

**European Commission**

**Fish / 2006 / 09**

**Assessment of the status, development and diversification of fisheries-dependent communities**

**Lake Peipsi Case Study Report**



**November 2010**



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## Acronyms

CFP	Common Fisheries Policy
EEK	Estonian Crowns (1 Eur= 15.6466 EEK)
EU	European Union
FLAG	Fisheries Local Action Group
GT	Gross Tons
kW	Kilo Watts
NGO	Non-Governmental Organisation
NUTS	Nomenclature of Territorial Units for Statistics
SME	Small and Medium sized Enterprises
TAC	Total Allowable Catch

This report has been prepared through a joint collaboration between Robert Arthur (MRAG Ltd) and Margit Säre and Kärt Leppik of the Peipsi Center for Transboundary Cooperation, with the active support of stakeholders from the communities and municipalities around the lake. The authors acknowledge the important role played by local stakeholders in providing both the quantitative data and the qualitative information presented in this report.

Citation: Säre, M., Leppik, K. And Arthur, R. (2010). Assessment of the status, development and diversification of fisheries-dependent communities: Lake Peipsi Case Study Report.

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# 1. INTRODUCTION

## 1.1 General description of the location

The Lake Peipsi region of Estonia is a particularly important one for fisheries in a European context as the lake is the most productive inland fishery in Europe. The lake itself has a surface area of approximately 3,550 km<sup>2</sup>, making Lake Peipsi the fourth largest lake in Europe. Lake Peipsi is a transboundary resource. Some 44% of the lake belongs to the Republic of Estonia and 56% to the Russian Federation with management responsibilities and benefits shared between the two states. Lake Peipsi is situated around 160-260 km (depending on location) from the national capital – Tallinn – and is surrounded by two NUTS 3 regions: Kirde Eesti to the north and Lõuna Eesti to the west. Within this, there are 30 islands in the lake and a total of 19 local municipalities directly border directly the lake. However, there are two additional municipalities that are also highly dependent on the lake. As a result the local Fisheries Local Action Group (FLAG) – the Peipsi Fisheries Area Development Foundation – includes a total of 21 municipalities. The municipalities are generally equivalent to NUTS 5 regions.

While fishing has been an important function of the lake, the fisheries have declined in terms of production and the nature of the fisheries has changed over recent years. Eutrophication of the lake has been a problem in the past but has been improving in recent years while changing species composition of catches have also been observed over recent years. The eutrophication has also affected other aspects of the lake ecology. Around the margins of the lake there has been an increase in the amount of reeds. These have flourished as nutrients have settled into the lake bed and marginal soils. The reeds have negative impacts in that they obstruct the views of the lake and access to the waters.

## 1.2 Location

Lake Peipsi is situated in the River Narva drainage basin, located in the central part of southeast coast of the Baltic Sea. This basin consists of two major parts: the Lake Peipsi/Chudskoe basin (47,814 km<sup>2</sup>) and the River Narva partial basin (8,438 km<sup>2</sup>). The lake and its basin drain via the River Narva to the Gulf of Finland, which is a part of the Baltic Sea.

The national border between Estonia and the Russian Federation runs along the River Narva, Lake Peipsi/Chudskoe and the Narva Reservoir. Cross border cooperation between the two states is therefore a very important aspect in relation to Lake Peipsi water management and fisheries management issues. On the Estonian side, the main administrative centre for the lake is Tartu (see Figure 1).

The lake itself is a shallow lake; with an average depth of 7.1 m and maximum depth 15.3 m. Lake Peipsi comprises three parts: Lake Peipsi itself (2,611 km<sup>2</sup>), Lake Pskov (708 km<sup>2</sup>) and the narrow (the smallest width is 3 km) but deep Lake Lämmijärv (236 km<sup>2</sup>), that connects the other two. Because of its location, ice covers Lake Peipsi for several months each year. The ice usually forms at the end of November and it is at its thickest, up to 50-60 cm, in the second half of March.

Lake Peipsi is a eutrophic and biologically highly productive lake, one of the reasons for its high fisheries productivity. Eutrophication, caused by the high nutrient load, is a major threat to water quality in the lake; fortunately the recent years have shown a tendency for the better. The fisheries are based on the diverse fish assemblage of the lake. This comprises one lamprey and 33 fish species that permanently inhabit Lake Peipsi or the lower reaches of its tributaries. The main commercial fish are lake smelt, perch, pike-perch, ruffe, roach, bream, pike.

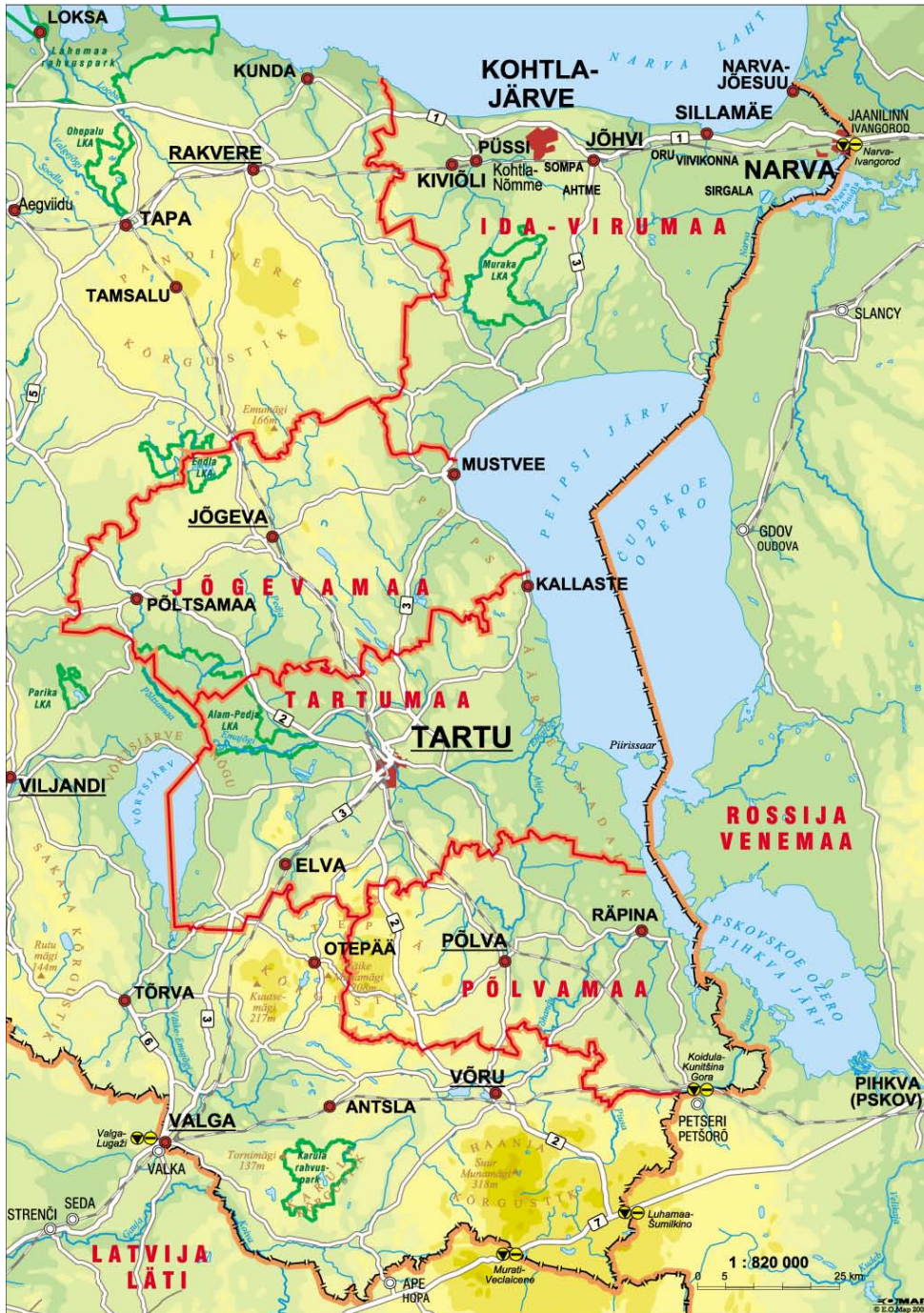


Figure 1. The Lake Peipsi region of Estonia

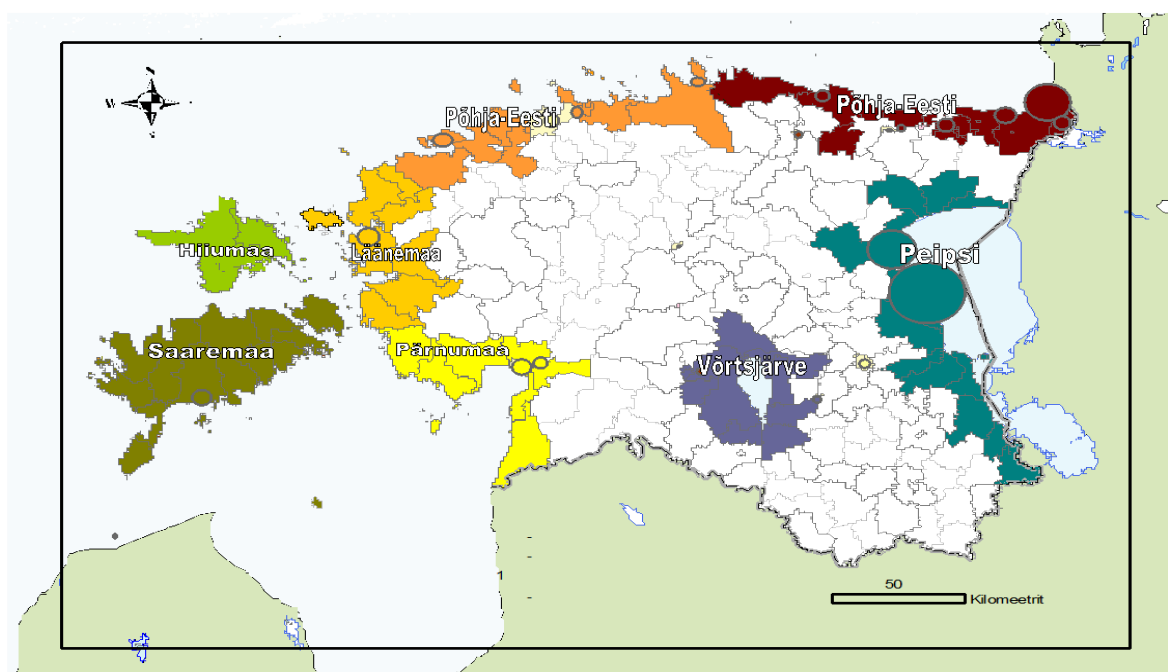
The Estonian side of the lake is divided between four counties whose territory is altogether 11,224 km<sup>2</sup>, representing a quarter of the Estonian territory (see Table 1).



**Table 1. Counties of the Lake Peipsi region of Estonia**

County centre (town)	County name	Coast length in km
Lake Jõhvi	Ida-Virumaa	49
Jõgeva	Jõgeva	24
Tartu	Tartu	30
Põlva	Põlva	72
<b>Total</b>		<b>175</b>

Because the Peipsi Fisheries Area Development Foundation<sup>1</sup> initiative group involves 21 municipalities (see Figure 2), the scope of this study will be these 21 municipalities from the four counties. Tabivere and Saare municipalities are only ones out of those 21 that do not border directly the lake, but they are both in close vicinity and dependent to a large extent on the lake.



**Figure 2. Fisheries dependent municipalities in Estonia. Source: Operational Programme of the European Fisheries Fund 2007-2013**

The total population of the Lake Peipsi region municipalities is approximately 31,000 inhabitants.<sup>2</sup> In general it could be said that these municipalities share very many similar problems and challenges and that they are more common with each other than with the rest of the county in which they are situated. Each of the Peipsi region municipalities can be described as rural, sparsely populated, with aging population and fisheries and agriculture dependent.

The entire River Narva basin is an important fishing area and Lake Peipsi exceeds other European lakes in its fishery production. However, due to eutrophication and weak fishery

<sup>1</sup> Peipsi Fisheries Area Development Foundation, [www.pkak.ee](http://www.pkak.ee)

<sup>2</sup> "Kalanduspiirkonnad"; Kalandusvõrgustik 2010. <http://www.maainfo.ee/public/files/KalandusPiirkonnad-2010-a5-uus.pdf>

management, the total fish catch in Lake has declined during the 1990s and catches are half of what they were a century ago. During the Soviet period (up to the end of the 1980s), the numbers of fishermen were restricted and remained approximately 200.<sup>3</sup> During 2001-2004 around 565 fishermen were active in fishing in average.<sup>4</sup>

However, recent initiatives have strengthened the management of the fisheries and reduced the amount of illegal fishing that is taking place. The current fishery situation is stocks of not only valuable fish species, but also other fish species are being utilised quite intensively or even over-intensively. Fish are harvested younger than the growth optimum that would produce the maximum yield per recruit. The total yield from the fishery remains therefore smaller than it could be. The current assessment is that better fishery management could bring higher total revenues.<sup>5</sup>

### 1.3 Key geographical characteristics of the community

Lake Peipsi is located in the continental climate zone. The weather in this zone is moderated by the relative closeness of the Atlantic Ocean although being located on the border of the climate transition zone from marine to continental results in unstable weather in all seasons. Summer is comparatively warm and wet, and there is a comparatively mild winter. The watershed belongs to an area of high cyclone activity. An average of 130 cyclones are registered each year, i.e. almost every third day. Because of the climate, Lake Peipsi is usually under ice cover for five months during the year. Ice cover forms at the end of November and stays until the beginning of April. It is at its thickest, up to 50-60 cm, in the second half of March.

### 1.4 People

There are 21 local municipalities in the Lake Peipsi fishery area. Most of them are rural municipalities with average population of around 1,500 people. There are two towns – Mustvee (1,561 inhabitants) and Kallaste (948 inhabitants) that are located directly on the lake shores. Further from the lake, the towns of Tartu (95,596 inhabitants) and Narva (62,550 inhabitants), are the biggest centres in the wider region regard to the economy, transport, education etc. However, both of them are approx 40 km. from the lake. Other important towns include Põlva (6,107 inhabitants) and Jõgeva (5,652 inhabitants).<sup>6</sup>

The Lake Peipsi region is characterised by old settlements. For centuries different cultures, nationalities and ethnic groups (mainly Estonians and Russian speakers) have lived together here. Fishing, farming, handicraft and trading have traditionally been the sources of livelihood for the local people. The central part of Lake Peipsi is inhabited by peculiar ethnic/religious group – Russian old believers (numbering a couple of thousand people) - that consists of descendants who fled Russia to escape the persecution of the Orthodox Church in the 17<sup>th</sup> century. The second clearly definable ethnic group in the region is the Setus (13,000 people), who primarily live in Southeast Estonia in Põlva and Võru counties. The characteristic feature of the Setus is their dialect and the fact that the majority of them belong to the Russian Orthodox religion, while most of the Estonians are Lutheran.

The re-establishment of the national border between Estonia and Russia in 1991 and the visa regime that was also established with Russian Federation has affected local people to a quite

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<sup>3</sup> Lake Peipsi/Chudskoe Basin Water Management Programme (2006); Peipsi Center for Transboundary Cooperation [www.ctc.ee](http://www.ctc.ee)

<sup>4</sup> Kalandus arendusrahastu meetmete mõju ja vajadus Peipsi regiooni kalandussektorile, (2006). Põllumajandusministeeriumi raport. [www.agri.ee](http://www.agri.ee)

<sup>5</sup> Lake Peipsi/Chudskoe Basin Water Management Programme (2006); Peipsi Center for Transboundary Cooperation; [www.ctc.ee](http://www.ctc.ee)

<sup>6</sup> [www.stat.ee](http://www.stat.ee)

large extent and cross-border communication, trade and many other fields of life were disrupted.



Photo: Lake Peipsi village

## 2. DEMOGRAPHIC ASPECTS

### 2.1 Population and population age structure

In Estonia, the overall population has declined by 14% between 1989 and 2000.<sup>7</sup> Most of the smaller municipalities lost inhabitants during this time and this tendency has been higher in rural areas. Another trend overall in Estonia is the migration of young people in rural areas to the bigger and more urban centers like Tallinn, Tartu and Pärnu. Today approximately 69% of Estonian population lives in urban areas. Across all of Estonia the most densely inhabited regions of the country are in North Estonia and in the coastal areas.

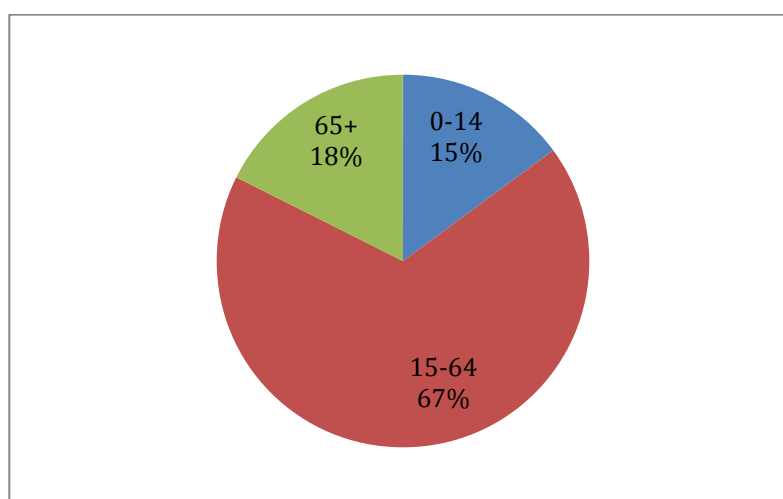
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<sup>7</sup> Jussi Jauhainen. Demographic, employment and administrative challenges for urban policies in Estonia; in European Planning Studies, Volume 14, Issue 2 February 2006

**Table 2. Estonian population changes during last 10 years**

Year	Population, 1st January
2001	1,366,959
2002	1,361,242
2003	1,356,045
2004	1,351,069
2005	1,347,510
2006	1,344,684
2007	1,342,409
2008	1,340,935
2009	1,340,415
2010	1,340,127

Age structure in Estonia in 2009 is shown in Figure 3 below.<sup>8</sup>



**Figure 3. Age structure of the Estonian population based on 2009 figures**

The population within the 21 municipalities varies quite considerably (Table 3). Only three of the municipalities have over 2,000 people in them and some are quite small. Piirissaare is the most extreme of these with only 73 inhabitants. This is a small island municipality with a declining and ageing population. In terms of changes within the population, a similar trend to the national is seen in the Lake Peipsi region, although the change has been more extreme. While the population in Estonia declined by 2% between 2001 and 2010, the population of the 21 Lake Peipsi municipalities has decreased by around 6% over the same period. As with the national trend, it is mainly the younger generation who have left the area to move to bigger cities for better educational and employment opportunities.

<sup>8</sup> Estonian statistics; [www.stat.ee](http://www.stat.ee)

**Table 3. Population of Lake Peipsi municipalities**

Municipality	2001	2005	2008	2010
Alajõe m.	403	360	333	309
Alatskivi m.	1,489	1,396	1,363	1,328
Iisaku m.	1,504	1,433	1,397	1,271
Kallaste town	1,213	1,166	1,134	1,115
Kasepää m.	1,422	1,350	1,324	1,296
Lohusuu m.	871	825	812	785
Mäksa m.	1,742	1,720	1,721	1,703
Meeksi m.	807	760	722	699
Mikitamäe m.	1,173	1,069	1,016	973
Mustvee town	1,730	1,662	1,610	1,592
Pala m.	1,395	1,352	1,326	1,302
Palamuse m.	2,527	2,512	2,508	2,496
Peipsiääre m.	971	914	863	831
Räpina m.*	5,811	5,670	5,556	5,502
Piirissaare m.	102	90	80	73
Saare m.	1,442	1,402	1,378	1,367
Tabivere m.	2,508	2,478	2,453	2,454
Tudulinna m.	659	638	621	605
Värskä m.	1,491	1,418	1,357	1,325
Võnnu m.	1,257	1,235	1,199	1,184
Vara m.	1,970	1,950	1,950	1,938
<b>TOTAL</b>	<b>32,084</b>	<b>31,400</b>	<b>30,723</b>	<b>30,148</b>
* in year 2002 Räpina town and rural municipality united				

Source: Statistic Estonia; www.stat.ee

Because of the changes in the population, the Lake Peipsi region municipalities are characterised by smaller groups of young people and an aging population. When in 2001 26% of people were in the age group 0-19, by 2010 this had decreased to 21% (Table 3). Over the same period, the percentage of people older than 60 years increased from 26% to 27%. As a result of this, over the last decade the region has seen several gymnasiums and vocational schools closed. For example, Kallaste vocational school, which closed in 2004, provided training on inland fishing. Closing the school has been very painful to that lake side town – in connection with the closure more than 50 people lost their jobs and around 130 young people do not have opportunities for vocational training any longer.



**Table 4. Age structure over time within the Lake Peipsi municipalities**

Municipality	2001					2005					2008					2010				
	0-19	20-39	40-59	60-79	80->	0-19	20-39	40-59	60-79	80->	0-19	20-39	40-59	60-79	80->	0-19	20-39	40-59	60-79	80->
..Alajõe vald	37	73	103	174	16	34	57	105	141	23	33	51	100	125	24	31	48	92	112	26
..Iisaku vald	416	347	329	353	59	390	335	325	321	62	343	361	339	289	65	317	376	340	274	73
..Lohusuu vald	185	204	215	226	41	182	201	188	214	40	165	210	179	208	50	139	221	178	193	54
..Tudulinna vald	180	145	151	154	29	189	133	140	148	28	170	143	137	139	32	148	157	133	131	36
..Mustvee linn	420	422	427	427	34	404	403	441	368	46	345	411	457	345	52	319	419	454	331	69
..Kasepää vald	344	313	383	347	35	314	302	371	319	44	277	313	380	293	61	241	332	360	302	61
..Pala vald	356	313	351	315	60	337	320	318	307	70	314	323	322	297	70	290	320	331	290	71
..Palamuse vald	724	666	615	444	78	652	726	596	443	95	625	742	585	448	108	586	759	570	477	104
..Saare vald	417	294	346	312	73	386	296	332	326	62	337	328	323	320	70	304	356	315	316	76
..Tabivere vald	711	630	629	453	85	656	636	640	442	104	605	669	622	442	115	556	702	622	452	122
..Räpina linn*	819	731	723	592	96	1,388	1,392	1,445	1,175	270	1,272	1,471	1,442	1,085	286	1,200	1,488	1,455	1,024	335
..Mikitamäe vald	241	198	301	372	61	207	196	283	301	82	191	198	278	263	86	179	207	262	248	77
..Värskä vald	400	330	349	358	54	372	290	383	318	55	318	323	383	276	57	295	325	386	260	59
..Kallaste linn	348	284	307	239	35	280	323	312	210	41	233	348	303	200	50	215	345	292	217	46
..Alatskivi vald	373	276	369	391	80	332	308	327	355	74	329	308	314	326	86	304	322	302	308	92
..Meeksi vald	190	147	202	227	41	169	145	196	200	50	134	160	193	182	53	110	172	190	169	58
..Mäksa vald	516	440	399	325	62	461	461	407	323	68	428	484	414	317	78	395	506	422	295	85
..Peipsiääre vald	176	199	234	300	60	180	183	219	254	76	157	184	208	249	63	143	192	189	238	68
..Piirissaare vald	2	13	30	49	8	3	11	22	40	14	3	11	17	34	15	3	10	16	27	17
..Vara vald	538	488	469	412	63	519	496	469	390	76	498	515	472	363	102	471	541	476	334	116
..Võnnu vald	350	300	320	253	34	330	299	323	237	46	281	319	317	213	69	252	333	318	212	69
<b>% of total year</b>	<b>26%</b>	<b>23%</b>	<b>25%</b>	<b>23%</b>	<b>3%</b>	<b>25%</b>	<b>24%</b>	<b>25%</b>	<b>22%</b>	<b>4%</b>	<b>23%</b>	<b>26%</b>	<b>25%</b>	<b>21%</b>	<b>5%</b>	<b>21%</b>	<b>27%</b>	<b>25%</b>	<b>21%</b>	<b>6%</b>

## 2.2 Ethnicity and migration

The Estonian population, as a result of the history of the region, is a mixed population. In 2010 the population consisted of 68.8% Estonians; 25.6% Russians, 2.1% Ukrainians and 1.2% Byelorussians.<sup>9</sup> The Lake Peipsi region municipalities are similarly mixed but are mainly inhabited by Estonians and Russian speakers (Russians, Ukrainians, Byelorussians). However, within the region we can also find distinctive ethnic groups like Russian old believers (approximately 2,000) within Jõgeva county and Setu people (approximately 6,000). The distribution of the ethnic groups is not homogeneous and within Jõgeva, Põlva and Tartu counties Estonians are in the majority. However, in Ida-Viru County the reverse is true and Russian speakers form approximately 76% of the total population of the county. Out migration has taken place almost equally in all lake municipalities, but it has been a bit higher from those that are situated further from county centers (Meeksi, Iisaku, Kasepää).

**Table 4: Ethnic composition by counties**

	Total	Estonians	Russians	Ukrainians	Byelorussians	Finnish
Year						
<b>2001</b>						
Ida-Viru county	178,896	36,011	125,819	4,843	5,240	2,568
Jõgeva county	38,223	34,419	2,954	268	98	313
Põlva county	32,527	30,785	1,343	158	28	133
Tartu county	149,488	123,350	20,881	1,520	571	1,552
<b>2005</b>						
Ida-Viru county	173,777	34,614	122,988	4,651	4,914	2,389
Jõgeva county	37,473	33,810	2,840	265	95	294
Põlva county	31,752	30,084	1,81	155	28	127
Tartu county	148,886	123,191	20,450	1,523	574	1,536
<b>2008</b>						
Ida-Viru county	170,719	33,668	121,486	4,542	4,650	2,331
Jõgeva county	36,922	33,355	2,783	260	86	284
Põlva county	31,175	29,540	1,253	161	25	126
Tartu county	149,283	123,835	20,260	1,500	564	1,518
<b>2010</b>						
Ida-Viru county	168,656	33,062	120,413	4,450	4,477	2,262
Jõgeva county	36,671	33,145	2,761	261	82	273
Põlva county	30,889	29,270	1,241	161	25	124
Tartu county	150,074	124,773	20,161	1,479	553	1,492

<sup>9</sup> Estonian statistics; [www.stat.ee](http://www.stat.ee)



### 3. ECONOMIC ASPECTS

#### 3.1 Importance of economic activities

The most important economic activities within the Lake Peipsi region are agricultural. According to the Estonian statistics unemployment rates in two Lake Peipsi counties – Jõgeva and Ida-Virumaa – are two highest in Estonia; Jõgeva county holds also the last place in the table for GDP per person among Estonian counties (Table 5). Tartu County has much lower unemployment rates than the other Peipsi counties and 3rd place for GDP nationally. However, it must be kept in mind that Tartu city, which is the university and science centre of the country, contributes a large part to this and that the city and its economic activities differs quite a lot from the Peipsi region municipalities within Tartu county.

**Table 5. Summary table of Estonian counties employment, salary and GDP. Lake Peipsi counties are highlighted in red**

County	Territory km <sup>2</sup>	Population (with migration) 1.01. 2010	unemployment , 2009 (%)	Average salary, 2009 (EEK)	GDP per person 2007 (EEK)
Harju	4,333.1	552,282	12.9	13,823	279,268
Hiiu	1,023.3	9,381	11.1	9,491	106,460
<b>Ida-Viru</b>	<b>3,364.1</b>	<b>158,479</b>	<b>18.1</b>	<b>9,964</b>	<b>109,481</b>
<b>Jõgeva</b>	<b>2,603.8</b>	<b>33,610</b>	<b>20.1</b>	<b>9,049</b>	<b>81,676</b>
Järva	2,459.6	32,635	11.9	9,786	117,530
Lääne	2,383.1	25,346	15.5	9,691	110,697
Lääne-Viru	3,627.8	62,780	16.4	9,760	123,914
<b>Põlva</b>	<b>2,164.8</b>	<b>29,435</b>	<b>12.0</b>	<b>10,024</b>	<b>90,550</b>
Pärnu	4,806.7	86,821	10.6	10,304	137,837
Rapla	2,979.7	35,961	15.5	10,032	99,780
Saare	2,922.2	33,055	10.4	10,201	122,097
<b>Tartu</b>	<b>2,992.7</b>	<b>145,244</b>	<b>11.9</b>	<b>11,725</b>	<b>164,045</b>
Valga	2,043.5	32,029	17.8	8,979	89,583
Viljandi	3,422.5	50,770	11.9	10,063	101,806
Võru	2,305.4	35,495	16.0	10,118	98,912
<b>All Estonia</b>	<b>43,432.3</b>	<b>1,323,323</b>	<b>13.8</b>	<b>12,264</b>	<b>182,238</b>

In comparison with the rest of Estonia, the Lake Peipsi area could be characterised as an underdeveloped region. There are few industries (the only large ones are in timber and fish processing), unemployment is higher than in other region and municipalities suffer from depopulation. The distribution of registered companies in the Lake Peipsi municipalities by economic activity provides further evidence of the rural nature of the economy (Table 6). The highest number of companies registered are in Agriculture/Forestry/Fishery sector. Unfortunately it is not possible to disaggregate beyond this classification. In all municipalities the number of registered companies has arisen during the decade. This is a positive sign in a region where business development has been hampered by the lack of entrepreneurship traditions, structural unemployment, administrative barriers, shortage of support structures and enterprise development centres and lack of access to capital. This is an area that the EU SME support instruments have sought to address.

**Table 6. Registered companies by sector in the Lake Peipsi municipalities**

		Al aj õe	lisa ku	Lohu suu	Tuduli nna	Must vee	P al a	Kase pää	Sa are	Tabi vere	Tor ma	Mikita mäe	Räp ina	Vär ska	Kall aste	Alats kivi	Meeks i	Mäks a	Peipsi ääre	Piiriss aare	Vara	Võnn u
Agriculture, forestry, fishery	2001	5	24	14	21	31	41	41	47	41	73	46	87	33	8	14	53	25	3	19	25	14
	2005	16	29	33	52	11	31	38	70	45	87	28	66	53	3	34	39	22	9	5	54	23
	2009	15	26	30	42	10	32	41	54	39	70	28	70	45	5	25	26	25	8	3	54	21
Manufacturing	2001	0	2	2	3	2	6	3	1	5	3	3	22	6	2	1	0	11	2	0	5	4
	2005	1	5	0	2	3	3	2	4	10	3	3	18	4	1	2	0	8	2	0	6	3
	2009	2	7	0	2	6	8	1	3	8	3	2	20	5	3	1	2	8	0	0	9	3
Construction	2001	0	0	0	0	1	0	0	0	0	1	0	5	1	0	0	0	0	0	0	1	0
	2005	0	5	0	0	3	2	2	2	0	3	0	9	1	0	1	0	1	0	0	4	2
	2009	4	7	1	2	6	1	7	4	5	7	4	19	1	0	3	2	9	1	0	3	2
Wholesale and retail, repair services	2001	3	12	4	5	9	5	8	10	12	13	3	37	10	7	3	4	9	1	0	11	6
	2005	6	6	7	3	13	5	7	8	7	10	2	30	10	7	8	3	11	0	1	8	6
	2009	4	9	5	2	12	4	10	3	7	7	2	23	11	7	7	3	11	3	0	9	4
Hotels, restaurants	2001	1	3	0	0	1	2	1	0	4	2	0	4	2	0	2	1	2	0	0	2	3
	2005	0	5	2	0	4	6	0	0	3	1	0	5	3	1	1	2	2	0	0	2	2
	2009	2	4	1	1	3	4	0	0	5	2	1	8	4	2	3	2	2	0	0	1	1
Other community and service activities	2001	1	1	0	1	0	0	0	0	0	1	0	3	2	0	0	2	0	0	0	0	0
	2005	1	4	0	0	1	0	0	0	1	2	0	2	2	1	2	0	1	0	0	2	2
	2009	0	7	0	3	4	1	1	0	4	4	2	7	1	1	5	0	0	0	0	1	3

Lake Peipsi region is historically famous for its handicrafts and agricultural products – mainly cucumber and onions. Lake Peipsi onions are especially famous across the region and each year, at the end of August, 2-3 onion festivals take place in the Lake Peipsi villages.

Tourism is also developing in the region and on hot summer days you can find thousands of holiday-makers on the Kauksi sand beaches. The southern part of Lake Peipsi, the Väraska region, is famous for its mineral water, healthy mud and Spa and this attracts tourists throughout the year. The increase in tourism has prompted tourism development to become one of the priorities for most of the local municipalities in the area. A lot of national and international projects, studies, trainings and investments are made in this field.

According to the Estonian statistics<sup>10</sup> employment in agriculture and fishing sector has dropped from 5.2% in 2005, to 4.0% in 2009. Overall within the Estonian fisheries sector, the opening up of European markets from the early nineties provided the possibility to export fish and exploit this new and highly profitable market. The result of this was rapidly increasing pressure on fish resources, both in terms of the number of fishermen and in their effort. As a result of this pressure, driven by high export market demand coupled with poor resource management, some of the most important coastal fishery resources have been over-fished. More recently, the situation has become more closely regulated and the costs connected to fishing have grown much more than the first buyer prices. The prices of raw material and fuel have increased more than those of end products, resulting in smaller profit margins and difficulties in meeting financial obligations. The dynamic development of the Estonian economy has yielded substantial increases of wages in other sectors of economy and therefore, by comparison, the well-being of fishermen has steadily worsened. This, in turn, has resulted in increasing social problems in many of the fisheries dependent areas of Estonia.

The Estonian fisheries sector consists of three major fields: fishing, aquaculture and fish processing and marketing<sup>11</sup>. Economic development within the fisheries sector has been slow and significantly poorer than in other parts of the economy. By 2007, the Estonian fisheries sector was made up of primarily micro, small and medium-sized enterprises. Investment level is the lowest and the sector is characterised by some of the highest depreciation costs in the total costs of businesses. The fisheries sector still relies largely on facilities and technology dating back to the Soviet era. With the accession to the European Union some of the structural issues associated with the fisheries sector have begun to be addressed and there has been upgrading of technology in the years 2001–2004; primarily for better complying with EU hygiene requirements. However, even with this support, only a fraction of overall assets have been actually replaced.

Commercial fishing in Estonian inland water takes place mainly in the two large inland lakes: Lake Peipsi and Lake Võrtsjärv. Across these two lakes the number of professional fishermen has varied over the last 10 years. An increase during the first half of the 1990s was followed by a later decline. The total number of professional fishermen on Lake Peipsi is currently estimated to be approximately 450 in Estonia and 700 in Russia. In Estonia there are 82 entrepreneurs (mostly joint-holding companies) who are engaged in the fishery. Fishing in Lake Peipsi is performed pursuant to fishing rights. Depending on the fishing gear used, a difference is made between line fishing, the catching of crayfish, recreational fishing and commercial fishing. Everyone may exercise fishing rights if he or she has satisfied the requirements for acquiring such rights.

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<sup>10</sup> Estonian Statistics: [www.stat.ee](http://www.stat.ee)

<sup>11</sup> Eesti Kalanduse Strateegia 2007-2013; [www.agri.ee](http://www.agri.ee)

Fish catch in inland waters is quite marginal compared with the overall landings for Estonia (around two percent of the total catch in 2005). However, as the price of freshwater fish is higher than that of marine fish, inland fishing remains an important economic activity and source of income in the rural areas. The major share of the fish is caught by professional fishermen with nets, fyke nets and bottom trawls. The gears used are generally not selective although the gill nets that are used in the winter are highly size selective. In recent years, the biggest catches (and revenues) are created in the pikeperch and perch fisheries, but bream, roach and other fish also make important contributions (see table 16).

Amateur fishermen play an important role during winter. Indeed the fisheries of Lake Peipsi can be separated into two distinct fisheries that take place at different times of the year. For the most part of the year (April-November) the commercial fishers predominate. From late November through to Late March the lake is generally frozen over and the most visible form of fishing are the ice fishing activities.

On a bright, clear, winter's day, spectacular views can be found on the frozen Lake Peipsi, when thousand of fishermen sit on ice, boring holes through the ice and putting their lines through in hopes of catching sparring, pike, pike-perch, bream and other fish varieties. Lake Peipsi is considered one of the best in the world for ice-fishing and it attracts many people from across Estonia as well as from neighbouring countries (in particular Latvia).



**Photo: In the wintertime, fishermen go far out over the ice, drill a hole and spend the day fishing. Over the weekends there are hundreds of them sitting on the lake.**

These fishers generate fishing tourism related opportunities and a number of support services have developed around the seasonal ice-fishing. Until recently there were only a few service providers who were offering support for recreational fishing, services such as transport to the ice, accommodation, food, equipment for fishermen. However, during last couple of years several support grants have been received through the fisheries areas sustainable development program, to support fishing tourism (including infrastructure). Ice fishing therefore plays an important part in the tourist sector as an addition to the summer vacationers. Ice-fishing tourism has shown itself to be vulnerable to the changing economic climate. While in the past few years there were large numbers of Latvians coming to ice fish

on Lake Peipsi, their numbers have been affected by the worsened economic situation and unfavourable winters. This has been somewhat offset by larger numbers of Estonians, who have chosen to take their vacations within Estonia rather than to travel abroad.

It is hoped that the quantity and quality of recreational fishing services will increase in the coming years and that income in this sector will also increase. Fishing tourism could become an important alternative source of employment to the professional fishing sector. Ice-fishing represents an important opportunity to develop new economic sectors based on the existing natural resources in this mainly mono-functional region.

### **3.2 Employment and unemployment**

According to the Estonian statistics unemployment rates in two Lake Peipsi counties – Jõgeva (18.1%) and Ida-Virumaa (20.1%) – are two highest in Estonia (see Table 5). During last five years, unemployment has risen in all Lake Peipsi municipalities (see Table 7).

**Table 7 Registered unemployed people in Lake Peipsi communities<sup>12</sup>**

	Alajõe	Isaku	Lohusuu	Tudulinna	Mustvee	Kasepää	Pala	Saare	Tabivere	Torma	Mikita mäe	Räpina	Värska	Kallas te	Alats kivi	Meeksi	Mäksa	Peipsiäär	Piirissaar	Vara	Võnnu
2005	25	42	51	6	112	69	26	51	51	56	35	165	31	35	25	34	17	15	3	42	19
2008	23	23	11	6	30	16	17	23	29	33	16	86	20	23	12	23	18	16	0	39	28
2010	41	52	28	23	37	28	48	35	74	71	51	217	59	45	46	24	98	49	4	103	46

<sup>12</sup>www.stat.ee

A recent study has identified that there are 82 entrepreneurs involved in fishery sector in Lake Peipsi. Most fishing companies do not employ fishermen, rather they buy fishing services from self-employed fishers.<sup>13</sup> Of these 82, nine of the bigger entrepreneurs account for approximately 65% of the total catch and they employ 188 fishermen.

**Table 8. Fishing companies during 2002 - 2009 by counties**

County	2002	2003	2004	2005	2006	2007	2008	2009
Ida-Virumaa	7	13	11	11	13	13	9	8
Jõgevamaa	17	16	15	16	17	18	17	15
Põlvamaa	31	34	36	40	40	32	39	33
Tartumaa	26	25	25	43	45	33	41	35
<b>Total fishery sector entrepreneurs in Peipsi**</b>	<b>81</b>	<b>88</b>	<b>87</b>	<b>95</b>	<b>96</b>	<b>94</b>	<b>85</b>	<b>82</b>

*\*\*Many entrepreneurs fish in several different counties*

Fisheries scientists suggest that the number of professional fishermen on Lake Peipsi exceeds the optimum. In 2003 the estimated number of fishermen in Estonia and Russia reached 600 and 900, respectively. During the Soviet period (up to the end of the 1980s) the numbers were restricted to approximately 200 and 300 respectively. Even if Lake Peipsi fishery remains important for employment in the future, the number of the fishermen should decrease gradually towards the estimated optimum number of fishermen on Estonian side of Lake of around 300.<sup>14</sup>

### 3.3 Infrastructure

The national motorway in the East of Estonia, the *Via Hanseatica*, passes the Lake Peipsi communities<sup>15</sup>. This is the official name of the Corridor 1A, which is included in the Pan-European Transport Network. The *Via Hanseatica* lies in the direction of Lübeck-Gdansk-Kaliningrad-Šiauliai-Jelgava-Riga-Valka/Valga-Tartu-Narva-St. Petersburg. One of the aims of the development of the *Via Hanseatica* is to promote tourism development along the road. In addition to this important road, Tartu has an airport that was re-opened for regular passenger flights in 2009 and from which domestic and international flights (operating from Tartu to Riga and to Stockholm) operate.

While the terrestrial aspects of transport infrastructure have been upgraded, Lake Peipsi largely lacks standardised networks of commercial ports and loading points. There are only two "passportized" (or in accordance with the EU standards) ports – in Vasknarva and Kallaste. As fishermen work all along the Lake Peipsi coast, more ports and loading points are needed. The lack of infrastructure has had an effect on the fisheries sector and many of the traditional fishers of the Lämmijärv (middle part of the lake) region have sold their historic

<sup>13</sup> Lake Peipsi Fisher Area Strategy 2009-2013; [www.pkak.ee](http://www.pkak.ee)

<sup>14</sup> Report "Coastal fishery development trends", 04.06.2010;

[http://www.maainfo.ee/public/files/EY\\_rannakalanduse%20arengusuunad\\_aruanne\\_4.06.2010\\_FINAL1.pdf](http://www.maainfo.ee/public/files/EY_rannakalanduse%20arengusuunad_aruanne_4.06.2010_FINAL1.pdf)

<sup>15</sup> [www.viahanseatica.info](http://www.viahanseatica.info)

fishing permits to fishers in other counties. One of the drivers for this is that they have been operating out of small, privately owned, ports. The owners of these ports do not have finances to renovate them and the fishing operations become more difficult.

Historically, small fish ports have been situated all along Lake Peipsi coast, short distances apart. Today many of them have ceased to operate or have fallen into disrepair. Changes in the Peipsi fleet as a result of renewal means also that larger loading areas are needed. It has been understood that the ports should be renovated in order to keep local fishing villages traditions alive. This is recognised in the Peipsi fishery area strategy for 2009-2013 that describes the lake ports and their investment needs in detail.<sup>16</sup> Lake Peipsi fishermen and fishing enterprises hope that problematic situation with ports and loading places will be solved with the help of EU funding by 2017.

In 2004 Kallaste vocational school was closed. This school provided, among other specialities, speciality in inland fishing. The curriculum of the school was united with Tartu vocational education center (<http://khk.ee>), where fishing specialities are not taught. While vocational training opportunities have decreased, fisheries related higher education can be obtained in Tartu University (including biology, environmental technology and ecology) and at Tallinn Technical University, Tartu College (environmental (water) technology).

### 3.4 Local development plans

According to the legal acts of Estonia, all local municipalities have local development plans. However, the time scales of most of the ongoing active development plans are different (Table 9). Many of the current development plans are up to the year 2013 or 2015 and all municipality development plans are available on the respective municipality websites.

**Table 9. Key elements of the local development plans and fishery sector related aspects**

Municipality	Period of plan	Special attention to fishery sector	Need of Investments in fishery sector or ports	key sectors for economic sectors
<b>Ida-Viru county</b>				Natural resources, lake port. Cultural heritage
Lohusuu	2007-2013	no	Lohusuu port	
Tudulinna		no	no	agriculture, tourism and service related entrepreneurship; timber processing
Iisaku	2010-2015	no	no	tourism
Alajõe	2004-2015	yes	Port investment in Vasknarva, Alajõe	Fishery and tourism sector (including fishing tourism)
<b>Jõgeva county</b>				
Pala	2003-2010	no	no	tourism and recreation
Kasepää	2008-2018	no	Need to find investors to develop Omedu port	(cultural) tourism

<sup>16</sup> Peipsi Kalanduspiirkonna Arendajate Kogu; [www.pkak.ee](http://www.pkak.ee)



Tabivere	2005-2013	no	no	agriculture, tourism, recreation
Saare	2006-2013	no	no	tourism, agriculture, forestry
Palamuse	2008-2016	no	no	agriculture, (cultural) tourism
Mustvee	2007-2013	no	Need for further development, finding investments to Mustvee (tourism) port	Transport sector (including port), (fishing) tourism
<b>Tartu county</b>				
Meeksi	2009-2013	yes	Mehikoorma port	Bio-energy (including lake reed, Mehikoorma port development, tourism (incl. development of fish museum))
Võnnu	2007-2013	no	no	not mentioned
Mäksa	2010-2015	no	no	agriculture; water and fishing related tourism
Piirissaare	2006-2013	yes (how to find alternatives to fishing which has been traditional source of living for locals)	Port development and improvement of connection with main land.	Water transport. Onion growing, sustainable tourism, reed management - as alternatives to traditional fishing
Vara	2009-2014	no	development of Liivanina port	organic agriculture, tourism
Peipsiääre	2010-2015	no	no	recreational activities
Alatskivi	2005-2010+	no	no	agriculture, (culture, water)tourism, fish breeding-processing
Kallaste	2008-2015	no	Kallaste port, small size boats docking area	development of port, water tourism, recreation
<b>Põlva county</b>				
Värska	2007-2015	no	no	based on local natural resources (water, mineral water, health mud); tourism (water, Seto culture)
Mikitamäe	2008-2015	no	Development of small ports boat docking areas	water transport/tourism, small ports/docking areas in Võõpsu, Lüübnitsa, Beresje, Laossina, Rõsna; tourism (focus on Seto culture)
Räpina	2003-2013	no	Räpina, Saarepere, Võõpsu port/docking areas	Timber processing, agriculture, fishing

The general conclusion from the local development plans is that more than half of the plans do not explicitly mention Lake Peipsi at all. Those municipalities that mention the lake in their development plans see it in connection with tourism sector. In large part, economic growth is seen in connection with tourism but also agriculture and timber processing. Several municipalities foresee the need for investments to local ports, but, again, this is more in connection with tourism sector and cross border cooperation with Russia. The only municipality where the fishery sector is mentioned more than just one sentence in Piirissaare municipality (Piirissaare is an island with 72 inhabitants). However, their concern is to find alternatives to fishing, which has been traditional source of living for locals.

## **4. FISHERIES AND AQUACULTURE SECTOR**

The fisheries sector in Lake Peipsi consists largely of the catching sector with some associated small-scale processing. There is almost no aquaculture although there is interest in developing this sub-sector and even to enhancing the lake fish stocks. The catching sector in the Estonian part of the lake is small-scale although on-going consolidation is seeing a smaller number of entrepreneurs responsible for the majority of the catch. The catches have been changing also as the fish assemblage of the lake has changed. Previously dominated by vendace, whitefish and smelt, the catches are now dominated by pike-perch and perch. These latter species are more valuable.

### **4.1 Details of the local fishing fleets**

Estonian Fishing Vessel Register was established in 2002. However, entering inland vessels into the fishing vessel register is not compulsory in Estonia, unless the vessel's owner has wished or wishes to apply in the future for assistance from the public sector. Because registering a vessel provides this opportunity to access funds for upgrading the vessel, many fishers have chosen to register their vessels. However, fishing pressure is not related to the number of vessels but to the number of gears that are used and licensing and controls apply to the gears. According to the fishing vessel register (see Table 10), there are 352 inland vessels and they are included in segment 4S4<sup>17</sup>.

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<sup>17</sup> Estonian Fisheries Strategy 2007-2013

**Table 10. Number of Estonian fishing vessels, total power of main engines and total gross tonnage in 2006**

Segment/indicator	4S1	4S2	4S3	TOTAL 4S1+4S2+4S3	4S4
Fishing ground	Baltic Sea	Baltic Sea	Sea, except Baltic Sea		Inland water bodies
Fishing gear	Trawls, gillnets	Unidentified	Trawls		Unidentified
Caught species	Pelagic and benthic species	Pelagic and benthic species	Pelagic and benthic species		Unidentified
Overall length	12 metres and above	Below 12 metres	24 metres and above		Unidentified
Possibility of adding to the segment	no	no	no		yes
Number of vessels (registered)	154	892	13	1059	352
Active	148	886	11	1045	350
Not active	6	6	2	14	2
Power (kW)	26 723	15251	25 738	67 712	103 16
Number of vessels without engines	0	106	0	106	87
Tonnage (GT) Loaded	10188	1823	15611	27 622	806
Data not available	0	0	0	0	69
Average year of construction	1980	1989	1980	1983	1990

According to the Lake Peipsi Fisher Area Strategy<sup>18</sup> there are 339 vessels registered to work on Lake Peipsi. This represents almost one quarter of the fisheries fleet in Estonia. Most of the fleet in Lake Peipsi area are located in Ida Viru county and the least in Põlva county (Table 11). Fishing takes place according to permits, which are given out for certain county; however most of the entrepreneurs work in two or more counties. Permits are related to the numbers of gears that are used. More than one fisher can appear on a permit and a fisher can also appear on more than one permit. This can lead to double counting and is one of the reasons that there are often different estimates of the total number of fishers on Lake Peipsi.

**Table 11. Fishing fleets by Peipsi counties**

County	Number of vessels
Ida-Virumaa	121
Jõgeva	82
Tartumaa	93
Põlvamaa	43

The main gears that are used in the fisheries are the Danish seine, trap nets, large-mesh gill nets and small-mesh gillnets. These are operated at different times of the year (see Table 12). The small-mesh gill nets are used to catch spring roach. The catches by gear vary, with gill nets particularly important for the commercially important pike-perch (Table 13).

<sup>18</sup> Lake Peipsi Fisher Area Strategy 2009-2013; www.pkak.ee

**Table 12. Fishing gears used on Lake Peipsi**

Season	Commercial fishers	Recreational/subsistence fishers
Winter	Large-mesh gill nets	Ice fishing
Spring	Trap nets; small-mesh gill nets	Gill nets, trap nets and hook and line
Summer	Trap nets	Gill nets, trap nets and hook and line
Autumn	Danish seine; large-mesh gill nets	Gill nets and hook and line

**Table 13. The catch (t) of the most important commercial species by different fishing gears in 1998 in L. Peipsi and Lämmijärvi<sup>19</sup>**

	Pike-perch	Perch	Pike	Bream	Roach	Smelt	White fish	Vendace
<b>Estonia</b>								
Gill nets	293.0	30.3	64.5	138.5	28.7	0	53.2	0
Fyke nets	23.5	259.1	8.3	21.6	59.0	1420.5	6.1	159.4
Danish seine	384.5	517.2	22.1	7.0	29.9	0	0.3	0
<b>Russia</b>								
Gill nets	283.7	2.8	32.4	381.7	6.3	0	8.2	0
Fyke nets	21.1	127.9	12.3	20.4	196.9	1522.8	0.5	7.7
Danish seine	231.2	249.5	14.7	19.7	138.1	0	0.3	0

The average age of a fisherman in Estonia is over 50 years. However, in the Lake Peipsi area the average age is lower, approximately 43 years. Monthly income from fishing is similar to that of a coastal fisherman, which is lower than the average income in Estonia, and the reduced prices at first sale has lowered income even more since 2001, while expenditure on gear (fishing gear, fuel, boat repairs, etc.) has increased<sup>20</sup>. Efforts are being made to increase the amount of local processing to enable fishers to get better prices for the fish.

The study of 2005<sup>21</sup> showed that 96% of fishermen are men, slightly more than half can speak Estonian and around 60% of owners of fishing permits were self-employed or limited employment to their family members. Surveys have also shown that fishing is the main source of income for half of the fishermen, while the rest get their main income from other activities, usually agriculture, forestry or construction. There were only about 4% of fishermen in the study who indicated that they would like to leave the sector. This is much lower than for coastal fishermen.

<sup>19</sup> M. Vetemaa, V. Vaino; Co-operative fisheries management of the cross border Lake Peipsi-Pihkva, Fisheries Management and Ecology, 2001, 8

<sup>20</sup> Estonian Fisheries Strategy 2007-2013

<sup>21</sup> Saar Poll „Kalandussektori info- ja teabevajaduse uuringu aruanne“, 2005

## 4.2 Fish stock status

According to present data, one lamprey and 33 fish species permanently inhabit Lake Peipsi or the lower reaches of its tributaries. The main commercial fish are perch, pikeperch, ruffe, roach, bream, pike and, until the 1990s, also vendace and until 2000 smelt. Secondary commercial fish are burbot, whitefish and white bream. The lake has seen a shift in the nature of the fish assemblage (and with it the catches). Previously the assemblage was dominated by vendace and smelt (with catches of vendace in the thousands of tonnes). More recently there has been a shift with the abundance of vendace declining and perch and pike-perch increasing to dominate. There are several contributory factors and these include heavy fishing on the year classes of vendace and the previously widespread use of Danish seines. As a result of intensive use of trawls and fine-meshed Danish seines, the stock of pikeperch was strongly depressed for a long time (1957-82). But since trawls were prohibited and the number of Danish seines considerably restricted (from 133 to 40), pikeperch has become one of the most important commercial fish in the lake<sup>22</sup>. Climate change is also considered to have contributed to the observed changes. The warmer summers and milder winters in recent years have tended to favour the warmer water species and reduce the abundance of colder water species like vendace, smelt and burbot. This shift has been beneficial for the fishers as perch and pike-perch are the more valuable species.

Fish resources of this lake system are managed together with Russia and all commercially important species are TAC regulated. Stocks are assessed annually through a joint trawl programme that samples stocks at the end of June to assess the year-class strength and that sets the quotas based on this. At present the status of the perch and pike perch stocks are good, bream is doing quite well, roach and pike are moderate and vendace and burbot stocks are not doing well. The quotas (examples in Table 14) reflect the state of stocks.

**Table 14. Estonian quotas on Lake Peipsi (tonnes)**

<b>Species</b>	<b>1998</b>	<b>2003</b>	<b>2008</b>
Whitefish <i>Coregonus lavaretus</i>	55	30	7
Smelt <i>Osmerus eperlanus</i>	2,300	1,500	5
Vendace <i>Coregonus albula</i>	0	0	0
Bream <i>Abramis brama</i>	300	600	700
Roach <i>Rutilus rutilus</i>	250	500	475
Pike <i>Esox lucius</i>	100	175	95
Burbot <i>Lota lota</i>	35	50	50
Perch <i>Perca fluviatilis</i>	700	450	750
Pike-perch <i>Sander lucioperca</i>	1,100	1,500	1,000
<b>Total</b>	<b>4,840</b>	<b>4,805</b>	<b>3,082</b>

Source: Ministry of the Environment

The fisheries are generally well managed. While there was some illegal fishing in the past this has been much reduced. The Estonia-Russia intergovernmental cooperation works well and the regulations are fairly well respected and enforced. Overall the fisheries are being managed to maximise the benefits from the stock as it stands and there is no effort at the moment to try and influence the nature of the fish assemblage to restore the abundance of vendace, for example. Evidence that it is going the right way can be seen by comparison with the coastal fisheries where some species, often pike-perch, are completely fished out.

<sup>22</sup> World Water Assessment Programm; Lake Peipsi/Chudskoe, Peipsi Cenetr for Transboundary Cooperation; [http://www.unesco.org/water/wwap/case\\_studies/peipsi\\_lake/index.shtml](http://www.unesco.org/water/wwap/case_studies/peipsi_lake/index.shtml)

### 4.3 Fisheries infrastructure

Fishing vessels typically operate from small ports on inlets in around the lake that provide very limited landing facilities. According to the Ministry of Agriculture, Fishery Information database, loading of fish on Peipsi have take place in 59 locations. However, Estonian Maritime administration has registered only 14 fishing port at Lake Peipsi. This remarkable difference comes from the reason that couple of ports do not situate directly on the lake side and loading activities take place on main land; and also as different fishermen have named the same place with different names. The study of Peipsi Fishery Area in 2009 has shown that loading of bigger catch takes place in 23 locations, which is also most reliable figure. The main characteristics in the infrastructure of the 14 main fishing ports on the Estonian side of the lake are provided in Table 15.

There are only two fishery ports on Lake Peipsi that meet all the requirements and regulations (Vasknarva and Kallaste). These are both larger than the typical port. However, it is estimated that there could be scope and need for around 11-14 fishing ports that meet the requirements. Today, many municipalities and private entrepreneurs plan renovating of their small ports, however many of these plans are being generated separately and there would be benefits in a strategic assessment of port development on Lake Peipsi.

**Table 15. Location of fishing boats by home ports and their main characteristics<sup>23</sup>**

Name of port	Registered fishing boats	Fresh fish in 2009, in EEK	Quay length, territory	Facilities	Needed/planned investments
Kallaste	58		2 quays – total 79 m	Fish landing facilities meet all requirements (incl ice production machines necessary for cooling and packing)	In 2008 received 4.5 million EEK from EFC for renovation of port and for promotion of inland fishing.
Lohusuu	53	5.3 million	100m	Cooling facilities; Fish processing in port territory (products for internal, external market). Drive well. Ice generator	Longer quay, asphalt on territory, facilities for fishermen, gear stores; fish landing, renovation of cooling system
Omedu: Includes 2 landing facilities 1. Omedu Rand 2. OÜ MIF Line	41		1.42x4.5 m  2.60m	1. Exist fish landing, cooling, storing facilities, drive well 2. Exist fish landing, storing facilities, drive well	Lighting and asphalt on territory.  3rd landing point with 7,477 m <sup>2</sup> quay in preparation
Alajõe	28	3 million	25m	cooling	Longer quay; need to finish fish processing facilities (fast freezing, glasure line)
Vasknarva	17			Fish landing facilities meet all requirements (including ice production machines necessary for cooling and packing)	During 2005-2010 received 5 million EEK from EFC for ship repairs, renovation of boat engines; also for aquaculture. Grant received by: OÜ Peipus
Kolkja	14	1.8 million	115 m <sup>2</sup>	Fish receiving point has	14

<sup>23</sup> Lake Peipsi Fishery Area Strategy 2009-2013; www.pkak.ee

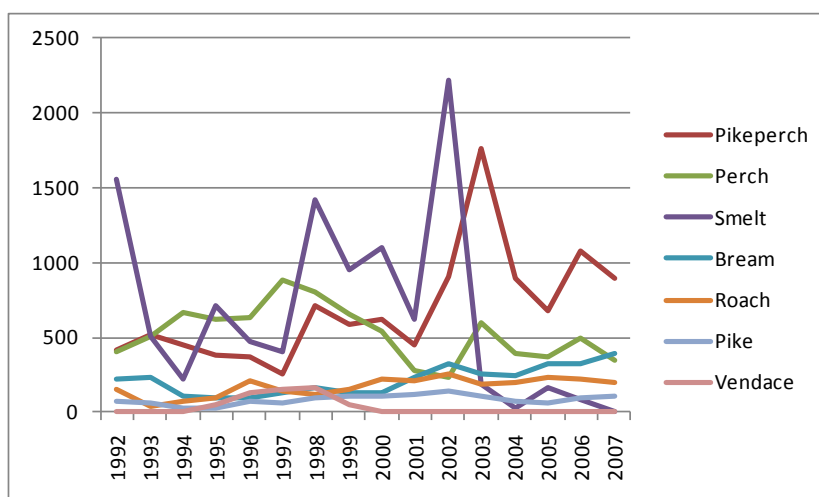
				sertificate from veterinary service, most of facilities are there and in good order	
Räpina	13	1.1 million		Gear storing, lighting; Processing 200 m away	Municipality want to develop fishing port in complex with water tourism, recretaional activities
Raja	14	0.9 million	20m	Facilites in accordance EU requirement for fish landi and first level fish proceedings)	Renovate quay, asphalt on territory;
Mehikoorma (with neighbouring villages)	13	3.4 million	200 m <sup>2</sup>	Gear stores, electricity, drive well	Investments needed
Võõpsu	13				
Varnja (with neighbouring villages)	12	1.9 million	270 m <sup>2</sup>	Quay in bad order, most facilities missing	Major investments needed
Kalma	11	1.5 million	59 m <sup>2</sup>	no facilities	Renovate quay, asphalt on territory;
Rannapungerja (with neighbouring villages)	11		(in planning) 100-150m <sup>2</sup>	Chilling and cooling	Renovate quay, asphalt on territory; drive well
Lüübnitsa	9				
Other	32				

As different fishing sector entrepreneurs use different types of capturing devices, their landing needs are also different (for example deep water seine needs larger landing area). Most of the currently used landing/loading areas are situated on private land. There are only three planned fishing ports (where technical projects are ready) that are located on municipal land (in Omedu, Räpina and Sassukvere.) It is much easier to find investment for ports on municipal lands, and also to make cooperation between private and public sector. For ports situated on private land, it is more difficult to access EU support or investments, in particular because the port should be accessed from public roads.

Aquaculture infrastructure is extremely limited. There is one company that has been conducting trials on crayfish breeding but that is the extent of aquaculture facilities in the area.

#### 4.4 Details of the local catching sub-sector

Pike and pikeperch are the most important species within the Lake Peipsi fisheries, forming more than 60% of total catch. The catch of roach and burbot has also increased to some extent – these species are important for local market. Figure 4 shows the trends in catches by species, highlighting how the catches of vendace and smelt have become quite low while those of pike-perch in particular have increased over time.



**Figure 4. Trends in landings of key species (in tonnes) over time.**

Nine bigger entrepreneurs are responsible for almost 65% of the total catch in Lake Peipsi and they employ 188 fishermen. In Ida-Viru county the biggest one is OÜ Peipsi Grupp Holding who holds 85% of total catch in the county. In Jõgeva county there are 4 bigger companies: OÜ Peipsi Kalatööstus, OÜ Omedu Rand, OÜ Kalameister and OÜ MIF Laine and in Tartu county AS Kallaste Kalur, AS Peipsi Kalamees and OÜ Profit Pluss.

Perch and pike-perch have become commercially very important species (see Table 16) and it is necessary to maintain the market for perch and pikeperch in order to ensure the continued profitability of the Lake Peipsi catching sub-sector. This requires that the Estonian state, development organisations and fishing entrepreneurs have to work together.

**Table 16. Value of fish catches in EEK and as a percentage of total catch, (without scientific catch)<sup>24</sup>**

<b>Species</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Perch	487,900 21.1%	342,400 17.3%	743,800 35.8%
Pike-perch	1,076,700 46.5%	885,100 44.7%	619,400 29.8%
Pike	99,400 4.3%	112,000 5.7%	54,700 2.7%
Bream	323,500 14.0 %	387,800 19.6%	367,200 17.7%
Roach	217,400 9.4%	201,600 10.2%	202,200 9.7%
Lake smelt	83,400 3.6%	0	0
Burbot	18,100 0.8%	33,500 1.7%	24,800 1.2%
whitefish	600	2,000 0.1%	800
Ruffe	8400	15,400 0.8%	63,200 3.0%
Other	800	1,300	400
<b>Total, EEK</b>	<b>2,316,100</b>	<b>1,981,100</b>	<b>2,076,500</b>

<sup>24</sup> Tartu University, Marine institute



While the average monthly gross wage of fishermen has risen by nearly five times during the last decade, the first buyer price of pike-perch has fallen by a fifth (see Table 17). Therefore the amount of pike-perch needed to earn an average Estonian wage (taxes excluded, fishery costs included) has risen by nearly seven times. This has resulted in increased pressure on the fish stocks and worsened living conditions of fishermen.<sup>25</sup>

**Table 17. Official first-buyer prices in 2006-2008 in EEK** <sup>26</sup>

Species	2006	2007	2008
European eel	92.55	117.15	100.00
Perch	24.65	26.92	16.84
Pike	13.13	16.03	16.97
Pike-perch	32.80	39.32	36.71
wels	2.56	3.91	6.50
Gibel carp	2.19	2.80	5.60
Carp	6.19		15.00
Ruffe	0.90	0.90	0.36
Bream	5.45	6.59	8.27
Burbot	8.67	8.26	9.23
Whitefish	20.43	12.80	4.00

Lake Peipsi fishermen's income is influenced to large extent by the falling prices of perch (-10.08 EEK/kg) and pike-perch (-2.61 EEK/kg) first-buyer prices compared with 2007. Over the same period, the price of wels catfish has increased considerably; as have the prices of bream and pike. Seasonality also plays a role in income as prices usually fall in the autumn season, when the quantity of available fish is high. There are also different regulations, from the national government and Ministry of Environment, which set up temporary restrictions on when fish can be caught. For example, the autumn season in 2009, when Danish seines could be used, was limited to between 1<sup>st</sup> September and 30<sup>th</sup> September. This affects the fishers as it means that there may be times when they cannot work and generate incomes from fishing and creates periods when they may have to seek alternative employment outside the sector. Catching days are also limited by regulations from Border Guard Board, which prohibit fishers from going out on to the lake ice. There were 154 possible catching days in 2007.

#### 4.4.1 Marketing

As recently as even just ten years ago there were dozens of fresh, dried and smoked fish selling points in the lakeside villages along national Narva-Tartu road. However, in the last two or three years their number has reduced considerably. The main reason for that is higher control from Veterinary and Food Board and other institutions as those selling points had a reputation for poor hygienic conditions. There was also a push for greater regulation as no taxes were being paid on generated income. Currently most of the fishing entrepreneurs are also involved in processing and they have freezing and chilling facilities, some are also involved in smoking or canning the fish.

Today the main direct marketing places in Lake Peipsi shores are R pina market, Kolkja sales point, Kuldkala O , also Kallaste, Omedu, Vasknarva, Lohusuu and Alaj e ports and five smoked fish sale points (with necessary certificates from Food Board).<sup>27</sup> However, these are

<sup>25</sup> Estonian Ministry of Agriculture; www.agri.ee

<sup>26</sup> 1 Eur= 15.6466 EEK

<sup>27</sup> Report "Coastal fishery development trends",2010; <http://maainfo.ee/>

small outlets and much of the sales around the lake are seasonal. The lake produces a relatively large amount of fish compared to the size of the Estonian market and with the higher prices that are available in the wider European market, most of the fish and fish products are marketed abroad, in particular to Finland, Latvia, and Lithuania.

Entrepreneurs often prefer export channels as they can sell bigger quantities, which give them also more stable income. However, on the other hand, the export market dictates the price; in peak season there is greater supply and the prices are falling. One possible future development might be increased cooperation between entrepreneurs to identify joint marketing channels and to develop the potential to supply to Estonian supermarkets, which are becoming an increasingly important retail outlet. At present it is almost impossible to find fresh Lake Peipsi fish in supermarkets. The European Fisheries Fund has been an important source of funds for entrepreneurs who have wished to invest in fish processing or to work out direct marketing channels. Lake Peipsi area entrepreneurs have been active in applying for funding to develop their company, modernize the equipment and technologies or to develop marketing channels.

#### 4.5 Details of the local processing sub-sector

According to the report on the fisheries sector of 2010, there 262 people involved in fish processing in the region.<sup>28</sup> The Veterinary and Food Board has registered 16 enterprises involved with fish processing in 2010<sup>29</sup>. Lake Peipsi processing and marketing sub-sector can be described as relatively well developed compared with many other fisheries areas in Estonia. Overall in Estonia the processing sector has shown a declining trend that is shown in the employment (Figure 5) and the contribution to total industrial production (Figure 6).

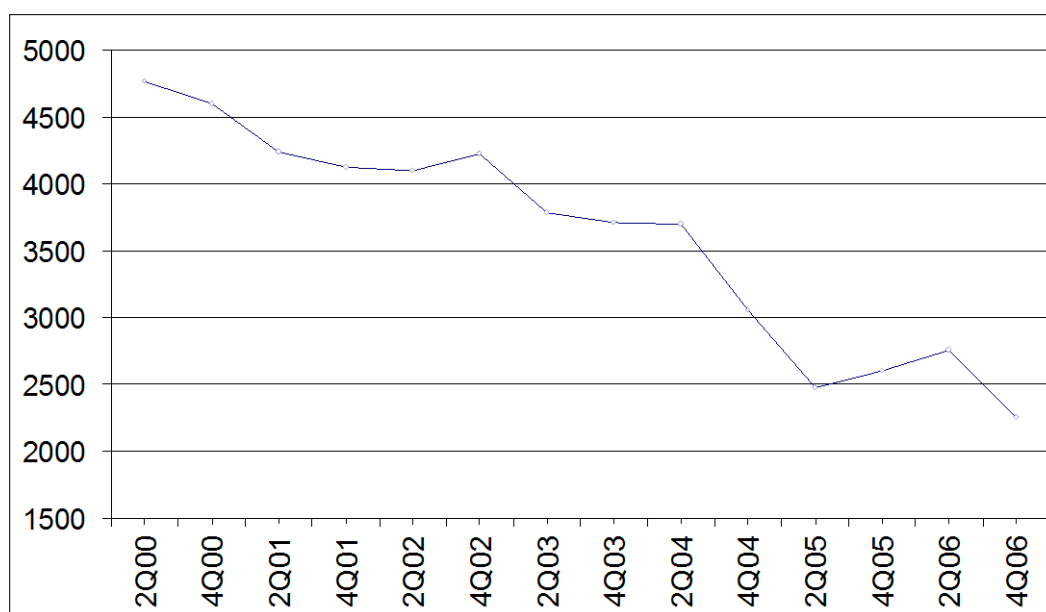
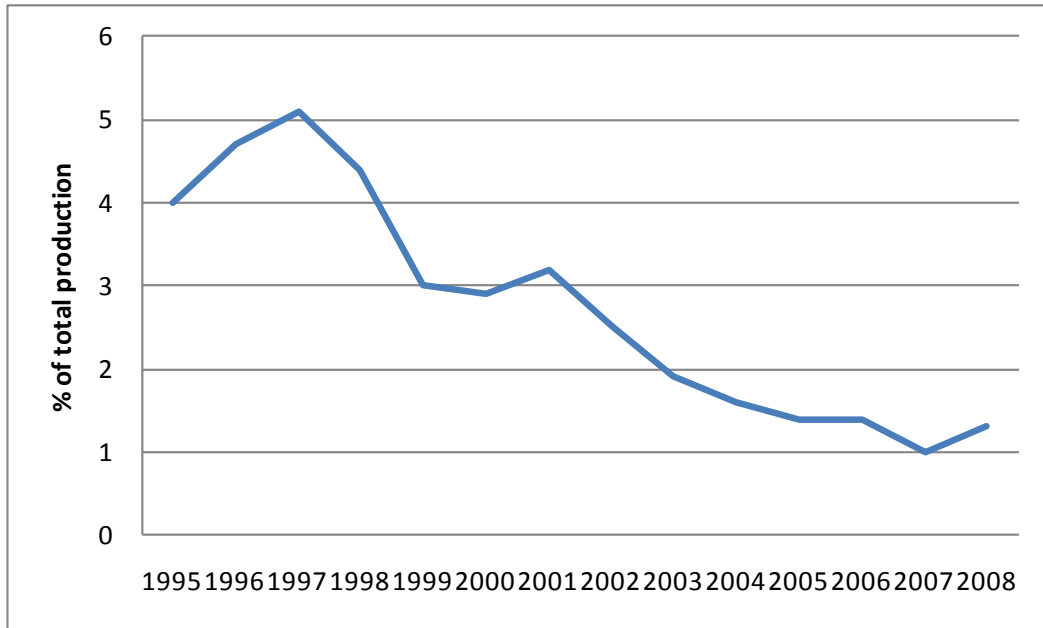


Figure 5. Trend in fish processing employment (numbers) in Estonia 2000-2006 by quarter.

<sup>28</sup> Report "Coastal fishery development trends", 2010; <http://maainfo.ee/>

<sup>29</sup> The Veterinary and Food Board; [www.agri.vet.ee](http://www.agri.vet.ee)



**Figure 6. Fish processing in Estonia as a percentage of Estonian total industrial production**

Those entrepreneurs who own enough fishing permits (catch the fish themselves) and also own fish processing are well positioned to develop their businesses. These entrepreneurs have usually good marketing channels in Estonia and also for export.

There are around ten direct marketing places in Lake Peipsi ports, village markets and two fish restaurants for processed fish. However, this is a sparsely populated region and the market within Estonia is limited and most of the processed fish products are marketed abroad. There is a range of processing activities that are undertaken by local businesses and these are summarised in Table 18.

**Table 18. Lake Peipsi region fish processing activities**

No	Name of establishment	Municipality	Activity
1.	Kallaste Kalur Ltd	Kallaste,	1;2;3;8;13;14
2.	Inc Kallaste Rand	Alatskivi	1;2;4;5;8;11;13;14
3.	Inc Profit Pluss	Pala	1;2;13;14
4.	Inc Peipsi Kalatööstus	Nõmme village, Kasepää parish, Jõgeva county	1;2;3;4;5;9
5.	Ltd Kallaste Kalur Kalavastuvõtupunkt	1, Tööstuse Str, Kallaste, Tartu county	1;2;3;4;11
6.	Peipsi Kalamees Ltd	Kolkja, Peipsiääre parish, Tartu county	1;2;11
7.	Inc Peipus	Vasknarva village, Alajõe parish, Ida-Viru county	1
8.	Inc Latikas	Mehikoorma, Meeksi parish, Tartu county	1;2;5;8;9;11;14
9.	Inc Juritex	4 Aia Str, Kükita village, Kasepää parish, Jõgeva county	3;4;5
10	Inc Järvetähe	11a Tähe Str, Mustvee, Jõgeva county	1;14
11	Peipsi Kalamees kalatseh Ltd	Kolkja, Peipsiääre parish, Tartu county	1;4;11,14
12	Inc Kalma Kaubandus	Päiksi, Alatskivi parish, Tartu county	1;14
13	Inc Katroni	2 Kalda Str, Raja village, Kasepää parish, Jõgeva county	1;14
14	Peipsi Trade Ltd	21, Järve tee, Lohusuu parish, Ida-Viru county	1;2;11;12,14
15	Inc Fadorex	88a, Võidu Str, Kallaste, Tartu county	1;11
16	Inc MIF Laine	Omedu village, Kasepää parish, Jõgeva county	4

Activity:

1. Chilling ; 2. Freezing ; 3. Salting ; 4. Drying ; 5. Smoking ; 6. Preserves ; 7. Canned products ; 8. Production of mechanically separated fishery products ; 9. Production of heat-treated and cold-treated fishery products ; 10. Peeling, salting and pickling of shrimps ; 11. Storing ; 12. Packing ; 13. Other activities ; 14. Filletting

All fish processed in Lake Peipsi area is local and there are no fish brought from outside area for processing. While there used to be some trade in fish with the Russian side when the border was open this has ceased with the closing of the border.

#### 4.6 Details of the local aquaculture sub-sector

Aquaculture is only beginning to be developed. Aquaculture in the region is focused on shellfish rather than finfish, given the productivity of the lake. There is one company that is involved in this sub-sector - OÜ Peipus. The company is involved in catching, processing and marketing fish and they have begun to explore the potential for crayfish aquaculture and have developed side activity in crayfish breeding, with a crayfish farm is situated close to Vasknarv port with 10 crayfish ponds and a total area of 25,000 m<sup>2</sup>. The main activity of OÜ Peipus is still fishing and fish processing; aquaculture still forms less than 25% of their activities.

In 2005, OÜ Peipus received EU support for crayfish breeding investments. Today the company has approximately 120,000 crayfish and they plan to sell between 600 and 2,000 kg of crayfish next year. Export partners are from Finland, Poland and there are also markets in Estonia. OÜ Peipus long term plan by the year 2017 is to sell 30,000 or 1 tonne of crayfish per year. This would then represent 5% of Estonian crayfish breeding capacity and generate 40% of the company's profit.

#### **4.7 Details of the local ancillary sub-sector**

The fishing activities are for the most part small-scale and most repairs to gears and to boats are undertaken by the fishers themselves. There are a few small gear merchants but these are not significant in size. The nature of the fishing activities, operating from small ports, means that there are no large port facilities on the lake.

Provision of services to the recreational ice fishers is another part of the ancillary sub-sector. Until now there have been only few service providers of recreational fishing, providing services such as transport to the ice, accommodation, food, equipment for fishermen. However, during last couple of years several support grants have been received through the fisheries areas sustainable development program, to support fishing tourism (including the development of local infrastructure). It is hoped that recreation fishing services quantity, quality and income in this part of the sub-sector will increase during some years and provide an important alternative to commercial fishing.

## **5. GOVERNANCE**

### **5.1 Key local institutions**

Lake Peipsi is a trans-boundary resource and, as such, there are a range of governance structures that exist from the supra-national to the local. At the local level, Lake Peipsi has an established FLAG that has been operational since 2008 and which operates across the 21 municipalities.

#### **5.1.1 Intergovernmental level**

Estonian fisheries are managed by the National Estonian Board of Fisheries under the Ministry of the Environment. The Estonian Government has at present established bilateral fisheries agreements with the EU, the Faroe Islands and Russia. The Estonian Government is a member of NAFO and Baltic Sea Fisheries Commission.

The Lake Peipsi and Narva River basin fishery issues are managed according to the Estonian-Russian Agreement on Lake Peipsi fisheries, the Agreement on Estonian-Russian fisheries relations, the Estonian-Russian Agreement on the protection and sustainable use of trans-boundary water bodies, and the Estonian-Russian Agreement on environmental protection. Those four intergovernmental commissions ensure enforcement of the agreements and operate as conflict-prevention and conflict-resolution mechanisms. The intergovernmental commissions also invite representatives from fishery organisations to their work.

### **5.1.2 National organisations**

The Estonian Fishermen's Association, Estonian Sport Fishermen Federation and Estonian Fishery Association (fish processors mainly) are actively involved in the co-management process (discussions on fishery management measures, amendment of laws and fishery rules, discussions on structural measures, the application of structural funds, etc.).

### **5.1.3 Fishery Local Action Group**

With support from the European Fisheries Fund, an association of local fishers, NGOs and local municipalities has been launched to promote and support sustainable fisheries development. This is the first time in Estonia that fishermen and other organisations have the opportunity to consider jointly the future of fisheries and draw up a development strategy. The strategy that has been developed is linked to support measures that provide resources to enable the development of the fisheries sector through various courses of action that include: renewing of cutter harbour and unshipping places, processing and direct marketing of fish, the development of fishing-related tourism and the regeneration of coastal villages, diversification of activities, training activities.

Estonia has set up local action groups in eight Fisheries areas. These voluntary associations are non-profit organizations. The Development Association of Peipsi Fishery Area ([www.pkak.ee/](http://www.pkak.ee/)) was established in 2008. The association includes 15 municipalities, 18 NGOs and more than 100 entrepreneurs and companies as their members. The association is widely seen as a positive step and a useful mechanism to coordinate support to the sector across the Peipsi area.

## **5.2 Public intervention**

Table 19 below provides an overview and details of the main items of public investments with an emphasis on the fisheries sector.

**Table 19. Details of public investment and investment outcomes in the Lake Peipsi area.**

Public investment	Source of funding	Investment cost	What was the investment intended to achieve?	What were the outcomes (or expected outcomes)
Jõhvi-Tartu-Valga national road renovation (2005-2006)	82% EU Cohesion Fund  18% State funding	683 million EEK	Renovation of different parts of the main road in the Eastern Estonia (total 83,6 km )	Better quality transport corridor from Russian border on East (Narva), to Latvian border on South (Valga).  Increased safety in traffic (also for pedestrians, local transport)
Lake deepening equipment for Lake Peipsi (2010-2011)	80% European Fisheries Fund, 20% NGO Peipsi Association	6.9 million EEK	To purchase Lake (Ports areas) deepening equipment, which could be used also by other organisations	Project proposal was approved in Oct 2010, the first works will start in 2011.  Many port areas need deepening works, to have bigger/deeper boats, increased quantity
Alajõe quay widening works (2010-2011)	80% European Fisheries Fund 20% Association of Alajõe Port	3,024,000 EEK	Improved Alajõe fishing port facilities for fishing and other boats	Increased volume of fishing boats
Lake Peipsi permanent exhibition in Kasepää; 2010-2011	80% European Fisheries Fund 20% Kasepää municipality	171,724 EEK	Peipsi permanent exhibition for tourism and nature education purposes	Increased public knowledge on Lake Peipsi issues
Renovation of Kallaste port; 2004-2006	80% European Fisheries Fund 20% Kallaste Kalur Ltd.	4.5 million EEK	Renovated port, in accordance with EU requirements	Main Lake Peipsi fishing port, with high quality standards, services
Renovation of Vasknarva port, promotion of aquaculture; 2005-2006	80% European Fisheries Fund 20% Peipus Ltd	Ca 5 million EEK	Renovation of fish boats; establishment of Cray fish breeding	One of the two "passportized" fishing ports on Peipsi; ; aquaculture forms today 25 % of their activity but the aim is to reach to 40%
Improvement of equipment and methods to study fish stock; 2010-2011	European Fisheries Fund  Tartu University	14,732,000 EEK	To improve material base and methods to study fish stock; better overview of fish stock for industrial fishing	
Preparation work for Center of Fishing Culture; 2010-2011	European Fisheries Fund  Latikas Lth	644,535 EEK	Preparation works to establish Fishing culture center in Mehikoorma, which would give information on Lake Peipsi, fishing, fish issues	Preparation of the area of the future center (demolition of old ruins etc

In terms of the success of the investments to date, one of the big challenges is that many of these are quite recent and it is too soon to see how the investment is affecting the patterns of fishing and fish trade. One of the biggest problems and challenges for the catching sector in

Lake Peipsi is lack of interest for cooperation between fishing entrepreneurs. It would be much reasonable to join forces and to work out common initiatives for marketing, to have joint local labels – until now it has remained largely non-existent. The local FLAG, the Development Association of Peipsi Fishery Area (established in 2008) has begun to provide a means in the future through which this can be addressed. It may also be necessary to organise campaigns to promote local food, and fish products as a part of everyday food. One of the development Foundation initiatives is to start Internet based fish sales portal in the coming years.

The Peipsi Fisheries Area Strategy for 2009-2013, written by working groups of Development Association was approved by Ministry of agriculture in May 2009. Based on this plan, the Development Association has organized ongoing competitive grants schemes in the Peipsi fishery area. These activities are in accordance with the European Fisheries Fund implementation plan 2007-2013, approved by Estonian Ministry of Agriculture 10/05/2008.

The first projects (from the first round of application) were approved by the board of the Development Association in January 2009. In 2010 four rounds of calls for applications were announced and approved. The table below shows the details of the 2010/2011 budget for local fishery projects (in accordance with Peipsi Fisheries area implementation plan).

**Table 20. Details of the funds available through the Development Association of Peipsi Fishery Area.**

	Ports	Direct marketing	Tourism	Diversification	Training	Total
Ida Virumaa	117,568	13,713	55,435	19,555	11,760	218,032
Jõgevamaa	139,370	49,870	67,555	28,497	12,486	297,779
Tartumaa	135,718	15,386	87,294	26,056	12,241	276,696
Põlvamaa	89,868	32,617	54,357	5,991	5,991	188,824
<b>Total</b>	<b>482,524</b>	<b>111,587</b>	<b>26,462</b>	<b>80,100</b>	<b>4,278</b>	<b>981,330</b>



## 6. STAKEHOLDER ANALYSIS

Some key contacts from the Lake Peipsi communities and municipalities are provided in the table below.

**Table 21: Stakeholder details and contacts**

<b>Name</b>	<b>Organisation</b>
Andrey Ulukhaniyants	Kalma Kaubandus OÜ
Anatoli Filippov	AS Peipsi Kalamees
Aivo Kähr	OÜ Kalameister
Ilja Böstrov	Peipsi Kalatööstus oÜ
Andrus Toss	Tudulinna municipality, mayor
Grigori Blinnikov	OÜ Katroni
Andres Kolpakov	Kofish OÜ
Ove Kalme	OÜ Ninametsa
Toivo Kivi	Lohusuu municipality council, NGO Peipsi society
Mihhail Guz	OÜ MIF Laine
Andri Plato	NGO Peipsi Fisheries Area
Urmas Pirk	Association Lake Peipsi Fishermen association
Margit Säre	Peipsi Center for Transboundary Cooperation

## **7. QUALITATIVE ANALYSIS**

To qualitatively analyse socio-economic changes in Lake Peipsi communities, focus group and expert interview were held on 9 November in Kasepää village. The group included 13 participants representing the fishing industry, fish processors and sellers and a fisheries scientist, along with key representatives from local government. The discussions explored the historical development of the area (across demographic, economic and sectoral aspects) and the stakeholder perceptions of the likely future development of the region and the role of the fisheries sector within this.

### **7.1 Key events and drivers of change**

This section provides an overview of the perceptions of the key events and drivers in the recent past that have shaped the historical development of the area.

#### **7.1.1 Demographics**

The key event within the recent history of the region has been the changes following the collapse of the Soviet Union and entry of Estonia into the European Union. These changes brought about large socio-economic changes throughout the 1990s as there was a process of re-orientation to a market economy and disappearance of the traditional Soviet/Russian market. As a result of these changes, there has been a constant outward migration from the lake communities. This has also affected the demographics of the communities as young people are not motivated to be employed in fishing sector. One of the issues is that it continues to provide unstable income (there are only about 150 catching days in the year). There are also no higher education institutes in the region and the vocational school, which taught also fishing related subjects, was closed 10 years ago.

#### **7.1.2 Economic aspects (all sectors)**

During the Soviet time and through to the beginning of the 1990s, the Lake Peipsi region was particularly famous for its cucumbers and onions. These were highly sought after and were sold in the St. Petersburg market. After the border and visa regime was re-established, this lucrative market was lost to local farmers who felt the effect through reduced income. Re-orientation of the agricultural sector to internal and western market has not taken place to such a large extent.

Re-independence had an effect on the way that agricultural and fishing operations operated. For many local people, including fishermen, the effect has been that they could start establishing their own businesses, to be self employed.

While there has been a traditional dependence in the region on employment related to the natural environment (agriculture, forestry and fishing), today, most of the employment in lake Peipsi communities is provided by the public sector (local municipality, schools, kindergarten, health sector). Jobs in this sector are relatively well paid (compared with the average in municipality) and stable. However, unemployment is high in these border communities, compared with the national average, reaching in some municipalities higher than 20%.

#### **7.1.3 Fisheries and aquaculture aspects**

The fisheries of the region have been affected by the changes brought about by the changing environment and fishing activities. From a system dominated by whitefish and vendace, the

fish community structure has shifted to one dominated by perch and pike-perch. These changes have affected the catches from the fishery in similar ways. Overall the catches have fallen in terms of the amount landed but the increased value of the now dominant species means that the returns are still high and there is higher demand for these species. As a result, the main commercial fish, with highest first-buyer prices are perch and pikeperch, and it is necessary to maintain the market for these species in order to ensure the continued profitability of the Lake Peipsi catching sub-sector. Some of the fish species, like vendace, also white fish, are almost disappeared. Recently Lake Peipsi fishers' income has been influenced to large extent by the falling prices of perch and pike-perch first-buyer prices compared with 2007.

As the demographic trends suggest, the historic fishing villages of Lake Peipsi are in the process of vanishing. Fishing is concentrating to bigger companies (currently nine larger companies hold approximately 65% of the total catch quotas) and small scale fishing and fishing for family needs is no longer profitable. There are currently around 450 fishermen on the Estonian side of the lake, but it is likely that this number will continue to decrease in coming years (as recommended by fish scientists; also caused by several restriction on fishing opportunities, fish quotas).

#### **7.1.4 Governance aspects**

Following re-independence the establishment and operations of the Intergovernmental Fisheries Commission over the last 15 years has contributed to more sustainable fisheries management in Lake Peipsi. Compared to the coastal areas, the status of many freshwater species is considered to be more healthy. However, the participants did point to the fact that fishers on the Estonian side are not satisfied with the system of distributing the fish quotas in the Estonian-Russian intergovernmental Fisheries commission. On the Estonian side the state manages the quota and individual fishers (limited by gear restrictions) catch until the quota is fulfilled. By contrast, on the Russian side, the quota is distributed to individual fishing companies. According to the participants, this allegedly creates an incentive for illegal or undeclared fish catch.

On the Estonian side of the lake there are 21 local municipalities. Most of them are small rural municipalities with average population of around 1,500 people. As the municipalities are small and with very limited budgets, fishermen do not see any help from them to represent their interests in national/international level or promote fishing sector. Indeed the local municipalities are seen as bureaucratic bodies that do not help with new initiatives, but rather are focused on controlling activities and ensuring that all relevant norms are 100% fulfilled.

There has been investment in a range of fisheries infrastructure along the Estonian side of the lake but many of these investments have been quite recent and it remains too soon to tell how effective many of these have been. Renovation of the ports is expected to increase the potential beyond the fisheries sector and (water transport, tourism, food industry) and people feel positive about this. However, there remains a degree of competition between different ports and municipalities. Currently ports are also looking for funds from other sources. For example it was announced that some ports will have renovation money from Interreg Estonia-Russia-Latvia program.

A recent initiative that was seen as a positive step by the participants has been the establishment of the local FLAG. This has provided a means for all the municipalities to be involved in fisheries planning and also a means for the small-scale fishers (often marginalized) to be able to participate and both have their views heard and to be able to access public investment (which they complain they have not been able to access in the past). The FLAG has developed an approved strategic plan against which it has issued a series of competitive

calls for projects within the fisheries sector and funds have been dispersed to approved projects (see Section 5.2).

## **7.2 Adaptation**

This section aims to provide an overview, based on local respondents perceptions, of how the communities have been able to respond to the events and drivers and what this has meant for the development and diversification of the region. This section highlights the extent to which the communities have been able to cope or adapt and some of the strategies that they have employed.

### **7.2.1 Demographic aspects**

The demographic changes, mainly the out-migration and aging population, have been quite painful for most of the municipalities. The traditional sectors are becoming less important to the majority of people as control and engagement is consolidating and young people do not find jobs in rural areas. An extreme case here is Piirissaare municipality (island) where almost half of the population is more than 60 years old. Changes in demographics have also forced municipalities to close schools (including vocational schools related to the fishing sector). This trend of losing young and active people is still continuing; only municipalities close to urban centres such as Tartu (for example Vara) do not feel outmigration so seriously.

### **7.2.2 Economic aspects (all sectors)**

The traditional sectors – farming, fishing, handicraft – are reducing in importance and there are not many alternatives that are replacing these working places. Many of the traditional sectors are not appealing to young people as they involve long hours for uncertain returns. These sectors are also highly seasonal. For example, in the fisheries seasonality plays a role in income with prices usually falling in the autumn season, when the quantity of available fish is high.

All Peipsi area local municipalities put emphasis on tourism development in their development plans. However, the sector needs many investments, especially more caravan and accommodation places, services etc. One of the prospective niche tourism could be (ice) fishing tourism, also culinary tourism, water sport activities. Currently there are new investments coming to lake Peipsi ports and also in vessel sector (renovation, purchasing new fish boats), to processing sector – which would mean more efficient catch and processing, which would probably cause reduction of employment opportunities in the sector. However there is a complaint that all municipalities are still pursuing relatively independent plans and could benefit from coordinating investment plans.

### **7.2.3 Fisheries and aquaculture aspects**

For some there has been increased involvement and investment in the sector and expansion of the commercial opportunities that this provides. However these opportunities are limited and there are currently only nine large firms. Regulations have had an important impact, from the national government and Ministry of Environment, which set up temporary restrictions on when fish can be caught. For example, the autumn season in 2009, when Danish seines could be used, was limited to between 1st September and 30th September. This affects the fishers as it means that there may be times when they cannot work and generate incomes from fishing and creates periods when they may have to seek alternative employment outside the sector. Catching days are also limited by regulations from Border Guard Board, which prohibit fishers from going out on to the lake ice. There were 154 possible catching days in 2007. For others the role of fishing has remained the same but the opportunities are becoming more limited with the intensification of fishing that has resulted from the consolidation. One of the

key adaptation strategies for many fishers is seasonal employment in other sectors (usually forestry and construction). Ice fishing has also generated opportunities to exploit the tourism potential but these opportunities are seasonal and require investment and capital that many do not have access to and those who have taken advantage of the opportunities are often not themselves fishers.

There has been limited development of the aquaculture sub-sector to date and it is thought that the potential remains, at this stage, limited. The ancillary sub-sector is also very limited and the nature of landing sites as small areas within creeks around the lake mean that development may be limited.

#### **7.2.4 Governance aspects**

During last decade regional and administrative reforms have been taken place in Estonia. Small rural municipalities are encouraged (also financially) to unite with their neighbouring municipalities but in Lake Peipsi area this has only taken place in R pina town and R pina municipality, which united in 2005. Small municipalities lack human resources, skills, finances to take part in large, (pan-European), investment projects and thus lose out on some potential investments.

### **7.3 Future development of the community**

This section focuses on the perceptions of how the communities within the Lake Peipsi area are likely to develop into the future and the local perceptions of the key opportunities and constraints that currently face these communities. Respondents also indicated how current drivers, e.g. consolidation within the fisheries sector might affect the sector.

#### **7.3.1 Demographic aspects**

The municipalities are concerned about the unfavourable demographic situation, but still they do not see/plan measures to encourage inward migration and discourage outward migration. An aging population and migration of younger people means that the population will decline also in the future. The paradox is that even if young families with children want to move to some of these remote places they are discouraged by the lack of services that will be available as there is no kindergarten or school and the same time municipality can't establish children care facilities as there are no/few permanent inhabitants with young children. As a result, the way of life that has characterised the region may change. It is felt that these changes may be felt less strongly in some communities, such as the Old Believers, where the level of social cohesion and commitment to a particular way of life are especially strong.

#### **7.3.2 Economic aspects (all sectors)**

In order to support traditional sectors, Peipsi municipalities have been active in organising different kind of open air events, fish and onion fairs, eco-(product) fairs. However, as the traditional sectors (mostly farming and fishing) provide increasingly limited opportunities, there is a sense that alternatives should be developed. This is of utmost importance to reduce depopulation of the regions and outflow of young people. Peipsi area local municipalities and entrepreneurs see tourism as one of the most important sector. In particular, possibilities are seen to lie in ecotourism, (ice) fishing tourism, also culinary tourism and water sport activities.

As Peipi area has been identified as providing a number of possibilities to promote renewable energy generation and there are several ideas in this field. These include harnessing wind power and also developing the now abundant reeds as a source of fuel by producing reed pellets that can be burned. The development of reed biomass fuels has appeared in the future development plans for a number of the municipalities around Lake Peipsi.

### **7.3.3 Fisheries and aquaculture aspects**

The Lake Peipsi climate conditions, as well as the physical and chemical characteristics have changed over the past 20 years. As a result, Lake Peipsi is currently less suitable for cold-water fish but provides a more appropriate environment to fish who like warmer and more nutrient-rich water (e.g. pike-perch). It is thought that it is likely that this situation will remain in the near future and indeed the effect of predation by pike, pike-perch and perch on the vendace and whitefish could create a barrier for recovery of the more cold-water species.

More investments in fishing and processing is likely to bring higher intensity and efficiency to the sector. Local production may be supplemented by fish imports (for example from Russia), in order to give work to newly renovated fish processors. However, the intensification and consolidation process is not without costs, in particular for the smaller operators who fish for the companies and who also see fishing operations being affected by the intensification. Fishers complain that there is little sense in making big investments to upgrade fishing boats, when in fact you are allowed to go fishing for only four months during the year.

Another process which is inevitable in the future is consolidation of fish enterprises but, at present, this process is ongoing and there is little interest in cooperation amongst these enterprises. In future cooperation is more likely and there may be common initiatives for marketing, to have joint local labels, products etc. The Development Association of Peipsi Fishery Area is working in this direction. It is also necessary to organise campaigns to promote local food, and fish products as a part of everyday food.

To date there have been only few service providers of recreational fishing, providing services such as transport to the ice, accommodation, food, equipment for fishermen. However, during last couple of years several support grants have been received through the fisheries areas sustainable development program, to support fishing tourism. It is hoped that recreation fishing services quantity, quality and income in this part of the sub-sector will increase during some years and provide an important alternative to commercial fishing.

Fishermen feel that there are too many restrictions and that the increased consolidation has led to an intensification in the fishery that has reduced the possible catching days to around 150 (ten year ago there were usually nine fishing months). Fishing does not provide stable income, so, people have to find jobs also in other sectors (often in constructions, forestry – mostly in Scandinavian countries).

### **7.3.4 Governance aspects**

The work of Estonian-Russian Fishery Commission has worked in large part effectively. However, fishermen hope there will be more fair distribution of fish quotas between Estonia and Russia; and also control over fulfilling these quotas.

Peipsi FLAG is seen as a positive initiative and considered to have done good work over the past two years in terms of developing a strategic plan with involvement of the fishers and municipalities and identifying fundable projects against this plan. According to local participants, this kind of support has been very helpful to fishery sector. There was a hope amongst the participants that this support structure will continue in the future. It was also hoped that there would be some reform within the regional administrations and that some of the smaller municipalities will unite in the nearest future. Across all municipalities it was hoped that there would be greater coordination of investment plans and that not all municipalities would feel a need to invest in a full range of activities. The situation for Lake Peipsi was contrasted with that of Lake Võrtsjärv where there are fewer municipalities and other actors and where it was felt resource management and investment planning were more straightforward and less contested.

It was hoped that from the EU there would be a greater recognition of the particular characteristics of the area and greater flexibility in the approach. Two particular issues were highlighted. In the first place, Lake Peipsi is has ice cover for about four months of the year and there should be a recognition of this and support should be given in relation to this, for example for vehicles to move on the ice. In addition, many of the fishers in the area are very small-scale and there can be difficulties accessing public resources. The fishers have not been able to get many resources from the municipalities and the FLAG may be an important mechanism in the future. In the meantime, the system tends to favour the larger operators and this can have considerable effects on the structure of the sector and consolidation within it.