

# **Economic importance of the Dutch non-commercial small-scale fleet**

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This paper describes the characteristics, costs and revenues of the so-called non-commercial small-scale fleet based on a survey sent to all the skippers owning a vessel that according to the LEI definition falls within the category of non-commercial small-scale fisheries. With this data the economic importance of this part of the fleet can be determined.

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## Preface

This report describes the economic importance of the non-commercial small-scale fishery in the Netherlands. In the ongoing developments in fisheries science in Europe, there is a growing awareness of the importance of economic research and particularly the importance of economic data. An important goal of economic research is to provide economic incentives for the development of fisheries that are sustainable in ecological, economical and social terms. However, within the European fishing fleets, both large-scale economically oriented fishing companies, and non-commercial small-scale fishermen operate. For these two extreme groups and all others in between, incentives to either join the fishing fleet or change fishing behaviour might be very different and therefore different economic and social paradigms might apply. In addition, although the non-commercial small-scale fishermen might not have a large impact on the ecological sustainability of many fisheries, or on national economic performance, they are of importance to many local economies. In the Netherlands, economic research so far has concentrated on the commercial large-scale fishing fleet, although it has been an ongoing struggle to define who is included in this population. As of 2002 the European Commission has defined this population as all vessels included in the vessel register, which resulted in a doubling of the number of vessels for which data had to be gathered. Several discussions have since been held on the distinction between the so-called fully active and less active fishermen, or commercial and non-commercial fishermen; however, this definitional problem remains unresolved. I hope that this report will provide a better understanding of the economic importance of these non-commercial small-scale fisheries and that it will be instrumental within the discussion on the definitions of commercial fisheries.

A handwritten signature in black ink, appearing to be 'J.C. Blom', written in a cursive style.

Dr. J.C. Blom  
General Manager LEI B.V.





## Summary

From 2002 onwards the Netherlands are obliged to gather data on all fishing activities within the framework of the European Data Collection Plan (EU regulation 2001/1639). According to this regulation economic data have to be gathered for all registered fishing vessels irrespective of their activities. Because of this demand, LEI has gathered economic data about vessels that are left out of the regular data collection routine, the so-called commercially less active vessels (about 360 vessels). This year, data for the years 2004 and 2005 for this part of the fleet has been collected by means of a survey. The survey has been sent to all the skippers owning a vessel that according to the LEI definition falls into the category non-commercial small-scale fisheries. This paper describes the characteristics, costs and revenues of the so-called non-commercial small-scale fleet and determines the economic importance of this part of the fleet.

The main conclusion that can be drawn from this analysis is that the economic impact of the non-commercial small-scale fleet is very limited. Although the non-commercial small-scale fleet represents about 50% of the vessels in the Dutch fleet, they add only about 1% to both the revenue and the total costs of the Dutch fleet. Moreover, the results show that the non-commercial small-scale fleet is a very heterogeneous group of vessels, making it difficult to make a reliable estimation of the total costs and revenue.

However, the number of people involved in this sector of the fleet is high (although not if calculated in FTEs). Therefore some further research into why these people consider fisheries as their main profession and whether they have any other means of income (as their average gross annual income is very low) would be interesting.



## Samenvatting

Sinds 2002 is Nederland verplicht om te rapporteren over alle visserij activiteiten. Dit is gebaseerd op het Europese data collectie plan (EU-regulatie 2001/1639). Volgens het Europese data collectie plan moet data verzameld worden over alle visserij schepen, onafhankelijk van de intensiteit van de visserij activiteiten die zij ondernemen. Daarom heeft het LEI economische data verzameld over schepen die buiten de reguliere data-inzameling worden gelaten, de zogenoemde commercieel minder actieve schepen (ongeveer 360 schepen). Dit jaar is er een enquête rondgestuurd naar alle schippers van schepen die volgens de LEI-definitie binnen de niet commerciële kleinschalige vloot vallen. Hiermee is voor de jaren 2004 en 2005 data verzameld. Dit rapport beschrijft de karakteristieken, kosten en baten van de zogenoemde niet-commerciële kleinschalige vloot. Op basis hiervan kan de economische impact van dit deel van de visserij vloot bepaald worden.

De belangrijkste conclusie die getrokken kan worden uit deze analyse is dat de economische impact van dit deel van de vloot zeer gering is. Hoewel circa 50% van de Nederlandse vloot als niet commercieel, kleinschalig kan worden aangewezen, is het aandeel van dit gedeelte van de vloot in de totale kosten en opbrengsten slechts circa 1%. Daarnaast laten de resultaten zien dat de niet commerciële kleinschalige vloot bestaat uit een groep zeer heterogene schepen. Hierdoor wordt het zeer lastig om een betrouwbare schatting te geven van de totale kosten en opbrengsten in dit deel van de vloot.

Daarentegen is het aantal mensen dat werkzaam is in dit gedeelte van de vloot hoog (alhoewel dit niet het geval is indien gemeten in FTE's). Nader onderzoek in of visserij het hoofdberoep is voor deze mensen en of zij nog andere bronnen van inkomsten hebben, zou interessant zijn.



# 1. Introduction

From 1946 LEI has gathered economic data from the Dutch fishing fleet for the Ministry of Agriculture, Nature and Food Quality. The extent to which the data have been gathered (fleets involved) has depended on the questions by the ministry and the co-operation by the fishermen, which has been good for most of the fleet and decades. In all these years the basic assumption of the data collection programme has been that the population from which the data were gathered and which the LEI figures represented were the vessels that were commercially fishing. However, the question which vessel is 'commercially fishing' and which is not has been a struggle for many years. Many different criteria have been used to define the activity level; vessel type, effort, landings, income, and in many cases the decision on the level of activity of an individual vessel was mainly based on expert knowledge on the fishing operation. As from 2003 onwards a threshold of 50,000 gross income is used to distinguish between commercial large-scale and non-commercial small-scale fleet. This terminology is also used in this report. Besides, LEI did not collect economic information on shellfish vessels, and therefore these vessels are also included in this study. Despite the fact that the term non-commercial small-scale does not really refer to these vessels, they are included in here for practical reasons.

From 2002 onwards the Netherlands are obliged to gather data on all fishing activities within the framework of the European Data Collection Plan (EU regulation 2001/1639). According to this regulation economic data have to be gathered for all registered fishing vessels irrespective of their activities. Because of this demand, LEI is working on gathering economic data about vessels that are left out of the regular data collection routine, the so-called commercially less active vessels. This year, data for the years 2004 and 2005 for this part of the fleet has been collected by means of a survey (appendix 1). The survey has been sent to all the skippers owning a vessel that according to the LEI definition falls into the category non-commercial small-scale. Information on effort and landings was retained from the official landings database (VIRIS). In this database information is available on effort and landings for all vessels that have to fill in a European log-book. In The Netherlands, also captains of vessels less than 10 m have to fill in a logbook to prove that they are operating on a commercial basis. For these vessels, even landings less than 50 kg have to be reported, in contrast with the EU logbook regulation that requires only landings over 50 kg per species and trip to be recorded.

Oostenbrugge (2006) made a preliminary analysis of the economic importance of the non-commercial small-scale fleet based on data about landings and technical characteristics of the vessels. In this report we will further investigate this economic importance using the results of the survey.

Table 1.1 shows which part of the fleet belongs to the so-called non-commercial small-scale fleet. Most of the vessels fishing with passive gear, pots and traps, polyvalent gears and dredges belong to the non-commercial small-scale fleet. Almost half of all the demersal trawls and seiners and the pelagic trawls and seiners belong to the non-

commercial small scale sector. Only a small percentage of the beam trawlers are considered to be part of the non-commercial small-scale fleet.

*Table 1.1 Number of vessels in the total fleet and the non-commercial small-scale fleet per segment*

	Total (N)		Non-commercial small-scale (N)		Non-commercial small-scale (%)	
	2004	2005	2004	2005	2004	2005
Beam trawl	377	344	46	48	12.2	14.0
Demersal trawls and seiners	64	51	31	26	48.4	51.0
Pelagic trawls and seiners	36	33	17	16	47.2	48.5
Dredges	45	42	42	39	93.3	92.9
Passive gear (<12 meter)	193	216	189	208	97.9	96.3
Drift and fixed nets	19	20	15	14	78.9	70.0
Pots and traps	9	10	9	10	100.0	100.0
Polyvalent gears	12	11	9	9	75.0	81.8
<i>Total sea fisheries</i>	<i>755</i>	<i>727</i>	<i>358</i>	<i>370</i>	<i>47.4</i>	<i>50.9</i>
Aquaculture and inshore fisheries	104	102				
<i>Total fleet</i>	<i>859</i>	<i>829</i>				

Note that dredges are not required to register catches and therefore are missing in the VIRIS dataset. Thus although they have a high gross annual revenue, they are registered as non-commercial small-scale due to missing data. Therefore, these vessels are also included in this study.

Comparing 2004 and 2005, it seems that part of the commercial large-scale fleet is shifting to the non-commercial small-scale fleet. This section of the fleet has increased with 12 vessels (3%) while the total fleet decreased with 28 vessels (4%).

## 2. Response per segment

As mentioned in the previous section, a survey was sent to all vessels belonging to the non-commercial small scale fleet. In this section, an overview of the response per segment is shown. Besides that it will be investigated whether the response has a good coverage of the different segments in the non-commercial small scale fishing fleet.

### *Overall response*

Table 2.1 shows the response in the different segments. The overall coverage of the response is good. In most segments the coverage of the response is above 30%. The response of dredges is very low, only about 4%.

*Table 2.1 Number of vessels per segment in the non-commercial small-scale fleet and the response per segment (as a percentage)*

Segment	Length	2004		2005	
		N	response (%)	N	response (%)
Beam trawl	0-12 meter	23	43.5	21	38.1
	12-24 meter	20	50.0	22	36.4
	24-40 meter	3	33.3	4	0.0
Demersal trawls and seiners	0-12 meter	22	36.4	19	42.1
	12-24 meter	7	28.6	4	0.0
	24-40 meter	2	100.0	3	66.7
Pelagic trawls and seiners	12-24 meter	17	47.1	16	50.0
Dredges	24-40 meter	24	0.0	20	5.0
	>40 meter	18	5.6	19	5.3
Passive gear (<12 m)	0-12 meter	189	33.9	206	31.6
Drift and fixed nets	12-24 meter	15	20.0	14	28.6
Pots and traps	12-24 meter	9	33.3	10	20.0
Polyvalent gears	12-24 meter	9	11.1	9	22.2
Total	All	358	31.6	367	29.7

Considering table 2.1 the segments 'Beam trawl 24-40 meter', 'Demersal trawls and seiners 12-24 meter', 'dredges 24-40 meter' and 'dredges >40 meter' have an inadequate response. For the first two segments this is not as problem as the number of vessels is small compared to the number of commercial vessels in these segments. The response in the other sectors can be considered adequate and the survey should be representative for these segments.

However, not all vessels in the non-commercial small-scale fleet were active during 2004 and 2005. According to VIRIS only half of the vessels were active, in the sense that they went out to fish for at least one time per year. Because it can be expected that value of the economic indicators (income, variable costs) for the active part of the non-commercial small-scale fleet is higher than for the inactive part, we tested whether increased precision can be achieved by stratification based on activity level.

In the next section, the non-commercial small-scale fleet is divided into two sectors based on the activity level as found in VIRIS. It is analysed whether the response is adequate for each sector. Besides that, the activity level in VIRIS is compared to the reported activity level in the survey, to see whether there may be inconsistencies between VIRIS and the survey results.

#### *Stratification based on activity level according to VIRIS*

Table 2.2 shows the number of active vessels in both the VIRIS dataset and the sample. The coverage of the sample is good or acceptable in the segments: 'Beam trawl 0-12 meter' and 'beam trawl 12-24 meter', 'Demersal trawls and seiners 0-12 meter', 'Pelagic trawls and seiners 12-24 meter' 'Passive gear 0-12 meter', 'rift and fixed nets 12-24 meter' and 'polyvalent gears 12-24 meter'. The segment 'demersal trawls and seiners 12-24 meter' has an acceptable coverage in 2004 but not in 2005. This segment is quite small, only three active vessels in 2004 and two active vessels in 2005. Because of the relative low importance and the fact that the coverage is low in 2005, this segment is left out of the analysis. The other segments have a low or zero coverage and are also left out of the analysis.

*Table 2.2 Active part of the non-commercial small scale fleet: Number of vessels and coverage of survey per fleet segment*

Segment	Length	2004		2005	
		N	response (%)	N	response (%)
Beam trawl	0-12 meter	9	22.2	8	25.0
	12-24 meter	13	30.8	14	28.6
	24-40 meter	2	0.0	2	0.0
Demersal trawls and seiners	0-12 meter	13	30.8	12	25.0
	12-24 meter	3	33.3	2	0.0
	24-40 meter	1	0.0	1	0.0
Pelagic trawls and seiners	12-24 meter	14	50.0	14	50.0
Dredges	24-40 meter	1	0.0	0	0.0
	>40 meter	0	.	1	0.0
Passive gear	0-12 meter	137	29.9	150	30.0
Drift and fixed nets	12-24 meter	9	22.2	7	28.6
Pots and traps	12-24 meter	1	100.0	2	0.0
Polyvalent gears	12-24 meter	9	11.1	9	22.2



Table 2.3 shows the coverage of the survey for the inactive vessels in the non-commercial small-scale fleet. In accordance with the original assumption that the coverage of the survey could vary according to the activity level, it is clear that apart from some small segments (in terms of the number of vessels) the coverage of the survey is poor for the inactive part of the fleet. It is clear that most of the inactive vessels did not respond to the survey. Therefore, the results of this survey can not be considered representative for the inactive part of the non-commercial small-scale fleet.

Table 2.3 *Inactive part of the non-commercial small scale fleet: Number of vessels and coverage of survey per fleet segment*

Segment	Length	2004		2005	
		N	response (%)	N	response (%)
Beam trawl	0-12 meter	14	14.3	13	15.4
	12-24 meter	7	42.9	8	37.5
	24-40 meter	1	100.0	2	0.0
Demersal trawls and seiners	0-12 meter	9	0.0	7	0.0
	12-24 meter	4	25.0	2	0.0
	24-40 meter	1	100.0	2	50.0
Pelagic trawls and seiners	12-24 meter	3	0.0	2	0.0
Dredges	24-40 meter	23	0.0	20	0.0
	>40 meter	18	0.0	18	0.0
	Passive gear (<12 m)	0-12 meter	52	1.9	56
Drift and fixed nets	12-24 meter	6	66.7	7	0.0
Pots and traps	12-24 meter	8	0.0	8	0.0
Polyvalent gears	12-24 meter	0		0	0.0

#### *Inconsistency between VIRIS and survey results*

Stratification based on activity level revealed some inconsistencies between the survey results and the results as found in the VIRIS dataset. Table 2.4 shows a comparison between activity in VIRIS and in the survey. Noticeable is that 31 respondents called themselves active in 2004 and 2005 but no landings were registered in VIRIS. Thus estimates of activity based on VIRIS data are underestimating the activity level.

Table 2.5 shows the underestimation of the active vessels per segment. For example, according to VIRIS, about 40% of the vessels in the segment Beam trawl 0-12 meter are active. According to the sample however, about 60% of the vessels in this segment should be considered active.

The underestimation of the activity level is especially high in the segments 'Beam trawl 0-12 meter' and 'Pots and traps 12-24 meter'.

Table 2.4 Comparison between activity level in VIRIS and survey (number of vessels)

Survey	VIRIS	2004	2005
Not active	Active	7	7
Active	Not active	31	31
Active	Active	63	65
Not active	Not active	12	6
<i>Total</i>		<i>113</i>	<i>109</i>

Table 2.5 Comparison between activity level according to VIRIS and survey per fleet segment

Segment	Length	2004		2005	
		according- to VIRIS (%)	active according to survey (%)	active according to VIRIS (%)	active according to survey (%)
Beam trawl	0-12 meter	39.1	60.9	38.1	57.1
	12-24 meter	65.0	75.0	63.6	68.2
	24-40 meter	66.7	66.7	50.0	50.0
Demersal trawls and seiners	0-12 meter	59.1	68.2	63.2	84.2
	12-24 meter	42.9	42.9	50.0	50.0
	24-40 meter	50.0	50.0	33.3	33.3
Pelagic trawls and seiners	12-24 meter	72.7	81.8	87.5	93.8
Dredges	24-40 meter	0.0	0.0	0.0	5.0
	>40 meter	5.3	10.5	5.3	10.5
Passive gear (<12 m)	0-12 meter	73.1	81.9	72.8	80.1
Drift and fixed nets	12-24 meter	62.5	68.8	50.0	64.3
Pots and traps	12-24 meter	11.1	33.3	20.0	40.0
Polyvalent gears	12-24 meter	100.0	100.0	100.0	100.0
<i>Total</i>	<i>All</i>	<i>59.2</i>	<i>67.9</i>	<i>60.5</i>	<i>68.9</i>

### Conclusion coverage survey results

The response to the survey was good. About 30% of all surveys were returned. To increase the precision of the survey results, a stratification based on activity level was used. The non-commercial small-scale fleet is divided into two segments based on data available in VIRIS: an active segment, which went to sea at least once in a year and an inactive segment.

The overall coverage of the active part of the non-commercial small-scale fleet is good. In the rest of the analysis we will take the following segments into account: 'Beam trawl 0-12 meter', 'beam trawl 12-24 meter', 'Demersal trawls and seiners 0-12 meter', 'pelagic trawls and seiners 12-24 meter', 'Passive gear 0-12 meter', 'drift and fixed nets 12-24 meter', 'pots and traps 12-24 meter', 'polyvalent gear 12-24 meter'.

The coverage of the survey regarding the inactive part of the non-commercial small-scale fleet is poor. This survey cannot be considered representative for this part of the non-commercial small-scale fleet.

VIRIS underestimates the activity level of the non-commercial small-scale fleet. The number of active vessels in the fleet should be corrected. This is done in section 5.1.

### 3. Results survey: effort and landings

#### *Results Survey*

About 80% of the respondents said that they were active in 2004 and/or 2005 (see table 3.1). The activity levels are relatively low in the segments 'beam trawl 0-12 meter' and 'beam trawl 12-24 meter', respectively 30 and 41.7% were not active in these segments.

The activity levels are high in the segments 'pelagic trawls and seiners 12-24 meter', 'drift nets and fixed nets 12-24 meter' and 'polyvalent gears 12-24 meter'. All respondents in these segments were active in both 2004 and 2005. Of course it should be kept in mind that these segments are relatively small and therefore had only few respondents. One vessel in the segment 'Passive gear 0-12 meter' mentioned that it was only used to transport fish caught by other ships (category 'transport ship' in table).

Table 3.1 shows that the segments can be considered homogenous over time. Most of the vessels were either active in 2004 and 2005 or inactive in those years. Only a small number of vessels were active in only one of these years.

*Table 3.1 Response survey divided in activity level per segment (in percentages)*

Segment	Length	Active in 2004-2005	Only active in 2004	Only active in 2005	Not active	Transport vessel
Beam trawl	0-12 meter	70.0	0.0	0.0	30.0	0.0
	12-24 meter	54.5	0.0	0.0	45.5	0.0
Demersal trawls and seiners	0-12 meter	50.0	8.3	16.7	25.0	0.0
Pelagic trawls and seiners	12-24 meter	100.0	0.0	0.0	0.0	0.0
Passive gear	0-12 meter	89.1	1.6	3.1	4.7	1.6
Drift and fixed nets	12-24 meter	100.0	0.0	0.0	0.0	0.0
Pots and traps	12-24 meter	66.7	33.3	0.0	0.0	0.0
Polyvalent gears	12-24 meter	100.0	0.0	0.0	0.0	0.0
<i>Total</i>	<i>All</i>	<i>80.4</i>	<i>2.7</i>	<i>3.6</i>	<i>12.5</i>	<i>0.9</i>

Figure 3.1 shows that 40% of the respondents who were active in 2004 have been to sea more than 51 times. The length of a sea trip was relatively short, Most of the respondents (about 70%) answered that the trips they made were short (0-4 or 4-8 hours). Results show the same pattern for 2005.

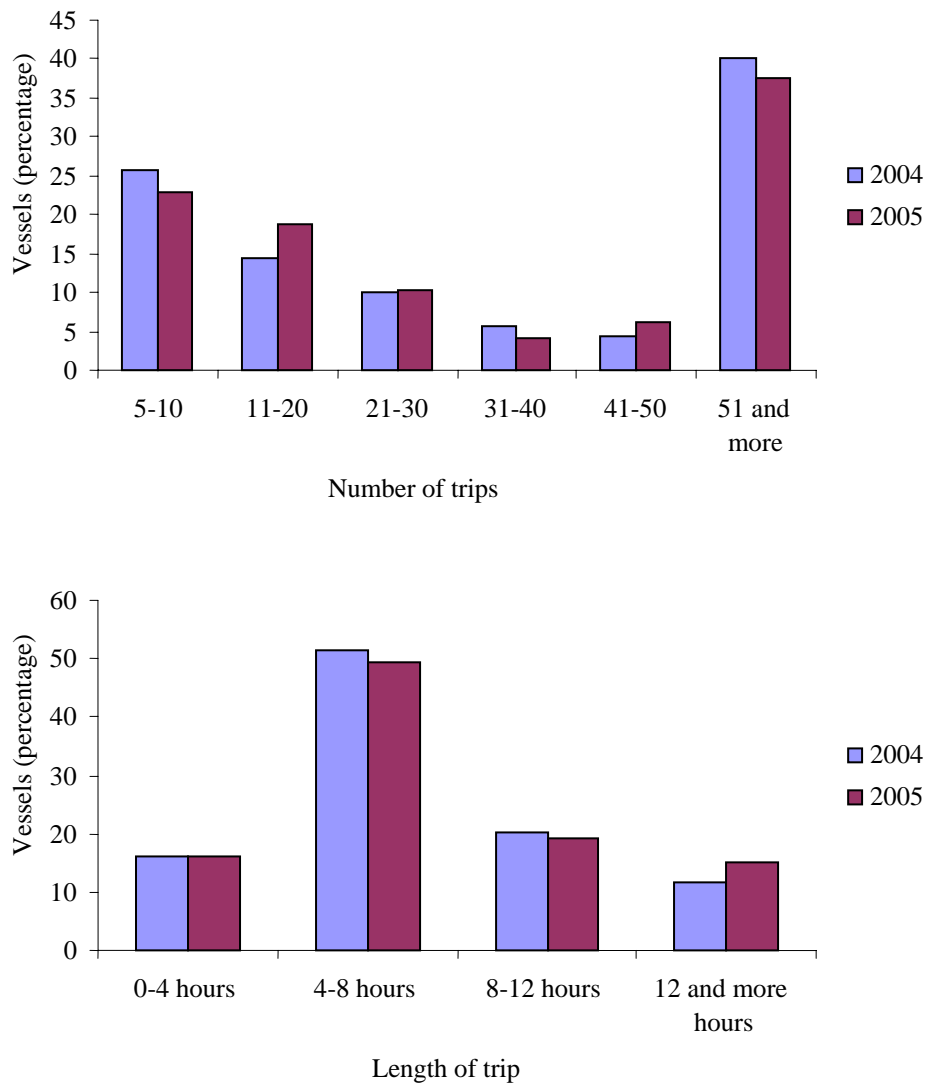


Figure 3.1 Number of trips and length of trips (in percentages)

### Representativeness

Table 3.2 shows the average number of trips and the length of a trip in the sample and according to VIRIS. The average number of trips according to the survey is obviously larger than in VIRIS (although not statistically significant). However, the length of the trip is much shorter according to the survey than in VIRIS dataset. The average number of sea-days (calculated as length of a trip multiplied by the number of trips) is quite comparable between the sample and VIRIS. Considering these results, it is probable that a couple of very short trips in VIRIS are aggregated to one longer trip. The standard deviation of the average sea-days, however, is quite high indicating that there is a large variation in the

number of sea-days between different vessels or segments, which makes it hard to show differences statistically.

If we compare VIRIS data about the vessels that answered the survey and those that did not, it is noticeable that the vessels that did answer the survey spend on average a longer time at sea. Possibly the more active vessels were higher motivated to return the survey. However, since the standard deviation is quite large it is questionable how much information can be distinguished from the average amount of sea-days for the total fleet.

Table 3.2 Average number of trips and sea days (survey and VIRIS)

	2004			2005		
	mean	std. dev.	N	mean	std. dev.	N
<i>Results survey:</i>						
- number of trips	31.9	20.8	86	31.8	20.2	90
- length of trip (in days)	0.3	0.3	89	0.4	0.3	93
- number of sea-days	11.4	11.4	85	11.5	11.6	90
<i>VIRIS (only vessels in survey):</i>						
- number of trips	20.7	26.3	63	19.8	25.2	65
- length of trip (in days)	1.2	1.7	63	1.0	1.5	65
- number of sea-days	14.4	21.7	63	14.1	21.3	65
<i>VIRIS (only vessels not in survey):</i>						
- number of trips	13.7	20.9	143	14.8	19.1	153
- length of trip (in days)	0.9	1.5	143	0.8	1.1	153
- number of sea-days	9.9	26.2	142	10.5	27.5	151

Table 3.3 Average number of sea-days per segment (survey and VIRIS)

Segment	Length	Survey results		VIRIS (vessels in survey)		VIRIS (vessels not in survey)	
		2004	2005	2004	2005	2004	2005
Beam trawl	0-12 meter	5.3	2.3	0.5	1.1	1.5	0.9
	12-24 meter	9.8	8.5	19.9	19.6	38.8	34.3
Demersal trawls and seiners	0-12 meter	6.7	4.9	3.4	3.5	2.4	2.7
	12-24 meter	12.4	13.6	12.8	12.7	4.4	5.3
Passive gear	0-12 meter	11.9	11.5	15.7	15.2	7.7	9.8
Drift and fixed nets	12-24 meter	20.1	18.5	32.4	22.8	9.9	10.9
Pots and traps	12-24 meter	13.8	13.8	7.0			0.2
Polyvalent gears	12-24 meter	13.8	34.4	7.5	3.1	20.0	9.2
<i>Total</i>	<i>All</i>	<i>11.3</i>	<i>11.4</i>	<i>14.4</i>	<i>14.1</i>	<i>9.9</i>	<i>10.6</i>

Therefore, table 3.3 shows the average number of sea days per segment. It is obvious from table 3.3 that smaller vessels (0-12 meter) spend, on average, fewer days at sea. According to the sample, the vessels using polyvalent gears spend the longest time at sea. Table 3.3 shows the average number of sea-days per segment. Although the differences between the survey results and the VIRIS data set sometimes seem large, the standard deviation of the mean is also quite large. The differences between the survey and the VIRIS data set are therefore not statistically significant (t-test).

#### *Fishing technique and target species*

Most of the respondents (60%) use gillnets or fyke nets. This is shown in table 3.4. The fishing technique as mentioned by the respondents is often the same as found in VIRIS. The fishing techniques in the sample and in VIRIS are comparable in about 95% of all cases.<sup>1</sup>

Table 3.4 *Fishing technique survey (in percentages)*

Fishing technique	2004	2005
Gillnets	30.5	33.1
Fyke nets	29.7	29.9
Other	20.3	22.8
Border trawl	16.4	16.5
Pots and traps	15.6	15.7
Hook and line	11.7	14.2
<i>Percentage fishing technique comparable to VIRIS</i>	<i>94.1</i>	<i>95.8</i>

The most important target species in both 2004 and 2005 were European sea bass, European eel, and mullet (see table 3.5).<sup>2</sup>

The target species as mentioned by the respondents were compared to the species caught as registered in the VIRIS dataset. Table 3.6 shows the results of this comparison. Most of the respondents (67% in 2004 and 60% in 2005) mentioned target species which were comparable to the species caught as registered in VIRIS. For three respondents (in 2004) and four respondents (in 2005) the mentioned target species did not compare at all to the registered species caught. These were vessels mostly fishing on sole according to the survey.

<sup>1</sup> Appendix 2 shows the use of fishing gear per segment.

<sup>2</sup> Appendix 3 shows the target species per segment.

Table 3.5 Target species survey (percentages)

Fish species	2004	2005
European sea bass	50.5	55.8
European eel	42.9	41.1
Mullet	36.3	36.8
Sole	20.9	20.0
Lobster	20.9	21.1
Flounder	14.3	14.7
Smelt	12.1	12.6
Common dab	12.1	12.6
Brill	9.9	10.5
Chinese river crab	9.9	9.5
Turbot	8.8	9.5
Crab	7.7	8.4
Pike-perch	7.7	6.3
Plaice	6.6	9.5
Shrimp	5.5	5.3
Cockle	4.4	4.2
Cod	4.4	3.2
Squid	3.3	2.1
Atlantic surf clam	1.1	2.1
Roach	1.1	1.1
Gurnard	1.1	2.1
Salmon	1.1	1.1
European sprat	0.0	1.1
Pod razor shell	0.0	0.0
Twaite shad	0.0	1.1

Table 3.6 Comparison between target species (in survey) and species caught (in VIRIS): percentage of vessels

Comparison target species and actual catch VIRIS	2004	2005
0%-20% of target species were equal to VIRIS	11.5	12.3
20%-60% of target species were equal to VIRIS	21.3	27.7
60%-100% of target species were equal to VIRIS	67.2	60.0

### *Conclusion representativeness of the sample*

The representativeness of the sample is quite good. Although there might be differences in the number of trips and the length of the trips, the average number of sea-days as found in the survey is comparable to the number of sea-days as found in the VIRIS dataset. The fishing techniques and target species as mentioned by the respondents are also comparable to the known data as found in VIRIS.



## 4. Average economic performance per vessel

The survey included several question about the gross annual revenue and various costs. In this section, the average revenue and costs per segment are presentment. In the next section we will calculate the total revenue and costs of the total non-commercial small-scale fleet based on these averages.

### 4.1 Gross annual revenue and investment value vessel

Table 4.1 shows the average gross annual income for the various segments in the non-commercial small-scale fleet. The average gross annual revenue was equal to €20,000 and ranged from less than €5,000 to more than €100,000. The lowest average annual revenue is found in the segments 'beam trawl 0-12 meter' and 'demersal trawls and seiners 0-12 meter'. The standard deviation for the average gross annual income is large, which means that there are large differences between the vessels within a segment. The difference between 2004 and 2005 are quite small.

Table 4.1 Gross annual revenue (in 1,000 euro)

Segment	Length	2004			2005		
		N	mean	std. dev.	N	mean	std. dev.
Beam trawl	0-12 meter	4	10.0	15.0	3	2.5	0.0
	12-24 meter	5	20.5	16.4	4	17.5	1.7
Demersal trawls and seiners	0-12 meter	6	7.5	7.7	6	5.8	6.1
Pelagic trawls and seiners	12-24 meter	7	28.9	33.1	7	36.1	47.1
Passive gear	0-12 meter	55	17.6	19.8	57	18.3	20.6
Drift and fixed nets	12-24 meter	3	41.7	29.8	4	35.6	27.2
Pots and traps	12-24 meter	2	53.8	30.0	2	53.8	30.1
Polyvalent gears	12-24 meter	1	75.0	.	2	100.0	35.4

A large part of the respondents (about 80%) does not have another income apart from fishing with the vessel as mentioned in the survey. Hardly any of the respondents used the vessel for tourist activities or sport-fishing (table 4.2). About 16% of the respondents did receive other income apart from fishing. Activities mentioned varied from hiring out the vessel and salvage activities to working on another vessel, or a totally different company like the KLM or a florist. Considering the response to this question it is clear that many respondents did not notice that they were only asked for the income coming from other

activities with the vessel mentioned in the survey. The percentage of respondents not having another income apart from fisheries with this vessel should be even higher than shown in table 4.2.

Table 4.2 *Income other than fisheries with the vessel (number of vessels and percentage)*

Other income	N	%
None	80	81.6
Tourism	2	2.0
Sport fisheries	3	3.1
Other	16	16.3

## 4.2 Technical costs

### 4.2.1 Fuel costs

A majority of the respondents reported that they used little fuel on a trip (between 0-50 litre), where use of fuel is defined as fuel without lubrication. On average, a vessel in the non-commercial small-scale fleet uses approximately a 100 litre of fuel. Table 4.3 shows the average amount of fuel used per year for the different segments. The beam trawls 12-24 meter use the highest amount of fuel per year. The smaller vessels (0-12 meter) used on average less fuel than the larger vessels independent of the segment they were in. The segment 'demersal trawls and seiners 0-12 meter' showed large differences between 2004 and 2005. However, given the very large standard deviation in 2004 the differences are statistically not significant.

Table 4.3 *Average use of fuel per year per segment (in 1,000 litres)*

Segment	Length	2004			2005		
		N	mean	std. dev.	N	mean	std. dev.
Beam trawl	0-12 meter	4	1.0	0.6	3	0.9	0.6
	12-24 meter	5	13.6	18.5	4	5.7	6.8
Demersal trawls and seiners	0-12 meter	6	1.7	1.7	6	1.3	1.3
Pelagic trawls and seiners	12-24 meter	7	1.9	1.8	7	2.5	2.9
Passive gear	0-12 meter	52	2.3	7.6	55	2.2	7.4
Drift and fixed nets	12-24 meter	3	3.1	1.8	4	3.4	1.6
Pots and traps	12-24 meter	2	1.4	0.0	2	1.4	0.0
Polyvalent gears	12-24 meter	1	1.4	.	2	2.8	1.9

On average a vessels spends about €1,500 on fuel in 2004 and €1,400 in 2005. It should come as no surprise that the segments which have a relatively low fuel demand, have the lowest costs (as shown in table 4.4). The only exception is the segment 'demersal trawls and seiners 0-12 meter'. This segment has a low fuel demand per year, but relatively high costs. However, the deviation in this segment is quite large and the number of respondents in this segment is low, indicating that one respondent with unusual high fuel costs can have a large impact on the reported average fuel costs.

Table 4.4 Average cost diesel per segment (in 1,000 euro)

Segment	Length	2004			2005		
		N	mean	std. dev.	N	mean	std. dev.
Beam trawl	0-12 meter	2	0.3	0.2	2	0.2	0.1
	12-24 meter	5	5.7	8.1	4	2.1	1.7
Demersal trawls and seiners	0-12 meter	6	2.2	3.8	5	2.6	4.3
Pelagic trawls and seiners	12-24 meter	6	2.0	2.8	6	2.1	2.7
Passive gear	0-12 meter	43	1.2	1.7	44	1.2	1.3
Drift and fixed nets	12-24 meter	3	2.4	2.2	3	2.5	2.2
Pots and traps	12-24 meter	2	2.6	0.2	1	2.8	.
Polyvalent gears	12-24 meter	1	4.0	.	2	6.3	2.5

#### 4.2.2 Repair and maintenance costs and other costs

Table 4.5 shows the repair and maintenance costs for the different segments. The average repair costs were about €3,000. The repair costs for the segment 'beam trawl 12-24 meter' is quite high in 2004, much higher than in 2005. However, the standard deviation is extremely high in this year, because one vessel had very high repair and maintenance costs in this year. The same hold for the segment 'polyvalent gears 12-24 meter' in 2005.

Table 4.5 Average repair and maintenance costs per segment (in 1,000 euro)

Segment	Length	2004			2005		
		N	mean	std. dev.	N	mean	std. dev.
Beam trawl	0-12 meter	2	0.8	0.9	2	0.7	0.8
	12-24 meter	4	14.1	24.0	3	2.2	2.5
Demersal trawls and seiners	0-12 meter	4	1.7	1.7	5	2.6	3.6
Pelagic trawls and seiners	12-24 meter	5	3.4	3.9	6	8.7	13.4
Passive gear	0-12 meter	35	1.6	2.0	39	1.4	1.4
Drift and fixed nets	12-24 meter	3	10.6	5.7	3	8.3	5.9
Pots and traps	12-24 meter	2	5.4	4.9	1	2.0	.
Polyvalent gears	12-24 meter	1	7.0	.	2	16.5	12.0

### 4.2.3 Other operational costs

Finally, table 4.6 shows all other costs, like for example insurance, transport, provision, and administration costs. The average other costs were equal to about €4,000. It is clear that on average, the smaller vessels (0-12 meter) have lower costs in all segments. The other costs are quite high in the segment 'polyvalent gears 12-24 meter' (2004) and 'Pelagic trawls and seiners 12-24 meter'. However, this average is based on only a small number of vessels with quite different amounts of other costs.

Table 4.6 Average other costs per segment (in 1,000 euro)

Segment	Length	2004			2005		
		N	mean	std. dev.	N	mean	std. dev.
Beam trawl	0-12 meter	2	1.1	0.7	2	1.1	0.7
	12-24 meter	5	7.1	10.2	4	2.9	2.8
Demersal trawls and seiners	0-12 meter	5	1.7	1.4	6	1.4	1.4
Pelagic trawls and seiners	12-24 meter	6	5.3	9.7	6	11.2	24.0
Passive gear	0-12 meter	37	2.6	4.1	38	3.3	9.1
Drift and fixed nets	12-24 meter	2	6.3	5.3	3	5.3	4.1
Pots and traps	12-24 meter	2	5.7	0.4	1	6.0	.
Polyvalent gears	12-24 meter	1	30.0	.	2	24.0	12.8

### 4.3 Crew Costs and employment

More than half of the respondents did not answer the question about the total crew costs or said that the total crew costs were 0. The crew costs ranges from €20 to €125,000. Table 4.7 shows the total crew costs per segment for the respondents that did answer this question. The deviation of the total crew costs is large, even within a segment. Because of the relatively small number of respondents that answered this question, it is difficult to say anything about the average crew costs. It is quite possible that many of the respondents did not know the crew costs since they are fishing by themselves and are not paying themselves any wage.

A vessel in the non-commercial small-scale fleet fishes on average with 1.7 persons on board, ranging from 1 to 5 persons on board. Table 4.8 shows the average amount of people working on board per segment. The average number of people differs only slightly between the different segments. The survey also showed that all of the respondents fished with their own vessel (not shown in table).

Table 4.7 Average total crew costs per segment (in 1,000 euro)

Segment	Length	2004			2005		
		N	mean	std. dev.	N	mean	std. dev.
Beam trawl	0-12 meter	0	.	.	0	.	.
	12-24 meter	4	8.3	4.9	3	10.1	7.7
Demersal trawls and seiners	0-12 meter	1	1.0	.	1	1.0	.
Pelagic trawls and seiners	12-24 meter	2	17.5	21.2	2	20.0	24.7
Passive gear	0-12 meter	19	2.5	3.0	22	2.5	3.1
Drift and fixed nets	12-24 meter	2	6.8	2.6	2	6.9	2.7
Pots and traps	12-24 meter	1	10.0	.	1	10.0	.
Polyvalent gears	12-24 meter	0	.	.	1	60.0	.

Table 4.8 Average number of crew per vessel per segment

Segment	Length	2004			2005		
		N	mean	std. dev.	N	mean	std. dev.
Beam trawl	0-12 meter	4	1.3	0.5	3	1.3	0.6
	12-24 meter	5	1.8	0.8	4	1.8	1.0
Demersal trawls and seiners	0-12 meter	7	1.7	1.0	7	1.9	0.9
Pelagic trawls and seiners	12-24 meter	7	1.4	0.5	8	1.4	0.5
Passive gear	0-12 meter	55	1.7	0.8	58	1.7	0.8
Drift and fixed nets	12-24 meter	3	2.0	1.0	4	2.0	0.8
Pots and traps	12-24 meter	2	1.5	0.7	2	1.5	0.7
Polyvalent gears	12-24 meter	1	4.0	.	2	3.0	1.4

On average, about 55% of the respondents practised fisheries as their main profession (see table 4.9). Especially the smaller beam trawlers (0-12 meter) and the demersal trawls and seiners (0-12 meter) hardly practised fisheries as their main profession (only about 30%).

Table 4.9 Percentage of vessels that practised fisheries as their main profession

Segment	Length	2004	2005
Beam trawl	0-12 meter	25.0	33.3
	12-24 meter	60.0	50.0
Demersal trawls and seiners	0-12 meter	28.6	14.3
	12-24 meter	62.5	62.5
Pelagic trawls and seiners	0-12 meter	52.7	52.6
	12-24 meter	100.0	100.0
Passive gear	0-12 meter	100.0	100.0
	12-24 meter	100.0	100.0
Drift and fixed nets	0-12 meter	100.0	100.0
	12-24 meter	100.0	100.0
Pots and traps	0-12 meter	100.0	100.0
	12-24 meter	100.0	100.0
Polyvalent gears	0-12 meter	100.0	100.0
	12-24 meter	100.0	100.0

#### 4.4 Investment value of the vessel and financing

The average investment value of the vessel is about €71,000 in both years. Table 4.10 shows the average investment value in the different segments. The segment 'beam trawl 12-24 meter' has the highest average investment value. The lowest average investment value is found in the segment 'passive gear 0-12 meter' (27 k euro).

Table 4.10 Average investment value vessel (in 1,000 euro)

Segment	Length	2004			2005		
		N	mean	std. dev.	N	mean	std. dev.
Beam trawl	0-12 meter	2	57.0	75.0	2	57.0	75.0
	12-24 meter	7	295.1	338.6	5	285.5	403.2
Demersal trawls and seiners	0-12 meter	7	74.0	82.4	7	69.2	75.7
	12-24 meter	4	125.0	165.8	6	106.3	146.2
Pelagic trawls and seiners	0-12 meter	52	27.1	29.7	55	28.0	29.2
	12-24 meter	3	59.7	37.4	4	63.5	31.5
Passive gear	0-12 meter	2	75.0	35.4	2	75.0	35.4
	12-24 meter	2	115.0	21.2	1	130.0	.
Drift and fixed nets	0-12 meter	2	75.0	35.4	2	75.0	35.4
	12-24 meter	2	115.0	21.2	1	130.0	.
Pots and traps	0-12 meter	2	75.0	35.4	2	75.0	35.4
	12-24 meter	2	115.0	21.2	1	130.0	.
Polyvalent gears	0-12 meter	2	75.0	35.4	2	75.0	35.4
	12-24 meter	2	115.0	21.2	1	130.0	.

A large part of the investment value of the vessel is financed with own capital. For the total fleet on average, about 91% is financed with own capital. Table 4.11 shows the average part financed with own capital for each segment. The differences between the different segments are not that large.

*Table 4.11 Part of the investment value financed with own capital*

Segment	Length	2004			2005		
		N	mean	std. dev.	N	mean	std. dev.
Beam trawl	0-12 meter	2	100.0	0.0	2	100.0	0.0
	12-24 meter	7	77.9	26.1	5	89.0	21.9
Demersal trawls and seiners	0-12 meter	7	75.0	38.2	6	75.0	41.8
Pelagic trawls and seiners	12-24 meter	5	83.0	38.0	8	89.4	30.1
Passive gear	0-12 meter	50	95.4	19.5	50	95.0	20.4
Drift and fixed nets	12-24 meter	3	100.0	0.0	4	87.5	25.0
Pots and traps	12-24 meter	1	100.0	.	1	100.0	.
Polyvalent gears	12-24 meter	2	75.0	35.4	1	50.0	.

## 5. Total economic importance non-commercial small-scale fleet

### 5.1 Aggregation procedure

As shown in section 2, VIRIS underestimates the activity level of the non-commercial small-scale fleet. According to the results of the survey, the number of active vessels in each segment can be calculated. Table 5.1 shows the corrected number of active vessels for each segment.

Table 5.1 Number of active vessels in the non-commercial small-scale fleet

Segment	Length	2004			2005		
		Total	Active (VIRIS)	Active (corrected)	Total	Active (VIRIS)	Active (corrected)
Beam trawl	0-12 meter	23	9	14	21	8	12
	12-24 meter	20	13	15	22	14	15
Demersal trawls and seiners	0-12 meter	22	13	15	19	12	16
Pelagic trawls and seiners	12-24 meter	17	14	15	16	14	15
Passive gear	0-12 meter	189	137	154	206	150	165
Drift and fixed nets	12-24 meter	15	9	10	14	7	9
Pots and traps	12-24 meter	9	1	3	10	2	4
Polyvalent gears	0-24meter	9	9	9	9	9	9
Total	all	304	205	235	317	216	245

Based on the various average costs and revenue as presented in the previous section and the number of active vessels in the non-commercial small-scale fleet, it is possible to calculate the total costs and gross annual revenue for the non-commercial small-scale fleet. These results are shown in table 5.2 to table 5.8.

The technical characteristics (like age, length and tonnage) of the active vessels and the inactive vessels do not differ significantly. Therefore, it is possible to estimate the value of the entire fleet based on the survey results.

### 5.2 Total revenue

The total gross annual revenue in the non-commercial small-scale fleet was equal to 4.7 million euro. Most of the gross annual revenue (57%) was made in the largest segment



'passive gear 0-12 meter'. The standard error of the mean is quite high (24.5%), in fact higher than what is normally considered acceptable according to EU-standards (12.5%). The total gross annual revenue has slightly increased in 2005. However, the differences between 2004 and 2005 are small.

Table 5.2 Total gross annual revenue (in 1,000 euro)

Segment	Length	2004			2005		
		N	Revenue	S.E. mean	N	Revenue	S.E. mean
Beam trawl	0-12 meter	14	140.0	75.0	12	30.0	0.0
	12-24 meter	15	307.5	35.8	15	262.5	49.5
Demersal trawls and seiners	0-12 meter	15	112.5	42.2	16	93.3	42.4
Pelagic trawls and seiners	12-24 meter	15	433.9	43.2	15	541.1	49.4
Passive gear	0-12 meter	154	2,709.0	15.2	165	3,025.0	14.9
Drift and fixed nets	12-24 meter	10	416.7	41.3	9	320.6	38.2
Pots and traps	12-24 meter	3	161.3	39.5	4	215.0	39.5
Polyvalent gears	12-24 meter	9	675.0	.	9	900.0	25.0
Total	all	235	4,714.1	8.7	245	5,361.2	9.1

### 5.3 Technical costs

#### 5.3.1 Fuel costs

Table 5.3 show the total fuel costs for the non-commercial small scale fleet. This fleet uses for about €120,000 of fuel. The segment 'passive gear 0-12 meter' is good for 42% of the total fuel costs. 'Beam trawl 12-24 meter' uses about 20% of the total fuel costs in 2004. In 2005 the fuel costs in this section are much lower. The total standard error of the mean is large in both 2004 and 2005 but decreased considerably in 2005.

Table 5.3 Total fuel costs (in 1,000 euro)

Segment	Length	2004			2005		
		N	Costs	S.E. mean	N	Costs	S.E. mean
Beam trawl	0-12 meter	14	3.6	53.8	12	2.5	42.9
	12-24 meter	15	84.9	64.3	15	32.6	39.1
Demersal trawls and seiners	0-12 meter	15	33.4	70.9	16	42.1	72.8
Pelagic trawls and seiners	12-24 meter	15	29.8	57.3	15	30.9	54.3
Passive gear	0-12 meter	154	181.5	21.9	165	203.4	15.7
Drift and fixed nets	12-24 meter	10	24.2	53.4	9	22.7	49.6
Pots and traps	12-24 meter	3	7.9	5.7	4	11.2	.
Polyvalent gears	12-24 meter	9	36.0	.	9	56.3	28.0
Total	all	235	419.3	14.6	245	408.5	10.8

### 5.3.2 Repair and maintenance costs

The total repair and maintenance costs are shown in table 5.4. The total repair and maintenance costs were about €780,000. The total repair and maintenance costs were relatively low in the largest sector, 'passive gear 0-12 meter', only about 31%. The large difference between 2004 and 2005 in the segments 'beam trawl 12-24 meter' and 'pelagic trawls and seiners 12-24 meter' are caused by 1 or two vessels which gave largely deviating total repair and maintenance costs for that year. The total standard error of the mean is very large for almost all segments. Only the segment 'passive gear 0-12 meter' has a relatively low standard error of the mean.

Table 5.4 Total costs repair and maintenance costs (in 1,000 euro)

Segment	Length	2004			2005		
		N	Costs	S.E. mean	N	Costs	S.E. mean
Beam trawl	0-12 meter	14	11.8	78.6	12	8.6	74.8
	12-24 meter	15	211.9	85.0	15	32.5	65.7
Demersal trawls and seiners	0-12 meter	15	24.8	52.9	16	40.8	62.6
Pelagic trawls and seiners	12-24 meter	15	51.6	51.1	15	130.5	62.7
Passive gear	0-12 meter	154	247.1	21.2	165	227.8	16.7
Drift and fixed nets	12-24 meter	10	105.5	31.4	9	74.4	41.2
Pots and traps	12-24 meter	3	16.3	63.2	4	8.0	.
Polyvalent gears	12-24 meter	9	63.0	.	9	148.5	51.5
Total	all	235	787.5	21.0	245	749.2	14.1

### 5.3.3 Other operational costs

The total other operational costs of the non-commercial small-scale fleet were about €900,000 in 2004 and 1,100,000 in 2005.

The largest segment 'passive gear 0-12 meter' spent about 45% of the total costs. In this cost-category, large difference between 2004 and 2005 are again apparent. In the segments 'beam trawl 12-24 meter' and 'pelagic trawls and seiners 12-24 meter', the differences between 2004 and 2005 are noticeable. However the standard error of the mean is also quite large in these segments.

Table 5.5 Total other operational costs (in 1,000 euro)

Segment	Length	2004			2005		
		N	Costs	S.E. mean	N	Costs	S.E. mean
Beam trawl	0-12 meter	14	15.4	45.5	12	13.5	42.2
	12-24 meter	15	106.5	64.3	15	43.1	48.4
Demersal trawls and seiners	0-12 meter	15	25.4	37.0	16	22.8	41.2
Pelagic trawls and seiners	12-24 meter	15	80.1	74.5	15	167.6	87.6
Passive gear	0-12 meter	154	396.6	26.4	165	551.1	44.0
Drift and fixed nets	12-24 meter	10	62.5	60.0	9	48.0	44.1
Pots and traps	12-24 meter	3	17.2	4.8	4	24.0	.
Polyvalent gears	12-24 meter	9	270.0	.	9	216.0	37.5
Total	All	235	890.7	13.7	245	1,086.2	22.4

#### 5.4 Crew costs and employment

The total crew costs of the small-scale fleet are shown in table 5.6. The total crew costs were equal to 2.1 million Euro in 2004 and 3.0 million in 2005. It should be noted that the question about the total crew costs was only answered by about a third of the respondents. Therefore, the estimation of the total crew costs is not very reliable. The standard error of the mean is therefore also very large for the cost-category.

Table 5.6 Total cost crew (in 1,000 euro)

Segment	Length	2004			2005		
		N	Costs	S.E. mean	N	Costs	S.E. mean
Beam trawl	0-12 meter	14	.	.	12	0.0	.
	12-24 meter	15	198.8	33.9	15	226.0	55.3
Demersal trawls and seiners	0-12 meter	15	15.0	.	16	16.0	.
Pelagic trawls and seiners	12-24 meter	15	525.0	85.7	15	600.0	87.5
Passive gear	0-12 meter	154	696.0	28.6	165	756.2	27.5
Drift and fixed nets	12-24 meter	10	155.0	67.7	9	140.6	68.0
Pots and traps	12-24 meter	3	60.0	.	4	80.0	.
Polyvalent gears	12-24 meter	9	.	.	9	1,080.0	.
Total	All	235	2,113.9	22.3	245	3,049.3	17.8

Table 5.7 shows the total employment in the non-commercial small-scale fleet of people who consider fisheries their main profession. The number of people working in the sector of the fleet is quite high; 218 persons in 2004 and 248 persons in 2005. However, if the number of FTE's are calculated based on the average number of sea-days and the average number of crew on a vessel, the employment in this part of the fleet is much smaller,

only 42.6 FTE in 2004 and 45.2 FTE in 2005. The number of persons working in the segment 'passive gear 0-12 meter' has increased with 20% because the both the number of vessels as the average number of crew aboard have increased in 2005.

*Table 5.7 Total employment non-commercial small-scale fleet (fisheries is main profession)*

Segment	Length	Number of persons		FTE	
		2004	2005	2004	2005
Beam trawl	0-12 meter	4	4	0.2	0.2
	12-24 meter	15	11	2.8	2.2
Demersal trawls and seiners	0-12 meter	6	2	0.8	0.1
	12-24 meter	16	15	4.0	3.7
Passive gear	0-12 meter	133	162	24.3	25.9
Drift and fixed nets	12-24 meter	20	18	3.9	3.3
Pots and traps	12-24 meter	5	6	0.7	1.0
Polyvalent gears	0-24 meter	35	27	5.9	8.9
Total	All	218	2,113.9	42.6	3,049.3

## 5.5 Total investment value

Finally, table 5.8 shows the total investment value of the vessels present in the non-commercial small-scale fleet. Because the characteristics (such as age, length and tonnage) between active vessels and inactive vessels do not differ significantly, it is possible to estimate the investment value of the total non-commercial small scale fleet (and not just the active part).

The total investment value equals about €19 million. The largest segment passive gear 0-12 meter accounts for about 28% of the total value. The much smaller segment beam trawl 12-24 also accounts for about 20% of the total value, indicating that this segment consists of relatively valuable vessels. The difference between 2004 and 2005 are quite small in all segments. The overall standard error of the mean is again quite high.

Table 5.8 Total investment value (in 1,000 euro)

Segment	Length	2004			2005		
		N	Costs	S.E. mean	N	Costs	S.E. mean
Beam trawl	0-12 meter	23	1,3311.0	93.0	21	1,197.0	93.0
	12-24 meter	20	5,901.4	43.4	22	6,281.0	63.2
Demersal trawls and seiners	0-12 meter	22	1,628.6	42.1	19	1,314.3	41.4
Pelagic trawls and seiners	12-24 meter	17	1,722.7	55.1	16	1,701.3	56.1
Passive gear	0-12 meter	189	5,195.7	15.2	206	5,760.5	14.1
Drift and fixed nets	12-24 meter	15	894.8	36.2	14	888.8	24.8
Pots and traps	12-24 meter	9	675.0	33.3	10	750.0	33.3
Polyvalent gears	12-24 meter	9	1,170.0	.	9	1,170.0	.
Total	All	304	19,881.8	17.3	317	18,307.4	27.0

## 6. Discussion

### *Survey and coverage*

To collect data about the vessels in the so-called non-commercial small-scale fleet, a survey was sent out to all vessels which fall, according to the LEI definition, into this part of the fleet. In this survey questions were asked about the activity of the vessels, fishing technique and target species and costs and revenue of the vessel per year. With the survey it is possible to estimate the total costs and revenues in the non-commercial small scale fleet. No questions were asked about prices or the value of the catch. The whole survey can be found in appendix 1.

The response to the survey was quite good. On average about 30% of the skippers in the non-commercial small-scale fleet returned the survey. However, the variance between the different vessels, even within a segment is quite large. Therefore the uncertainty about the calculated average costs and revenue is large. One explanation about this large variance could be found in the activity level. Another explanation could be found in the division between skippers who consider fishing their main profession and skippers for whom fishing with this vessel is just a side job.

### *Stratification based on activity level*

Not all vessels were active during 2004 and/or 2005, in the sense that they did not go out to fish. One assumption was that skippers who were active during either 2004 or 2005 would have a larger incentive to return the survey than skippers who were not active. Therefore, our survey would have an overrepresentation of the active vessels. This was tested by dividing the non-commercial small-scale fleet in an active and a non-active part based on VIRIS data. This survey had indeed good coverage of the active sector but poor coverage of the non-active sector. By dividing the fleet in an active part and an in-active part the representativeness of the survey for the active vessels increased.

### *Stratification: Main profession versus side job*

Since VIRIS has no data available about main profession or side job it is not possible to compare results of the survey with VIRIS data on this subject. Besides that, it is unclear from the survey why people consider fisheries their main job. For example, figure 6.1 shows the gross annual revenue for the group of respondents whom consider fishing their main job and the group of respondents who consider it a side job. 20% of the respondents said that they practiced fisheries as their main profession but still had a gross annual revenue of less than €5,000 (figure 6.1), making it quite improbable that they would not have another higher paying job or pension beside fishing

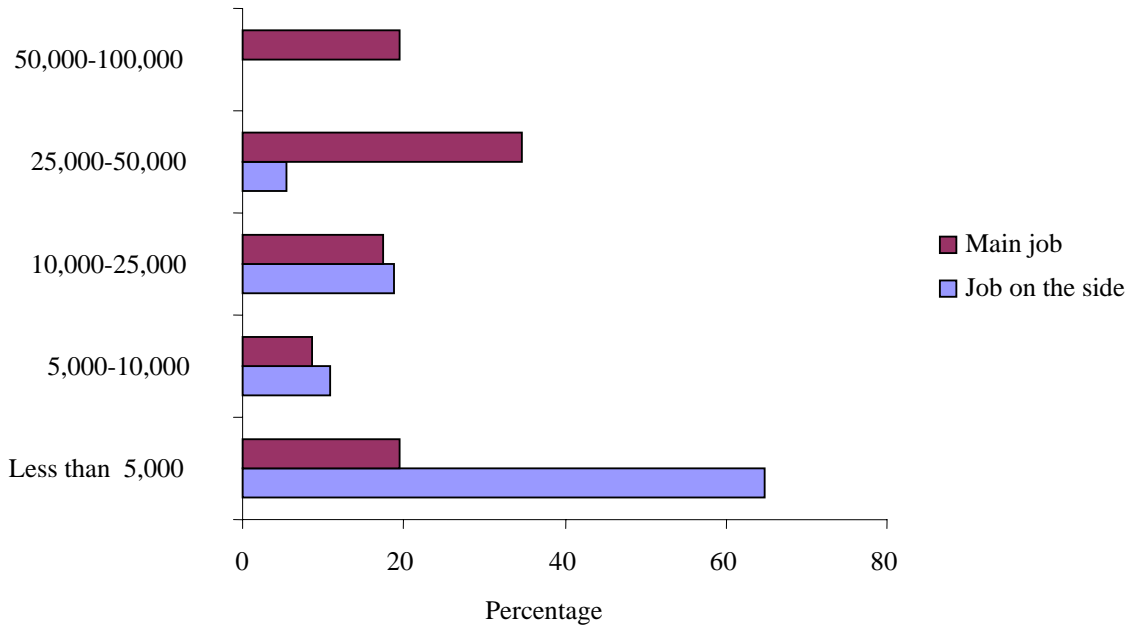


Figure 6.1 Average Gross annual revenue versus main profession, 2004

In this report, it proved impossible to make a distinction between respondents that practised fisheries as a main profession or as a side job due to the availability of reliable data. However, since it very well may be possible to make more homogenous segments when taking this activity-level indicator into account, it would be interesting to further examine this in future research.

### Results

The total gross annual revenue of the non-commercial small-scale fleet is equal to 4.7 million euro in 2004 and 5.4 million euro in 2005. In these same years the total gross annual revenue of the commercial large-scale fleet was equal to 372 in 2004 and 382 in 2005 (Taal et al., 2006). Therefore the share of the gross annual revenue in the non-commercial small scale fleet is equal to 1.3% in 2004 and 1.4% in 2005.

The total costs in the non-commercial small-scale fleet were equal to 4.2 million euro in 2004 and 5.3 million euro in 2005. The total costs in the commercial large-scale fleet were equal to 387.3 million euro in 2004 and 391.5 million euro in 2005 (Taal et al., 2006). The share of the total costs of the non-commercial small-scale fleet as compared to the total fleet is equal to 1.1% in 2004 and 1.4% in 2005.

The total employment costs were equal to 2.1 million euro in 2004 and 3.0 million euro in 2005. This is about 50% of the total costs. The total labour costs in the commercial large-scale fleet were equal to 103.3 million Euro in 2004 and 99.5 million euro in 2005 (Taal et al., 2006). The share of the labour costs in the total costs was about 30% for the commercial large-scale fleet.

The share of the total labour costs of the non-commercial small-scale fleet as compared to the total fleet is equal to 2.0% in 2004 and 3.0% in 2005. One should note that the question about the labour costs was only answered by about one third of the respondents. The uncertainty surrounding the total labour costs are therefore very high.

Based on the figures above it can be concluded that the economic impact of the non-commercial small-scale fleet is very limited. However, as section 6 shows the number of people involved in this sector of the fleet is high (although not if calculated in FTE's). Therefore some further research in why these people considering fisheries as their main profession and whether they have any other means of income (as their average gross annual income is very low) would be interesting.

The uncertainty concerning the total costs and revenues of the non-commercial small-scale fleet is large. However, if we would combine these results with the results of the commercial large-scale fleet, the results would be much better. Especially for the segments Beam trawl and demersal trawls and seiners, the uncertainty surrounding the total costs and revenue of the commercial, large scale fleet is much lower and the number of vessels much higher.

Oostenbrugge (2006) showed that although the non-commercial small-scale fleet represented about 50% of the total Dutch fleet, they added 5% or less to the invested capital, employment and revenue. These preliminary figures are comparable to figures found in this report.

The survey could be improved on various points the next year. More questions should be focussed on whether fisheries is the main profession of the respondent, besides that question should be asked concerning whether the respondent has another job besides fishing with this vessel. If for example most of the respondents also fish in the commercial large-scale fleet, their employment is already covered in the main statistics.

Another problem with this year's survey concerns the range of the multiple choice questions. For example, 20% of the respondents answered that they went fishing 51 times or more, this makes it difficult to estimated the average number of trips as there is no indication whether the fished for example 60 times or a 100 times. The ranges of the multiple choice question should be more carefully chosen or open questions should be considered.



## References

Oostenbrugge, H., 'Definition of EU fishing fleets for economic data collection: What are we aiming for?'. In: *Working paper*. LEI, The Hague, 2006.

Taal, C., H. Bartelings, A. Klok, J.A.E. van Oostenbrugge and B. de Vos, 'Fisheries in figures 2006'. In: *Visserij in cijfers 2006*. LEI, the Hague, 2006.



## Appendix 1 Survey

Survey with regard to vessels which are part of the non-commercial small-scale fleet / or fish for shellfish:

Number of vessel:

NB. The questions following below refer to fishing activities and not to any other activities, like sport fisheries, involving the vessel

1. Did you use the vessel for fishing activities during 2004 and/or 2005?

- A. I was only active in 2004
- B. I was only active in 2005
- C. I was active in both 2004 and 2005
- D. No I was not active in either year
- E. No, it is a transport vessel

2. How many fishing trips a year did you undertake with this vessel?

2004	2005
A. 5-10	A. 5-10
B. 11-20	B. 11-20
C. 21-30	C. 21-30
D. 31-40	D. 31-40
E. 41-50	E. 41-50
F. 50 or more	F. 50 or more

3. What was the average length of a trip?

2004	2005
A. 0-4 hours	A. 0-4 hours
B. 4-8 hours	B. 4-8 hours
C. 8-12 hours	C. 8-12 hours
D. 12 hours or longer	D. 12 hours or longer

4. Which fishing gear did you use on this vessel (several answers possible)?

2004	2005
A. Border trawl	A. Border trawl
B. Gillnets	B. Gillnets
C. Fyke nets	C. Fyke nets
D. Pots and traps	D. Pots and traps
E. Hook and line	E. Hook and line
F. other namely....	F. other namely....

5. How much diesel/gasoline did you use on average during a trip?

2004	2005
A. 0-50 litre	A. 0-50 litre
B. 50-100 litre	B. 50-100 litre
C. 100-200 litre	C. 100-200 litre
D. 200-1000 litre	D. 200-1000 litre
E. other, namely....	E. other, namely....

6. What were the most important target species (several answers possible)?

2004	2005
A. Sole	A. Sole
B. Sea bass	B. Sea bass
C. Mullet	C. Mullet
D. Turbot	D. Turbot
E. Brill	E. Brill
F. Plaice	F. Plaice
G. Eel	G. Eel
H. Smelt	H. Smelt
I. Lobster	I. Lobster
J. Shrimps	J. Shrimps
K. Atlantic surf clam	K. Atlantic surf clam
L. other, namely....	L. other, namely....

7. How many crewmembers were on board on average when you went out for a trip (please pick one of the answers and fill in the number of crewmembers)?

2004	2005
A. I went alone	A. I went alone
B. I went together with .... crewmembers	B. I went together with .... crewmembers
C. crew went alone, .... crewmembers	C. crew went alone, .... crewmembers
D. other, namely....	D. other, namely....

8. Do you consider fishing with this vessel your main profession?

2004	2005
A. Yes	A. Yes
B. No	B. No

9. What was the gross annual revenue with this vessel?

In 2004 (if applicable) in €	In 2005 (if applicable) in €
A. less than 5.000	A. less than 5.000
B. 5.000-10.000	B. 5.000-10.000
C. 10.000-25.000	C. 10.000-25.000
D. 25.000-50.000	D. 25.000-50.000
E. 50.000-100.000	E. 50.000-100.000
F. more than 100.000....	F. more than 100.000....
G. other, namely....	G. other, namely....

10. Can you roughly estimate the annual amount spend on:

Costs	2004 in €	2005 in €
1. Costs concerning crew, including yourself, including social costs		
2. Fuel costs		
3. Repair and maintenance costs (concerning the vessel, gear, motor, etc.)		
4. Other costs (insurance, provisions, rent machinery, rent quota, port dues, transport, administration, inspection, taxes, etc.		

11. What is the investment value of your vessel (preferably insurance value)

2004 in €	2005 in €
.....	.....

12. Which part of this investment did you finance with own capital?

2004 in €	2005 in €
.....% own capital	.....% own capital

13. Did you have receive any income from activities with this vessel apart from fishing?

- A. No
- B. Yes, tourism (round trip boat)
- C. Yes, sport fishing
- D. Other, namely ...

## Appendix 2 Number of vessels that used a certain fishing technique per segment (in percentages)

Segment	Length	Demersal Trawls	Gillnets	Fyke nets	Pots and traps	Hook and line	Other
2004							
Beam trawl	0-12 m	50.0	0.0	50.0	25.0	25.0	0.0
Beam trawl	12-24 m	80.0	20.0	0.0	0.0	0.0	20.0
Demersal trawls and seiners	0-12 m	85.7	14.3	14.3	0.0	14.3	14.3
Pelagic trawls and seiners	12-24 m	25.0	25.0	37.5	25.0	0.0	62.5
Passive gears	0-12 m	12.5	55.4	46.4	26.8	21.4	26.8
Drift and fixed nets	12-24 m	0.0	66.7	33.3	0.0	0.0	33.3
Pots and traps	12-24 m	0.0	0.0	100.0	50.0	0.0	0.0
Polyvalent gears	12-24 m	0.0	0.0	100.0	100.0	0.0	100.0
2005							
Beam trawl	0-12 m	66.7	0.0	33.3	0.0	0.0	0.0
Beam trawl	12-24 m	75.0	25.0	0.0	0.0	0.0	25.0
Demersal trawls and seiners	0-12 m	71.4	42.9	0.0	0.0	14.3	14.3
Pelagic trawls and seiners	12-24 m	25.0	25.0	37.5	25.0	0.0	62.5
Passive gears	0-12 m	10.3	53.4	44.8	25.9	27.6	27.6
Drift and fixed nets	12-24 m	25.0	50.0	50.0	0.0	0.0	25.0
Pots and traps	12-24 m	0.0	0.0	100.0	50.0	0.0	0.0
Polyvalent gears	12-24 m	0.0	0.0	100.0	100.0	0.0	100.0

Note: respondents could indicate that they used more than 1 fishing techniques so percentages do not sum up to 100.

### Appendix 3 Target species per segment (in percentages)

2004	Beamtrawl	Beam trawl	Demersal trawl	Pelagic trawl	Passive gear	Drift and fixed nets	Pots and traps	Polyvalent gears
Species	0-12 m	12-24 m	0-12 m	12-24 m	0-12 m	12-24 m	12-24 m	12-24 m
European sea bass	25.0	20.0	28.6	62.5	57.1	100.0	0.0	100.0
European eel	50.0	0.0	14.3	37.5	48.2	33.3	100.0	100.0
Mullet	25.0	20.0	14.3	75.0	32.1	100.0	0.0	100.0
Sole	25.0	20.0	28.6	12.5	25.0	0.0	0.0	0.0
Lobster	25.0	0.0	0.0	0.0	30.4	0.0	50.0	0.0
Flounder	0.0	0.0	57.1	12.5	12.5	0.0	0.0	100.0
Smelt	0.0	20.0	28.6	37.5	7.1	0.0	0.0	100.0
Common dab	0.0	20.0	42.9	0.0	12.5	0.0	0.0	0.0
Brill	0.0	0.0	28.6	12.5	10.7	0.0	0.0	0.0
Chinese river crab	0.0	0.0	14.3	12.5	10.7	0.0	0.0	100.0
Turbot	0.0	0.0	14.3	12.5	10.7	0.0	0.0	0.0
Crab	0.0	0.0	0.0	12.5	10.7	0.0	0.0	0.0
Plaice	0.0	20.0	28.6	12.5	3.6	0.0	0.0	0.0
Pike-perch	0.0	0.0	14.3	0.0	5.4	0.0	50.0	100.0
Shrimp	50.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Cod	0.0	20.0	0.0	0.0	3.6	0.0	0.0	0.0
Squid	0.0	20.0	0.0	0.0	3.6	0.0	0.0	0.0
Cockle	0.0	0.0	0.0	12.5	0.0	33.3	0.0	0.0
Atlantic surf clam	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0
Gurnard	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0
Salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0

Note: respondents could mention several target species so percentages do not sum up to 100

2005	Beamtrawl	Beam trawl	Demersal trawls	Pelagic trawls	Passive gear	Drift and fixed nets	Pots and traps	Polyvalent gears
	0-12 m	12-24 m	0-12 m	12-24 m	0-12 m	12-24 m	12-24 m	12-24 m
European sea bass	0.0	25.0	57.1	75.0	58.6	100.0	0.0	50.0
European eel	33.3	0.0	0.0	37.5	48.3	50.0	100.0	100.0
Mullet	0.0	25.0	28.6	75.0	34.5	100.0	0.0	50.0
Lobster	0.0	0.0	0.0	0.0	31.0	0.0	100.0	50.0
Sole	33.3	25.0	28.6	12.5	22.4	0.0	0.0	0.0
Flounder	0.0	0.0	42.9	12.5	13.8	25.0	0.0	50.0
Smelt	0.0	25.0	14.3	37.5	8.6	25.0	0.0	50.0
Common dab	33.3	25.0	42.9	0.0	12.1	0.0	0.0	0.0
Brill	0.0	0.0	28.6	12.5	10.3	0.0	0.0	0.0
Plaice	33.3	25.0	28.6	12.5	6.9	0.0	0.0	0.0
Chinese River crab	0.0	0.0	14.3	12.5	10.3	0.0	0.0	50.0
Turbot	0.0	0.0	0.0	12.5	12.1	0.0	0.0	0.0
Crab	0.0	0.0	0.0	12.5	12.1	0.0	0.0	0.0
Pike-perch	0.0	0.0	14.3	0.0	5.2	0.0	0.0	50.0
Shrimp	66.7	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Cod	0.0	25.0	0.0	0.0	3.4	0.0	0.0	0.0
Cockle	0.0	0.0	0.0	12.5	0.0	25.0	0.0	0.0
Gurnard	0.0	0.0	14.3	0.0	1.7	0.0	0.0	0.0
Squid	0.0	0.0	0.0	0.0	3.4	0.0	0.0	0.0
Atlantic surf clam	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0
European sprat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0
Salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0
Twaiite shad	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0

Note: respondents could mentioned several target species so percentages do not sum up to 100