,723	0,812	0,732	0,858	0,863	0,847					9,9
Pay back (mod.tanks)	*Million EUR*	0,852	0,980	1,132	1,280	1,467	1,677	1,912	1,912	1,912	1,912	1,912	17,0
Tot. storage expenses	*Million EUR*	2,037	2,284	2,560	2,809	3,100	3,393	3,681	3,708	3,734	3,754	3,771	34,8
Total expenses	*Million EUR*	5,851	6,671	7,637	8,555	9,701	10,950	12,305	12,662	12,664	12,625	12,591	112,2

Notes:
1) *„Pay back + addit. fuel"* means repayments of the loan for buying fuel according to the annuity schedule. The bank loan includes the costs of both annual purchase of fuel (marked as *„Annual cost of fuel"*) and the purchase costs of additional fuel as a result of the increase of inland oil consumption;
2) The modernization of storage tanks proceeds from an assumption that oil stocks will be created gradually. The bank loan will be paid back according to an annuity schedule;
3) For storage of companies stocks, the storage costs are estimated to be at the same level as storage abroad; modernization cost of tanks and repayments of the loan are calculated separately.

2.3.1.2 Creation of 45 days' oil stocks by the agency

As regulated by the law, 50% of the 90 days' oil stocks will be financed from the state budget and created by the Lithuanian Petroleum Product Agency. The quantity and the expenses of the establishment of these stocks are shown in detail in Table 23. It can be seen that the estimated cost of the fuel (without excise duty, VAT and capital costs) for creation of 45 days' oil stocks is 34,7 million Euro (35,8 million Euro during the period of 2004-2014). In these calculations the capital cost has not been included because all oil stockpiling expenses of the agency are being covered from the state budget. **Together with the storage cost and investments for the modernization of storage facilities the state budget must contain 4,5-6,0 million Euro during the period of creation of compulsory oil stocks. Due to the schedule of creation of oil stocks, in year 2004 the annual cost is calculated to be approx. 23 million Euro.** These calculations take into account both the 1-2% increase of the inland oil consumption and the increase of the volume of oil stocks gradually created. **From year 2010, these costs will include only storage expenses, that is ca 2,5 million Euro per year** (incl. the purchase costs of additional fuel needed to cover the increased oil consumption). **During the creation period of stocks, exact budgeting will be problematic as the**

[10] In these calculations, capital costs are 12% of annual storage expenses.

volume of financial resources planned for the purchase of fuel directly depends on the oil prices in the international oil market.

Table 23. Quantity and cost of 45 days' oil stocks (Lithuania, agency)

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
		24,5	28	31,5	34,5	38	41,5	45	45	45	45	45	
Category I	1000 m3	25,88	29,58	34,07	38,18	43,01	48,01	52,86	53,65	54,33	54,93	55,42	
Category II	1000 m3	44,61	50,98	58,22	64,84	72,60	80,29	87,84	88,62	89,39	89,97	90,41	
Category III	1000 m3	23,94	27,36	30,78	33,71	37,13	40,55	43,97	43,97	43,97	43,97	43,97	
Total	1000 m3	94,43	107,92	123,07	136,73	152,74	168,86	184,67	186,24	187,69	188,87	189,80	
Modernizat. of tanks	*Million EUR*	4,215	4,818	5,494	6,104	6,819	7,538	8,244					
Annual modern.cost of tanks	*Million EUR*	4,215	0,602	0,676	0,610	0,715	0,719	0,706					8,2
Cost of fuel	*Million EUR*	17,592	20,105	22,967	25,562	28,605	31,670	34,671	35,001	35,307	35,554	35,751	
Annual cost of fuel	*Million EUR*	17,592	2,513	2,863	2,595	3,042	3,065	3,001	0,330	0,306	0,247	0,197	35,8
Tot. storage expenses	*Million EUR*	1,178	1,339	1,518	1,678	1,867	2,056	2,243	2,260	2,276	2,289	2,300	21,0
Total expenses	*Million EUR*	22,985	4,454	5,057	4,883	5,624	5,841	5,950	2,590	2,582	2,537	2,497	65,0

Notes: 1) In this table, the cost of fuel does not contain excise duty, VAT and capital costs;
2) The costs associated with the storage of stocks are: storage, insurance and inspection of stocks (incl. inspection of the stocks stored by the companies; inspection of the stocks stored by the state means monitoring the trend of fuel quality and respective analyses). For storage of agency stocks, the storage costs are estimated to be at the same level as storage abroad. The expenses do not contain VAT.

For the sake of comparing storage expenses in case of different scenarios it can be shown that in the period of 2004-2014 the estimated cost of storage of 45 days' agency stocks is 21 million Euro. Adding the purchase cost of fuel and the modernization cost of storage facilities in amount of 35,8 and 8,2 million Euro respectively, then the total creation and storage cost of 45 days' agency stocks will be approx. 65 million Euro for the same period.

On the basis of these calculations, it can be concluded that, during the period of 2004-2014, the total creation and storage cost of both the companies' and the agency's oil stocks amounts approx. 177,2 million Euro (112,2 + 65 = 177,2).

Taking into account that in 2003 the total inland oil consumption was approx. 1,8 million m^3, and dividing the above-mentioned creation and storage expenses of both the companies' and the agency's oil stocks with the total inland oil consumption, results in the cost of storing one litre of fuel (see Figure 16). There are two curves in Figure 16 – "a45+c45 (purch. of fuel+loan)" and "Mod. of tanks (c-loan + a)". The first characterises the total expenses of the establishment and the storage of both the agency and the companies stocks per one litre of liquid fuel consumed. The other curve shows the investments by the companies and the agency for the modernization of storage facilities that is an additional burden for the end consumers through market prices. It can be seen from the figure that during the creation period of stocks the oil price will increase from ca 0,54 cents to 0,88 cents per litre (hereinafter the **"stockpiling fee"**) and after creation of 90 days' stocks it will stay on the level of 0,75 till year 2014, which is the term of the bank loan taken by the companies for the purchase of liquid fuel. After year 2014, the stockpiling fee will fall to ca 0,58 cents per litre. Due to the schedule of creation of 90 days' oil stocks, in 2004 the stockpiling fee is ca 1,34 cents per litre. To these expenses, investment cost of the companies and the agency for the modernization of the storage facilities should be added (designated in Figure 16 as "Modern. of tanks (c-loan + a)"). Therefore, during the period of 2010-2014 the total stockpiling fee will be ca 0,86 cents per litre (0,75 + 0,11 = 0,86).

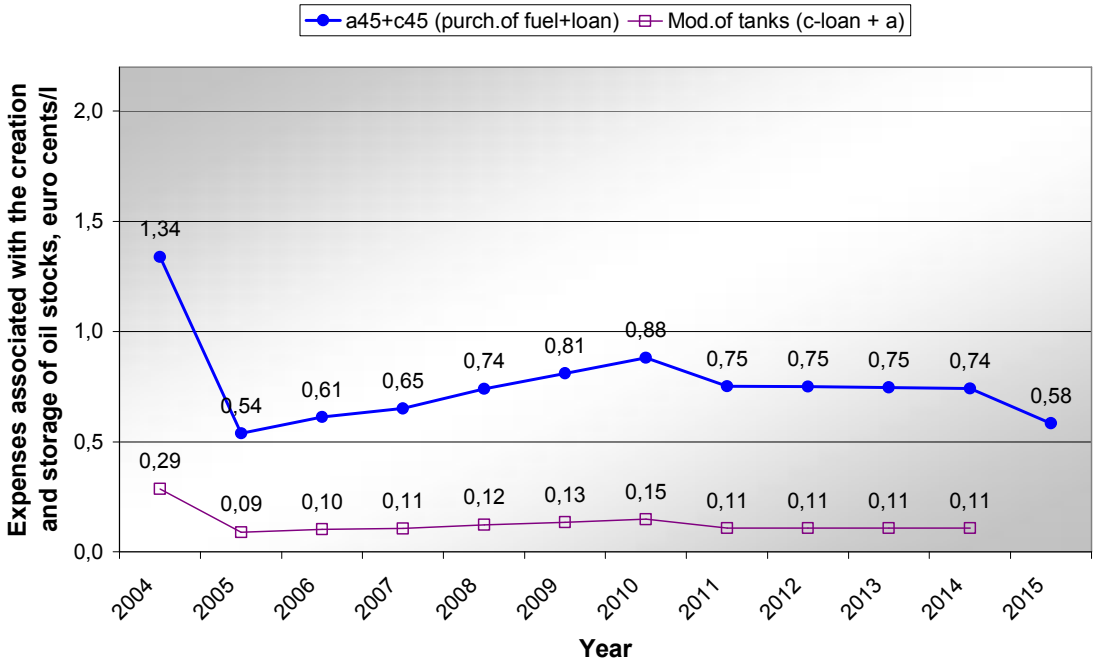


Figure 16. The total expenses of Lithuanian companies' and agency's oil stocks represented as the costs per one litre of consumed liquid fuel

Conclusions:

1. In Lithuania, there is enough free tank capacity for storing compulsory oil stocks. Due to the current condition of storage facilities it is necessary to modernize the storage capacities as well as install vapour recovery systems in case of storing gasoline;
2. the modernization cost of storage facilities by the companies are estimated to amount approx. 17 million Euro (9,9 million Euro without capital cost);
3. the modernization cost of storage facilities by the agency are estimated to amount approx. 8,2 million Euro;
4. during the period of 2004-2014, the cost of purchasing obligatory oil stocks by the companies amounts to 60,4 million Euro (35,8 million Euro without capital cost);
5. during the period of 2004-2014, the total cost of managing both the agency's and the companies' oil stocks amounts ca 55,8 million Euro;
6. to the above-mentioned expenses, 35,8 million Euro (the cost of purchasing fuel for the 45 days' oil stocks by the agency) must be added;
7. during the period of 2004-2014, the total cost of creating and storing both the agency's and companies' oil stocks is approx. 177,2 million Euro.

2.3.2 Scenario II

In case of scenario II, it is supposed that **whole Lithuanian 90 days' oil stocks will be created only by the agency.** Similarly as in case of scenario II of the analysis of Estonian and Latvian stockpiling systems, it is also here considered that the agency will be managed together with oil importers. The benefits of such agency as well as the involvement and the obligations of the oil importers are discussed in detail under scenario II of the analysis of Estonian stockpiling system on the page 44. Due to the enough free tank capacity all 90 days' stocks will be created within the territory of Lithuania.

2.3.2.1 Creation of 90 days' oil stocks by an agency

Supposing that no loans shall be taken for the creation of 90 days' stocks by the agency and that the purchase costs of fuel shall be covered by, for example, the stockpiling fee, which is paid by the oil importers on a similar basis with the excise duty (this can be also, for example, membership fee of the agency for oil importers – this method is in use in several other EU Member States), then, **during the period of 2004-2010, the estimated purchase cost of 90 days' oil stocks is 69,3 million Euro** (ca 71,5 million Euro when the increase of the inland oil consumption in the period of 2011-2014 is included; see Table 24). For the sake of comparison, **in case of scenario I, where the companies shall create 45 days' oil stocks, the purchase costs of liquid fuel and capital costs during the same period (2004-2014) amount to 60,4 million Euro** (see Table 22). To this sum, the purchase costs of fuel for 45 days' agency stocks (35,8 million Euro) should be added (see Table 23). Therefore, the difference in costs is **24,7 million Euro** (60,4 + 35,8 – 71,5 = 24,7 million Euro).

Table 24. Quantity and cost of 90 days' oil stocks (Lithuania, agency)

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
		49	56	63	69	76	83	90	90	90	90	90	
Category I	1000 m3	51,76	59,16	68,14	76,36	86,02	96,03	105,71	107,30	108,65	109,86	110,84	
Category II	1000 m3	86,38	98,72	112,74	125,56	140,58	155,47	170,09	171,59	173,10	174,21	175,06	
Category III	1000 m3	47,88	54,72	61,56	67,42	74,26	81,10	87,94	87,94	87,94	87,94	87,94	
Total	1000 m3	188,86	215,83	246,14	273,46	305,48	337,71	369,33	372,47	375,38	377,73	379,60	
Modernizat. of tanks	*Million EUR*	8,431	9,635	10,988	12,208	13,637	15,076	16,488					
Annual modern.cost of tanks	*Million EUR*	8,431	1,204	1,353	1,220	1,429	1,439	1,412					16,5
Cost of fuel	*Million EUR*	35,183	40,209	45,935	51,125	57,209	63,340	69,342	70,002	70,614	71,108	71,501	
Annual cost of fuel	*Million EUR*	35,183	5,026	5,725	5,190	6,085	6,130	6,002	0,660	0,612	0,494	0,393	71,5
Tot. storage expenses	*Million EUR*	2,302	2,623	2,981	3,303	3,679	4,059	4,431	4,466	4,498	4,525	4,546	41,4
Total expenses	*Million EUR*	45,916	8,854	10,059	9,712	11,193	11,628	11,845	5,126	5,110	5,019	4,939	129,4

Notes: 1) In this table, the cost of fuel does not contain excise duty, VAT and capital costs.
2) The costs associated with the storage of stocks are: storage, insurance and inspection of stocks (inspection of the stocks means monitoring the trend of fuel quality and respective analyses). The expenses do not contain VAT.

In Table 24, there is also shown the necessary modernization cost of the storage facilities in an amount of 16,5 million Euro. Compared with the total modernization cost of the storage facilities indicated in scenario I (25,2 million Euro, of which 17 and 8,2 million Euro is the investment made respectively by the companies and the agency), **the difference in costs is 8,7 million Euro** resulted from the capital costs in case of investments made by the companies. **When adding the saving on the purchase cost of**

oil stocks to the saving on the modernization of storage facilities, then, in the period of 2004-2014, the total saving for end consumers is approx. 33,4 million Euro as compared to scenario I (24,7 + 8,7 = 33,4 million Euro). This sum does not include the saving on the expenses associated with the storage of stocks. Hereby it is considered that under conditions described in this overview, the storage expenses of 90 days' oil stocks created by the central agency are approx. 41,4 million Euro (Table 24). As compared to the storage expenses in scenario I (55,8 million Euro – see conclusion nr 5 of scenario I on page 64) the saving is 14,4 million Euro. The higher costs in case of scenario I results from: 1) capital costs, 2) modernisation cost of tanks, and 3) possibly faster rotation of oil stocks in case of the companies. **Under conditions described above, during the period of 2004-2014, the total saving for consumers is approx. 47,8 million Euro as compared to scenario I** (33,4 + 14,4 = 47,8). Table 25 at the end of scenario II gives an overview of the costs associated with both scenarios (see the page 68).

Similarly to Figure 16, the costs associated with the storage of 90 days' oil stocks are being created by the central agency can be displayed as the cost per each litre of liquid fuel consumed (see Figure 17). In addition to the data given in Figure 16, Figure 17 describes all costs of the creation and storage of 90 days' oil stocks by the central agency as compared to scenario I, characterised by curve "ca90 (purch. of fuel)". It can be seen that during the creation period of oil stocks the stockpiling fee will raise from approx. 0,43 cents per litre in year 2005 to 0,59 cents per litre in year 2010, being 2,11 in year 2004. This high fee in 2004 is caused of the schedule of stock formation, where in 2004 the quantity of the compulsory oil stocks shall be at the level equal to 49 days' inland consumption that is the beginning of formation oil stocks by the central agency and therefore resulting in high purchase cost of fuel. By 2005 the growth of the stock volume is equal to 7 days' inland consumption and considering that the purchase cost of fuel play the most important roll in the stockpiling costs, therefore by 2005 the stockpiling fee drop from 2,11 to 0,43 cents per litre. After the transitional period of creation of oil stock the stockpiling fee will stay at the level approx. 0,28 cents per litre. It can be seen that after the repayments of the loan by the companies in case of scenario I, the difference in stockpiling fees between described scenarios is approx. 0,3 cents per litre. Considering that in 2015 the estimated Lithuanian annual fuel consumption will be ca 2 million m^3, then after 2014 the total saving will be ca 6 million Euro per each year.

Additionally also necessary investments for the modernization of storage facilities by the central agency are shown in Figure 17, characterised by curve "Mod. Of tanks (ca)". It was indicated above that compared with the total modernization cost of the storage facilities in case of scenario I the total saving is 8,7 million Euro. This difference in costs is also visible in the figure concerned.

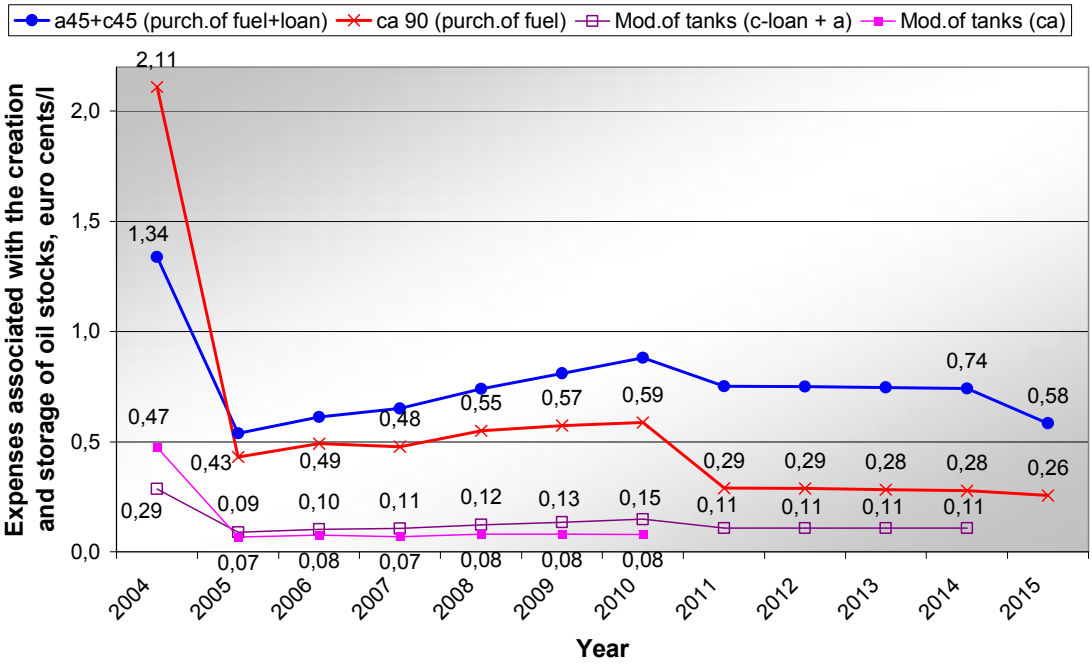


Figure 17. The total expenses of Lithuanian 90 days' oil stocks represented as the cost per one litre of consumed liquid fuel

Conclusions:

1. 90 days' oil stocks are being created by the central agency. It is suggested that the central agency should be managed both by the state and the companies, i.e. through the supervisory board;
2. the estimated purchase price of 90 days' oil stocks created by the central agency will beca 71,5 million Euro;
3. in case of scenario I, where the companies will create 45 days' oil stocks, the purchase costs of this fuel amounts to 60,4 million Euro (capital costs included). The purchase cost of agency's oil stocks for 45 days (35,8 million Euro) must be added to this sum;
4. based on above, the cost difference is 24,7 million Euro (60,4 + 35,8 – 71,5 = 24,7 million Euro);
5. In case of scenario II the necessary investments for the modernization of the storage facilities in an amount of 16,5 million Euro are necessary. Compared with the total modernization cost of the storage facilities indicated in scenario I (25,2 million Euro, of which 17 and 8,2 million Euro is the investment made respectively by the companies and the agency), the total saving is 8,7 million Euro resulted from the capital costs in case of investments made by the companies;
6. considering that, in case of scenario I, the total storage expenses of oil stocks would be 55,8 million Euro and in case of scenario II 41,4 million Euro, the saving on storage would be 14,4 million Euro;
7. when adding the saving on the modernization cost of storage facilities to both the saving on the total storage expenses and the purchase costsof oil stocks, then

under conditions described in this analysis, in the period of 2004-2014, the total saving for end consumers is approx. 47,8 million Euro as compared to scenario I (8,7 + 14,4 + 24,7 ≈ 47,8 million Euro);

8. **in addition to the saving of 47,8 million Euro during the period 2004-2014 in case of scenario II, the saving for end consumers after year 2014 minimally 6 million Euro per year should be taken into account.**

Table 25 gives a summary of the total cost of both scenarios during the period of 2004-2014.

Table 25. Comparison of costs of different scenarios for creation of Lithuanian oil stocks

	Scenario I (45+45 days' stocks)	Scenario II (90 days' stocks)
	Million Euro	Million Euro
Purchase cost of fuel	96,2	71,5
Modern. cost of tanks	25,2	16,5
Total storage expenses	55,8	41,4
Total	177,2	129,4
	Cost difference with sc. I	47,8

III. REVIEW OF THE OIL STOCKPILING SYSTEMS IN OTHER MEMBER STATES OF EUROPEAN UNION

3.1.1 Summary

Before the recent enlargement of the EU the compulsory stockpiling systems in the EU fell under two broad categories: "centralised", with a separate stock-holding entity; and "de-centralised", where the oil companies are responsible for holding compulsory stocks co-mingled with their operating inventories. By this time just over half the EU members had a centralised agency holding part of the compulsory stock requirements. The actual proportion of compulsory stock-holding requirements held by these agencies varied from between 15% (in the case of Austria) to about 84% (in the case of Germany). Across the whole EU, it amounted about 40 million tons aggregate, or just over one-third of total compulsory stock requirements in the EU.

There have been diverse reasons for adopting centralised stock-holding systems within the EU. The resulting structure and ownership of central stock-holding agencies thus vary. They can, nevertheless, be divided into three categories:

- entirely owned and administered by the state (Finland, Ireland);
- a non-profit making autonomous agency under government supervision (France, Germany, Netherlands, Spain);
- an organisation owned and/or administered by the operating oil companies (Austria and Denmark).

In reality, it should not matter who administers such an agency, providing it has the backing of the state and operating companies, while meeting the compulsory stock-holding requirements efficiently and effectively. There are strong arguments for suggesting that operating oil companies should be involved in the process in some way, since the security stocks would have to be incorporated into their supply systems in the event of an emergency.

There has been a move towards this type of system in the EU over the past fifteen years or so. In the mid-1980s only Denmark, Germany and the Netherlands had centralised systems, but these have since been joined by Austria, Finland, France, Ireland and Spain. It is worth recalling that the origins of this type of structure, in Germany, lay with concerns over potentially uncompetitive nature of applying uniform compulsory stock-holding obligations to all operators. This was also a factor which influenced the Dutch government's decision to establish COVA. Other factors appear, however, to

have been more apparent in subsequent moves by other countries to centralised systems. In some cases, this change related to previous market structures (prior to joining the EU or to liberalisation), which were dominated by state-owned companies or where governments played a direct role in holding strategic stocks (such as Austria, Finland, Ireland, Spain).

3.1.2 Advantages and Disadvantages of Different Systems

Centralised system

The preference for centralised stock-holding agencies may thus be related to particular conditions which specifically apply in certain markets but, in overall terms, it is possible to identify general advantages of such a structure:

- the location, quality and quantity of security stocks will be more easily identifiable (particularly compared with company-held compulsory stocks which are co-mingled with operating stocks);
- the financing arrangements are more transparent and it is easier to ensure an equitable allocation of costs;
- there is, potentially at least, better government control over drawdown procedures;
- the problem area of potential discriminatory regulations regarding refiners and small independent marketers is more easily avoided under such systems;
- similarly, difficulties encountered in implementing bilateral stock-holding arrangements can potentially be overcome more effectively under such systems;
- any future changes in the security stock regulations can be more effectively implemented within centralised systems.

There are, nevertheless, also disadvantages inherent in centralised structures:

- the risk of excessive bureaucracy in operating such systems;
- potential lack of technical competence in ensuring adequate products qualities and turnover;
- the danger that such stocks may not be adequately linked to the existing supply system (it is possible to prevent this if the oil companies are involved with the centralised system – this involvement is also strongly suggested by European Commission).

De-centralised system

Similarly, there are clearly advantages and disadvantages of a de-centralised stock-holding structure. On the plus side it is possible to identify;

- that de-centralised systems are more in tune with the operational needs of the market place;

- problems of maintaining the right products specifications should be more easily avoided.

On the negative side, however, the following factors can also be identified:

- it is sometimes difficult for the government to ensure that the required stocks are being maintained in the right volumes and qualities in a complex and fragmented market structure - in reality, many such systems rely on the oil companies for a degree of self-administering;
- allied to this is the particular difficulty of verifying non-segregated stocks (i.e. co-mingled with operating stocks);
- there is also the danger of discrimination against small independent operators, since it is difficult to apply differentiated obligations in a de-centralised system.

In conclusion, it is difficult to state conclusively that centralised stock-holding agencies are necessarily the most suitable in all situations, nor that the compulsory stocks systems in the EU Member States need to be uniformly structured. There are nevertheless grounds for arguing that non-centralised structures, in general, face an intrinsic difficulty in as much as they are forced to rely upon oil companies holding higher stock levels than, from a commercial perspective, they would like. These pressures, inherent in de-centralised systems, are likely to intensify in the coming years as oil companies pursue ever more stringent cost-cutting measures in the generally poorly profitable European downstream sector.

3.1.3 Member States with Centralised System

Finland

Finland has also had a tradition of holding a high level of security stocks and this has resulted in a two-tiered stock-holding structure, organised under the auspices of the state-owned centralised agency, NESA. Apart from the EU compulsory stock-holding requirements, which are set at 3 months supply of net oil imports for each of the three EU product categories, there is also a separate, government-owned, strategic stockpile of oil products (details are not publicly available), maintained by NESA.

Another reason for the additional stock-holding requirement is the high level of NGL (natural gas liquids) and MTBE (methyl tertiary butyl ether) usage for refinery input in the country which, although not included under the EU regulations, is effectively covered by IEA stock requirements. NESA effectively therefore fulfils four functions:

- to administer the compulsory stock-holding system;
- to “top up” the compulsory stock-holding obligation in order to meet the higher requirements of IEA membership (these stocks being owned by the government);
- to hold part of the compulsory stock requirements on behalf of the oil companies;
- to hold the government strategic stocks.

The regulations apply to importers of more than 5 000 tonnes p.a. of aviation fuels, 10 000 tonnes of motor gasoline and 20 000 p.a. of other products. There are also minimum stock-holding requirements for importers of natural gas and coal.

Current regulations do not permit compulsory stocks being held outside Finland, although the government is currently considering changes to this requirement.

NESA has been separated from the central government budget and is financially self-sufficient, being funded from a levy applied on the sale of oil products. It currently holds about 1 million tons of stocks, around one-third of which is crude oil.

Ireland

The stock-holding structure in Ireland has undergone a substantial change since 1995, a process which is not yet complete. The state still has a central role in the stock-holding function and established a centralised agency (NORA) to carry out the government's responsibilities. NORA is currently a subsidiary of the state-owned oil company, INPC, although it operates on an arms-length basis.

The overall system works on the basis that the oil companies have to maintain a compulsory minimum stock level of around 20 days consumption, for "normal" operating purposes, whilst NORA holds the remaining 70 days in order to meet the EU 90 days requirement, in both cases for each of the three EU product categories.

NORA inherited the strategic stockpile previously built by INPC (Irish National Petroleum Corporation) and held at the Whiddy Terminal. At the beginning of 1997 this stockpile amounted to around 200 000 tons of crude oil. NORA also holds around 65 000 tons of various products.

NORA's actual stocks inside Ireland amount only to around 40 days consumption, the deficit being made up of stock "tickets" (defined as "options" or "entitlements") for stocks held at various locations in other Member States under bilateral agreements. Thus about 30% of Ireland's stocks are currently held abroad.

NORA is required to operate on a break-even basis and is currently financed from a levy on sales of oil products.

France

France has a somewhat complex system of compulsory stock-holding, which is largely a legacy of the long history of government involvement in the industry and the particular system of operators' licencing in force prior to market liberalisation.

The current regulations apply to all operators who are liable to pay excise duties on specific oil products, but also include those supplying international aviation fuel. Compulsory minimum stock-holding regulations are currently fixed at 26% (i.e. 95 days) of net imports for each of the three EU product categories during the preceding calendar year, also for jet fuel separately (i.e. a fourth category).

The excise payment base on which the system rests lead to certain complexities which differentiate between operators entitled to hold products in bonded facilities (prior to the payment of excise tax), and smaller importers who pay customs duties when supplies are brought into the country.

The former of these, the so-called "Operators Agrées" ("Authorised Operators") which make up the bulk of the industry, meet their compulsory stocks in two ways:

- firstly by holding part of the stock themselves (or consigned to others);
- secondly by payment of a fee directly to a collective storage agency which is responsible for meeting the remainder of their obligation.

The latter group, made up of smaller importers, known as "Operateurs Non-Agrées" (or Non-Authorised Operators) pay a specific levy to the customs authorities, which is then made over to the collective storage agency which is responsible for meeting the total stocks obligation on behalf of such operators.

The central storage agency, CPSSP, took over this responsibility from the previous stock-holding entity, SAGESS, which operated from 1988 under the old system of A5 and A10 licensing. In fact, SAGESS provides most of the practical functions of stock-holding, whilst CPSSP has overall responsibility for administering the system. SAGESS is overseen by the oil companies, CPSSP is a quasi-state organisation.

From 1994, the "Authorised Operators" could choose between two options as to the ratio of compulsory stocks held by themselves and the central agency. In effect, the larger operators chose the option which required them to maintain 46% of their compulsory stocks, with CPSSP responsible for the remaining 54% on their behalf. Smaller operators, in particular the agencies purchasing on behalf of the supermarket chains, recently opted for a second choice which is to hold 20% of the compulsory stock-holding requirements themselves, with 80% being the responsibility of CPSSP.

Towards the end of 1996, SAGESS held (and owned) nearly 3,9 million tons of stocks, representing around 45% of CPSSP's total obligation. CPSSP was thus responsible for about 5 million tons of stock, consigned to it by operating companies. The overall split of total compulsory stocks of about 16 million tons, held by operating companies and SAGESS/CPSSP at this time, was approximately 45/55%.

Bilateral stock-holding arrangements are permitted, with formal/informal agreements in operation with several other Member States. Strict regulations apply to such stocks, in particular a limit of 10% for each company on the proportion of stocks held abroad. Currently, only about 2% of stocks are held abroad.

The centralised stock-holding system is financed through a system of fees paid by operators, related to the proportion of their stock-holding obligations carried by CPSSP. CPSSP itself pays a fee to companies in respect of stocks they consign to it and also pays SAGESS for its stocks and services.

Germany

Germany was at the forefront of establishing the system of centralised stock-holding agencies. Membership of the agency, EBV, is compulsory for all companies importing or refining oil in the country. EBV holds the equivalent to 80 days of refinery output and net imports during the average of the three preceding calendar years or during the last calendar year (whichever is higher), whilst refiners are required to hold a minimum of 15 days of their refinery output during the preceding calendar year, in both cases for each of the three EU product categories.

In addition, the government also holds an entirely separate strategic reserve which currently stands at about 7,3 million tonnes. Although there was an objective originally to increase this to 10 million tons, this target seems to have been abandoned and there are no current plans to expand the government's strategic stockpile.

Total security stocks in Germany thus amount currently to around 115 days consumption, consisting of about 20 days held in the government strategic reserve, 80 days held by EBV and 15 days compulsory stocks held by operating oil companies. EBV owns the stocks under its control and also owns a large proportion of the storage facilities utilised. EBV keeps stocks in each of the three relevant products categories.

Bilateral stock-holding arrangements are permitted, with agreements in force with several other Member States. About 6% of stocks are currently held abroad.

The running costs of EBV are covered by a monthly fee paid by EBV's members.

Netherlands

The Netherlands operates under a system with a centralised stock-holding agency (COVA). Under the existing system, refiners are obliged to hold stocks for each of the three EU product categories equivalent to 50 days consumption and independent importers equivalent to 16 days consumption (both based on inland sales during the previous calendar year), whilst COVA holds the remaining requirements in order to meet the national stock-holding obligations to comply with IEA commitments.

The system in the Netherlands is complicated by the fact that the country has a high level of "entrepot" stocks and additionally, is a substantial exporter of finished products (high LPG consumption is another factor which complicates the oil market structure). Thus, although actual stocks held in the country are inevitably well in excess of the standard 90-day minimum requirements, the volume of "available" stocks is difficult to distinguish. For this reason, refiners are subject to a 26 days "export-working-stocks" rule, which prevents these stocks being counted towards the compulsory obligations. In addition, COVA has a supplementary obligation to hold up to 20% of extra stock, over and above the net combined national EU/IEA obligation (the actual additional level currently held is equivalent to about 15%).

COVA currently holds the equivalent of about 82 days of net imports (with about 40% in the form of crude oil), with operating companies holding abut 30 days.

Bilateral stock-holding agreements exist with several other EU Member States, with about 20% of stocks held abroad under such arrangements. Part of COVA's stocks are held in Germany under a bilateral stock-holding agreement as a result of the high costs and limited availability of crude storage facilities in the Rotterdam area, a factor which is also behind COVA's proposal to increase the proportion of crude held by it abroad up to around 50%.

COVA's annual operating costs are covered by a fiscal levy applied to products sales. No financial support is given to companies' compulsory stock-holding obligations.

A review of the stock-holding system is currently under way, to accommodate better some unwanted effects of statistically-induced changes in the compulsory stocks system since the introduction of the Internal Market.

Spain

Spain is another country which, because of privatisation and liberalisation, has had to substantially reorganise its compulsory stock-holding structure recently. In 1994, it was decided to set up a central stock-holding agency, CORES, as a public corporation. Membership of CORES is compulsory for all operators authorised to distribute petroleum products in the country.

All operators authorised to distribute petroleum products, plus those distributing motor fuels and heating oil not acquired from an authorised operator (similarly, large consumers which import products directly) are required to maintain stocks equivalent to 90 days of annual sales/consumption of each of the three EU product categories.

CORES is responsible for holding "strategic" stocks (established as one-third of the 90 days compulsory obligations), in the form of finished products. The operating companies thus hold the remainder of the obligation; also, CORES holds the full stock obligation on behalf of small companies which do not have access to storage capacity or with a small market share.

There are currently no provisions to allow bilateral stocks, but the government is in the process of implementing a framework which will allow such agreements.

Members pay a monthly fee to cover CORES' operating costs, with a higher fee paid by other companies for whom CORES holds the full compulsory stock obligations.

Austria

The compulsory stock-holding system in Austria is based around a centralised agency, ELG, which was set up in 1976 when the country become a member of the IEA. The ex-state oil company, OMV, played a central role in the stock-holding system and still owns 51% of ELG. Membership of ELG is not compulsory (in the past, this has caused some problems due to under-utilisation of the agency's storage capacity).

Current regulations apply to all importers of oil, who are required to hold the equivalent of 25% (actually 27,5%, after taking account of 10% unavailable stocks) of their previous year's net imports, applied to each of the three EU product categories. This obligation is set for distributors and consumers as well as for refiner/marketers.

Companies obliged to hold compulsory stocks have considerable flexibility as to how this requirement is achieved: they can either hold the stocks themselves; group together and combine compulsory stocks with other companies; sign a contract for another stock-holder to hold the stocks on their behalf or transfer the obligation to the centralised agency, ELG.

Most of the main operators are part-owners of ELG and the agency also holds stocks on behalf of non-members. ELG's stocks currently total about 300 000 tons of crude oil, amounting to around 15% of the total compulsory stock obligation.

There are also regulations applicable to power stations, which are required to maintain a minimum of 30 days cover.

There are no bilateral stock-holding agreements currently with other Member States.

Companies using ELG for holding their compulsory stocks pay a storage fee.

Denmark

Until recently, Denmark held a relatively high level of security stocks (effectively around 125 days consumption for each EU product category), but since 1992 this requirement has been brought down more into line with other EU Member States and currently stands at around 90 days consumption. This level is still in excess of Denmark's actual compulsory requirements under EU rules, as Denmark is a small net exporter of oil and therefore fully qualifies for the 15% "derogation" for output.

The regulations apply to importers and producers of crude oil and products. A central stock-holding agency, FDO, was formed in 1964 and is owned by the majority of operating oil companies (membership is not compulsory). FDO's obligation currently stands at 60 days inland consumption, with FDO holding about 73% of members' obligations (25 days); compulsory stocks for non-members are set at 90 days each.

There are informal bilateral stock-holding agreements with several Member States, but the total volumes involved are small currently, at about 1% of total stocks.

Fees payable to FDO are a recognised cost for the companies which are allowed to pass them on in the final selling price. Currently, because of a cash surplus arising from FDO's earlier sales of stocks, fees have been suspended.

3.1.4 Member States with De-centralised System

Belgium

Compulsory oil stocks are entirely held by the operating companies. The regulations impose a minimum of 25% of the previous year's inland sales for each of the three main product categories, which apply to all refiners and importers.

A law was passed in 1978 which established the framework for the government to set up a central purchasing and storage agency, since when there have been periodic discussions with the operators - but as yet there are no firm plans proposed.

Bilateral storage arrangements with other EU Member States are permitted and are commonplace. There is a maximum allowable limit for stocks held abroad under bilateral agreements of 20% (in some circumstances 30%) of the compulsory stock obligations, with about 20% of stocks currently abroad under bilateral agreements.

The cost of compulsory oil stocks is estimated and built into the cost element which is taken into account in establishing the government-controlled maximum pricing structure. Thus compulsory stock-holding costs are in theory passed onto consumers.

Greece

The stock-holding structure in Greece is somewhat different from most others in operation in the EU, because the obligations are applied only to licensed products marketers (but not refiners directly, unless they are also product marketers). All such companies are required to maintain compulsory stocks equivalent to 90 days of inland sales during the previous calendar year, for each of the three EU product categories.

Such companies have the right, however, to transfer part or all of their obligations to the refineries in Greece from which they are supplied with product.

In reality, most of the obligations have been passed onto the refiners, partly as a result of the disproportionate availability of storage capacity. Licensed marketers in fact hold only around 5-10 days of working stocks at their terminals and depots.

Responsibility for supervising the entire system is in the hands of the Public Petroleum Corporation of Greece (DEP). This state-owned company currently owns about 40% of the country's refining capacity and controls all indigenous crude oil production (which currently amounts to around 400 000 tonnes p.a.) and thus benefits from the whole deduction off compulsory stocks allowed under EU stock regulations.

Greece has no bilateral stock-holding arrangements currently with other countries.

No financial support is given to commercial oil companies for holding compulsory stocks. Thus, in practice, stock-holding costs are implicitly passed onto consumers.

Italy

The compulsory stock-holding system in Italy has also undergone significant changes in the last few years, related to the privatisation of the state oil concern, ENI, and the liberalisation of the oil market. Minimum compulsory stocks are stipulated at 90 days of internal consumption during the preceding calendar year for each of the three EU product categories, applied to each individual operator delivering product into the market (set for each individual storage site, based on delivery volumes by site).

Up until early 1977, the government held strategic reserves of about 790 000 tonnes (equivalent to about 4 days consumption), but this has recently been disposed of. Unlike government strategic reserves in other EU countries, these stocks were counted towards the country's overall compulsory stock commitments and thus their recent disposal increases the obligation on operators by an equivalent amount.

The current distribution of compulsory stocks is thus as follows: electric utilities must hold stocks equivalent to either 30 days of the previous year's fuel oil consumption or 90 days of direct imports (whichever is the higher); export refiners must hold the equivalent of 23 days supply of products exported; the balance (which works out equivalent to 62 days inland consumption currently) is held by the market operators.

Stocks held abroad in other Member States under bilateral agreements are permitted to be counted towards the compulsory stock obligations, but only up to a maximum of 10%. Currently, only about 1% of stocks are held abroad under such agreements.

The government was apparently considering establishing a central stock-holding agency, but latest reports suggest that this proposal has now been abandoned.

No financial support is given to commercial oil companies for holding compulsory stocks. Thus, in practice, stock-holding costs are implicitly passed onto consumers.

Luxembourg

There is no centralised system for stock-holding in Luxembourg, all compulsory stocks currently being held by oil companies, co-mingled with their own commercial stocks. The regulations are based on a 90-day minimum requirement, related to deliveries for inland consumption during the previous calendar year, for each of the three product categories covered by the EU compulsory stock obligations.

Around 50% of Luxembourg's compulsory stocks are allowed to be held abroad under bilateral agreements; this allowance is generally used, particularly in the Netherlands.

An element of financial support is granted to companies for compulsory stocks, through the government allowing a "remuneration for storage" to be added into end-consumer prices.

The government has recently put forward several proposed changes which include the creation of a stock-holding agency, in particular focusing on storage facilities for jet fuel. The system would be financed by the introduction of a levy. No clear timetable has been scheduled as far as introducing the new system is concerned.

Portugal

The compulsory stock regulations in Portugal apply to companies importing and/or receiving product supplies from local refineries. The regulations stipulate a minimum stock obligation of one-third (i.e. 120 days) of the previous 12 months net imports for each of the three EU product categories, in addition to holding 90 day stocks of jet fuel separately and of fuel oil for power generation.

The partly-privatised company Petrogal (which accounts for around 50% of the oil products market) holds some compulsory stocks on behalf of other operators.

No compulsory stock-holding abroad is permitted.

No financial support is given to oil companies holding compulsory oil stocks.

Sweden

The authorities in Sweden impose wide-ranging minimum regulations for both oil and coal stocks. A government body (NUTEK) is responsible for administering the compulsory stock-holding structure, but does not hold stocks itself. The operators are thus responsible for meeting the compulsory minimum stock requirements.

The regulations apply to companies importing products or operating a refinery, as well as large consumers of LPG and fuel oil. The minimum stock-holding obligation is set at 25% (i.e. 91 days) of the total amounts of each of the three EU product categories sold/consumed in the previous calendar year.

The government has wide-spread powers over the location of compulsory stocks, whether parts of the stocks should be kept underground and also the specifications of certain products stored. The cut-off point for small operators is set at a maximum of 50 000 m^3 [about 40 000 tonnes] per annum. District heating plants consuming more than 5 000 m^3 per annum and large manufacturers which import products directly are also covered by the stock regulations.

Currently there are no provisions to allow for compulsory stocks to be held outside Sweden, although the government is discussing the possibility of bilateral agreements with several countries in order to adjust this policy in line with other EU members.

The costs of compulsory stocks are borne by the stock-holders (both companies and large consumers), so effectively costs are passed on by companies in market prices.

United Kingdom

The UK is a net oil exporter, thus qualifying for the full 15% deduction from the compulsory stock obligation for indigenous oil output. This “derogation” was applied in

the UK by setting the compulsory stock obligation at 76,5 days of the previous year's deliveries into inland consumption for each of the three EU product categories.

The current regulations stipulate that all refiners must hold a minimum of 75 days of the previous year's deliveries into consumption, whilst non-refiners who are substantial suppliers to inland market must hold only 65 days. Both these compulsory minimum levels were reduced in 1993 (by 1,5 days in the case of refiners and by 1 day for non-refiners) to take account of stocks held at offshore production facilities.

Non-refiners are permitted to make arrangements with refiners for stocks to be held on their behalf. They do not need legally to own their compulsory stocks, but they must have a firm agreement which provides access to them at all times.

Within the overall compulsory stock obligations, these minimum requirements are in effect only specifically applied to Category I (gasolines), not Categories II and III. The current obligations apply to operators delivering more than 50 000 tonnes annually into the inland market.

Various discussions have been held in the recent past with regard to the possibility of setting up a centralised stock-holding agency, as well as changing the basis used to set compulsory stocks (from one based on deliveries to consumers to one based on refiner/importer supplies to the inland market), but no proposals were taken up.

The UK has formal/informal bilateral stock-holding agreements with several EU Member States. Currently, about 11% of the UK's stocks are held abroad in net terms.

The costs of compulsory oil stocks are essentially financed by the companies operating in the market, thus implicitly passed onto consumers in market prices.

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