

# The Dutch non-commercial small-scale fleet in 2006



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# The Dutch non-commercial small-scale fleet in 2006

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## **The Dutch non-commercial small-scale fleet in 2006**

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Dit rapport beschrijft de karakteristieken, kosten en baten van de zogenoemde niet-commerciële kleinschalige vloot op basis van een enquête rondgestuurd naar alle schippers van schepen die volgens de LEI-definitie binnen de niet-commerciële kleinschalige vloot vallen. Op basis hiervan kan de economische impact van dit deel van de visserij vloot worden bepaald.

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 fleet. With this data the economic importance of this part of the fleet can be determined.

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# Preface

The fishing fleet in the Netherlands consist for a large part of so-called non-commercial small-scale vessels. This report describes the economic data gathered from the non-commercial small-scale fishery in the Netherlands for the year 2006 and determines the economic importance of this part of the fleet. The report clearly shows that the non-commercial small-scale fleet is a very heterogeneous group of vessels that consists of vessels that do not fish at all and are sometimes use to store quota on, vessels that fish on a non-commercial basis and vessel that fish commercially but on species which do not need to be registered, thus showing up a non-active in the regular data collection. Thus it is not easy to reliably estimate economic indicators for the entire non-commercial small-scale fleet.

This research was commissioned by the Ministry of Agriculture, Nature and Food Quality (LNV) and conducted by Heleen Bartelings and Hans van Oostenbrugge from LEI, animal system division/section Fisheries. Like last year, data for this part of the fleet has been collected by means of a survey. The authors would here be like to take the opportunity to thank all respondents to the survey for their willingness to participate.

This report, hopefully, will provide a better understanding of the economic importance of these non-commercial small-scale fisheries and will provide some essential background information for the European Commission and the Dutch Ministry about this part of the Dutch fishing fleet.



Prof.Dr. R.B.M. Huirne  
General Director LEI

# Summary

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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). Like last year, a survey has been sent out to collect data about this part of the fleet. The survey has been sent to all the skippers owning a vessel that according to the LEI definition falls into the category of non-commercial small-scale fleet. 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 this fleet represents about 50% of the vessels in the Dutch fleet, they add only about 2% to both the revenue and the total costs of the Dutch fleet.

A large part (47%) of the non-commercial small-scale fleet is inactive, meaning that they do not fish at all. Some of the inactive vessels are used to administer quotas on.

The results further show that the non-commercial small-scale fleet is a very heterogeneous group of vessels, including non-active vessels, less active vessels and active vessels which do not need to register their landings in the official logbook database. Consequently, it is difficult to make a reliable estimation of the total costs and revenue.

# Samenvatting

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Sinds 2002 is Nederland verplicht om te rapporteren over alle visserij-activiteiten. Dit is gebaseerd op het Europese datacollectieplan (EU-verordening 2001/1639). Volgens dit 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). Ook 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 zijn voor het jaar 2006 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 visserijvloot 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 2%.

Een groot gedeelte (47%) van de niet-commerciële kleinschalige vloot is inactief. Dit houdt in dat deze schepen in het geheel niet vissen. Een gedeelte van de niet-actieve schepen wordt gebruikt om quota op te bewaren.

Daarnaast laten de resultaten zien dat de niet-commerciële kleinschalige vloot bestaat uit een groep zeer heterogene schepen die bestaat uit niet-actieve, matig actieve en actieve schepen die niet verplicht zijn het officiële logboek in te vullen. Hierdoor wordt het zeer lastig om een betrouwbare schatting te geven van de totale kosten en opbrengsten in dit deel van de vloot.



# 1 Introduction

---

LEI has been gathering data from the Dutch cutler fleet for the ministry of Agriculture, Nature and Food quality since 1946. Until last year, data collection has focused on vessels that were commercially fishing. From 2003 onwards a threshold of 50,000 euro gross income is used to distinguish between commercial large-scale and non-commercial small-scale fleet. Commercial fishing vessels are defined as vessels that have a gross income of more than 50,000 euro per year. Any vessels that have a lower gross annual income are considered to be small-scale and non-commercial. This terminology is also used in this report. Until last year, LEI did not collect data from the non-commercial small-scale fleet.

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 has 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. Like last year, data for the year 2006 for this part of the fleet has been collected by means of a survey. The survey has been sent to all skippers owning a vessel that according to the LEI definition falls into the category of non-commercial small-scale fleet. 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, which in the Netherlands also includes vessels less than 10m. For these vessels, even landings less than 50kg have to be reported, in contrast with the EU logbook regulation that requires only landings over 50kg per species and trip to be recorded.

Like last year, a survey was sent out to all vessels that according to the LEI definition belong to the non-commercial small-scale fleet. To define whether a vessel belongs to the fleet, data from the official logbook database were used. In this database information is available on effort and landings for all vessels that have to fill in a European logbook. Not all landings have to be reported; dredges, for example, have no obligation to fill in the logbook and are therefore considered to be part of the non-commercial small-scale fleet, which they clearly do not belong to.

The non-commercial small-scale fleet can be split into two entirely different parts. Approximately 40% of the fleet does not fish or hardly fishes. These vessels are mainly used to store quotas on, which may mean that they go out to fish once a year to keep their licence. According to the definition in the Data Collection Regulation (DCR), these vessels belong to the inactive part of the Dutch fleet.

The other segment of the non-commercial small-scale fleet does fish although their income is significantly smaller than the income of the large-scale commercial fleet. These vessels belong to the group defined in the DCR as the 'less-active fleet'.

The non-commercial small-scale fleet consists of 366 vessels. About 55% of these vessels are inactive, whereas 45% of the vessels do go out to fish according to the official logbook database. Some of the segments in the so-called 'less-active' fleet are too small - in terms of number of vessels - to report on: the minimum number of vessels is 10. The segments that can be reported on are: 'beam trawl 12-24m', 'passive gear 0-12m' and 'polyvalent gear 12-24m'. This year more effort has been put into determining which vessels are inactive and which are less active. Compared to the results presented last year, a larger part of the non-commercial small-scale fleet is considered inactive. We feel that the description of the fleet as presented in Table 1.1 is far more accurate than the estimation last year.

| Segment                    | Length (metres) | Fleet      |             |            |
|----------------------------|-----------------|------------|-------------|------------|
|                            |                 | Inactive   | Less active | Total      |
| Beam trawl                 | 12-24           | 26         | 10          | 36         |
| Demersal trawls and seines | 0-12            | 25         | 0           | 25         |
| Pelagic trawls and seines  | 12-24           | 4          | 7           | 11         |
| Dredges                    | 24-40           | 17         | 1           | 18         |
|                            | >40             | 14         | 5           | 19         |
| Passive gear               | 0-12            | 125        | 118         | 243        |
| Polyvalent gear            | 12-24           | 2          | 12          | 14         |
| <i>Total</i>               | <i>All</i>      | <i>213</i> | <i>153</i>  | <i>366</i> |

As mentioned before, dredges do not need to report catches in the official logbook database. Most of the dredges however are known to be inactive. Only the dredges fishing for cockles by hand are still active. The government has is-

sued 30 licences to fish for cockles by hand in 2006. Only a small part of these licences is actually used. A report on the website of the Producer's organisation for cockle fisheries shows that 6 vessels were actively fishing for cockles in 2006.<sup>1</sup>

In this paper the results of the survey will be presented. Furthermore, the purpose of this paper is to:

- characterise the group of so-called non-commercial small-scale vessels;
- calculate the main economic indicators of the non-commercial vessels and determine the economic importance of this group of vessels.

## 2 Material and method

---

Economic information about the non-commercial small-scale fleet was obtained by sending out a survey to all vessels that according to the LEI definition belong to the non-commercial small-scale fleet. The survey was sent out in June 2007 and was used to gather data for the year 2006. About 30% of the vessels in the non-commercial fleet responded to the survey. Some of the results of the survey will be shown in chapter 3. Information on effort and landings was retained from the official landings database (VIRIS). In the Netherlands, every seagoing fishing vessel has to fill in a logbook to prove that they are operating on a commercial basis. For these vessels, even landings under 50kg have to be reported, in contrast with the EU logbook regulation that requires only landings over 50kg per species and trip to be recorded. In order to be able to calculate revenues, average monthly auction prices were used provided by the Dutch Fish Product Board. The official vessels register was used to get technical details of the vessels, and to value the material assets.

### 2.1 Methods used

#### 2.1.1 Fleet segments and stratification

Data analyses were carried out for all vessels that were in the official vessels register on 31 December 2006. Vessels were classified according to their fishing activities in 2006 as recorded in the logbook database. In case vessels used more than one gear and none of the gears was used in more than 50% of the fishing days, vessels were classified as using polyvalent gears. The total landings value was estimated using logbook landings and monthly average prices.

To enhance the precision of the estimates a distinction was made between inactive vessels and vessels that displayed at least some fishing activity. However, stratification based on activity level revealed some inconsistencies between the survey results and the results as found in the official logbook dataset. Table 2.2 shows a comparison between activities in the logbook database and in the survey. Note that 20 respondents called themselves active in 2006, whereas no landings were registered in the official logbook database.

Consequently, estimates of activity based on the official logbook data may underestimate the activity level.

| <b>Table 2.1</b>  |              | <b>Classification of vessels according to EU classification (EU regulation 1639/2001) based on gear used, official gear, MAGP segment and EU fishing licence</b> |                             |  |
|---|--------------|--|-----------------------------|--|
| Main gear used/registered gear  | MAGP segment | EU licence   | Classification              |  |
| Beam trawl , shrimp trawl   | n.a.         | 1  | Beam trawl                  |  |
| Bottom otter trawl, bottom pair trawl, Danish seine, Scottish seine   | n.a.         | 1  | Demersal trawls and seiners |  |
| Pelagic otter trawl, pelagic pair trawl, purse seine  | n.a.         | 1  | Pelagic trawls and seiners  |  |
| Longlines, set lines, drifting lines, Hand-lines and pole-lines (hand operated                                  | n.a.         | 1  | Gears using hooks           |  |
| Gillnets (not specified), Encircling gill-nets, drift nets, fixed gillnets (on stakes), set gillnets (anchored) | n.a.         | 1  | Drift nets and fixed nets   |  |
| Pots  | n.a.         | 1  | Pots and traps              |  |
| No main gear  | n.a.         | 1  | Polyvalent gears            |  |
| n.a.  | 4J7          | 1  | Aquaculture                 |  |
| n.a.  | 4J7          | 0  | Inland fisheries            |  |

| <b>Table 2.2</b> |                           | <b>Comparison between activity level in official logbook database and survey (number of vessels)</b> |  |
|------------------|---------------------------|--|--|
|                  | Official logbook database |  |  |
| Survey           | Inactive                  | Active   |  |
| Inactive         | 21 (25.9%)                | 3 (3.7%)   |  |
| Active           | 20 (24.7%)                | 37 (45.7%)   |  |

Table 2.3 shows the underestimation of the active vessels per segment. Survey results show that only in the segment 'passive gear 0-12m' the number

of active vessels is underestimated. Based on the activity levels as presented in Table 2.3 the number of active vessels in the segment 'passive gear 0-12m' has been recalculated. The corrected number of active vessels as shown in Table 2.4 has been used in the results presented in this paper.

| <b>Table 2.3</b>            |                  | <b>Comparison between activity level according to official log-book database and survey per fleet segment</b> |                                |
|-----------------------------|------------------|---|--------------------------------|
| Segment                     | Length in metres | Active according to logbook database (%)  | Active according to survey (%) |
| Beam trawl                  | 12-24            | 27.8  | 27.8                           |
| Demersal trawls and seiners | 0-12             | 0.0   | 0.0                            |
| Pelagic trawls and seiners  | 12-24            | 63.6  | 63.6                           |
| Dredges                     | 24-40            | 5.6   | 5.6                            |
|                             | >40              | 26.3  | 26.3                           |
| Passive gear (<12m)         | 0-12             | 48.6  | 65.4                           |
| Polyvalent gears            | 12-24            | 85.7  | 85.7                           |
| <i>Total</i>                | <i>All</i>       | <i>41.8</i>   | <i>53.0</i>                    |

Table 2.4 shows the estimated inactive and less active vessels in the non-commercial small-scale fleet based on the survey results.

| <b>Table 2.4</b>           |                 | <b>Adjusted activity levels according to the survey results</b> |             |            |
|----------------------------|-----------------|---|-------------|------------|
| Segment                    | Length (metres) | Fleet   |             |            |
|                            |                 | Inactive  | Less active | Total      |
| Beam trawl                 | 12-24           | 26  | 10          | 36         |
| Demersal trawls and seines | 0-12            | 25  | 0           | 25         |
| Pelagic trawls and seines  | 12-24           | 4   | 7           | 11         |
|                            | 24-40           | 17  | 1           | 18         |
| Dredges                    | >40             | 14  | 5           | 19         |
|                            | 0-12            | 84  | 159         | 243        |
| Polyvalent gear            | 12-24           | 2   | 12          | 14         |
| <i>Total</i>               | <i>All</i>      | <i>172</i>  | <i>194</i>  | <i>366</i> |

# 3 Survey results

## 3.1 Response per segment

As mentioned in the previous chapter, 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. Also, it will be shown whether the response has a good coverage of the different segments in the non-commercial small-scale fishing fleet.

### *Overall response*

Table 3.1 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 rate for the 'less-active vessels' is better than the response rate of the inactive vessels.

|                            | Length (metres) | Inactive   |              | Less active |              |
|----------------------------|-----------------|------------|--------------|-------------|--------------|
|                            |                 | N          | Response (%) | N           | Response (%) |
| Beam trawl                 | 12-24           | 26         | 7.7          | 10          | 20.0         |
| Demersal trawls and seines | 0-12            | 25         | 12.0         | 0           |              |
| Pelagic trawls and seines  | 12-24           | 4          | 0.0          | 7           | 28.6         |
| Dredges                    | 24-40           | 17         | 12.5         | 1           | 33.3         |
|                            | >40             | 14         | 21.1         | 5           |              |
| Passive gear               | 0-12            | 125        | 10.4         | 118         | 39.8         |
| Polyvalent gear            | 12-24           | 2          | 0.0          | 12          | 41.7         |
| <i>Total</i>               | <i>all</i>      | <i>213</i> | <i>11.3</i>  | <i>153</i>  | <i>37.3</i>  |

## 3.2 Activity level

About 70% of the respondents indicated that they were active in 2006 (see table 3.1). The activity level was quite low in the segment 'dredges'. As most of

the dredges in the Netherlands do not fish (as mentioned in chapter 2) these results are not surprising. About 10% of the respondents admitted that they only parked quotas on the vessels and that they did not use the vessels to fish.

| <b>Table 3.2</b>           |                 | <b>Response survey splitted in activity level per segment (in percentages)</b> |             |            |               |
|----------------------------|-----------------|--|-------------|------------|---------------|
|                            | Length (metres) | active   | not active  | tender     | parking quota |
| Beam trawl                 | 12-24           | 50.0   | 25.0        | 0.0        | 25.0          |
| Demersal trawls and seines | 0-12            | 0.0  | 100.0       | 0.0        | 0.0           |
| Pelagic trawls and seines  | 12-24           | 100.0  | 0.0         | 0.0        | 0.0           |
| Dredges                    | 24-40           | 33.3   | 66.7        | 0.0        | 0.0           |
|                            | >40             | 0.0  | 100.0       | 0.0        | 0.0           |
| Passive gear               | 0-12            | 78.3   | 5.0         | 5.0        | 11.7          |
| Polyvalent gear            | 12-24           | 100.0  | 0.0         | 0.0        | 0.0           |
| <i>All</i>                 | <i>All</i>      | <i>69.6</i>  | <i>16.5</i> | <i>3.8</i> | <i>10.1</i>   |

### 3.3 Effort

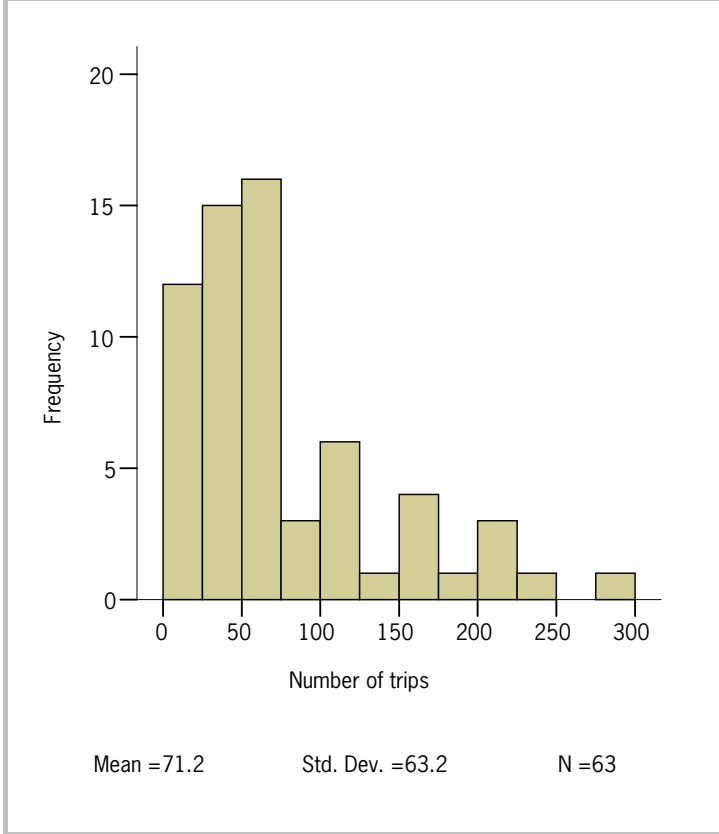
Most of the vessels (50%) made between 0 and 75 trips per year. Some vessels made considerably more trips. One of the respondents indicated that he made 300 fishing trips in 2006.

The overall length of a fishing trip was about 10 hours (see figure 3.2). More than 50% of the respondents indicated that an average fishing trip took between 0 and 10 hours. Only one respondent indicated that an average fishing trip took one week (120 hours).

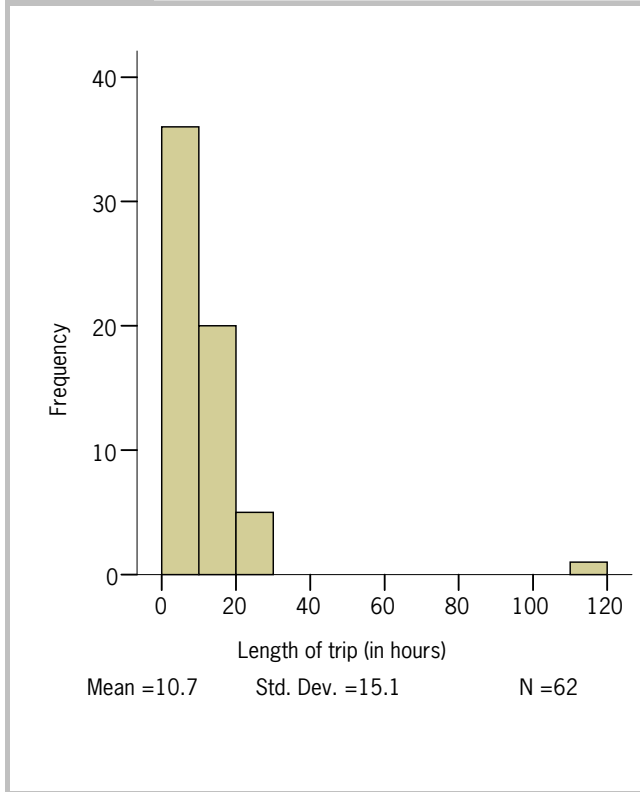
Based on the number of trips and the average length of a trip, the number of sea days can be calculated. The average number of sea days based on survey results is slightly higher than the average number of sea days found in the official logbook database. The difference is however not statistically significant. The vessels that responded to the survey made on average a larger number of sea days than the vessels that did not respond, which may indicate that the survey is slightly biased towards the more active vessels.



**Figure 3.1** Number of trips per year



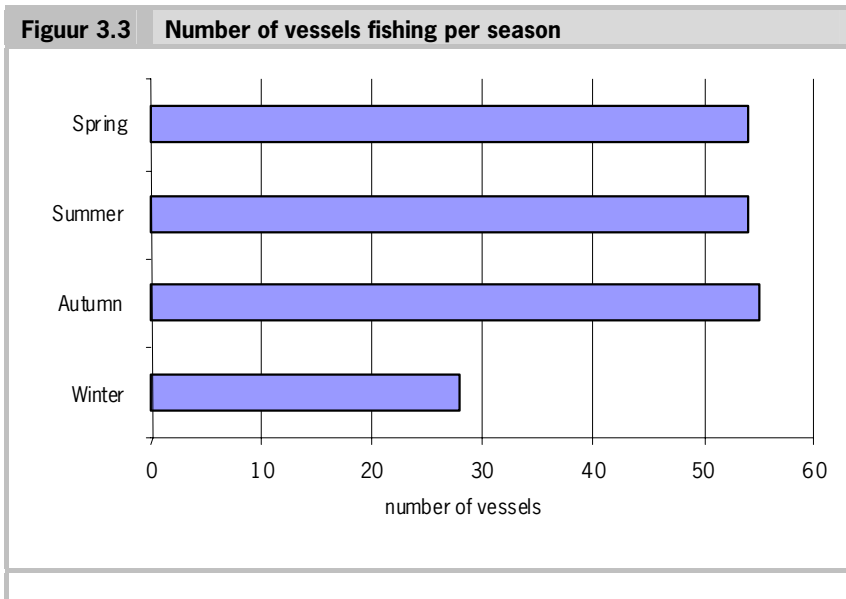
**Figure 3.2 Average length of a trip per year**



**Table 3.2 Comparison of sea days found in VIRIS for the vessels that responded to the survey and vessels that did not**

| Segment         | Length (metres) | Sea days    |                                     |   |
|-----------------|-----------------|-------------|-------------------------------------|---|
|                 |                 | Survey      | Vessel registry (vessels in survey) | Vessel registry (vessels not in survey) |
| Beam trawl      | 12-24           | 29.2        | 26.5                                | 25.3                                    |
| Passive gear    | 0-12            | 21.0        | 16.5                                | 12.3                                    |
| Polyvalent gear | 12-24           | 21.9        | 13.7                                | 26.2                                    |
| <i>Total</i>    | <i>all</i>      | <i>26.0</i> | <i>16.6</i>                         | <i>13.8</i>                             |

Only about 50% of the vessels in the non-commercial small-scale fleet fish all year round. The other half does not fish in the winter. Most of the vessels do fish in all other seasons, as figure 3.3 shows.



Most of the respondents use gillnets or fykenets (almost 60%). This is shown in table 3.2. The fishing techniques mentioned in the sample and in the official logbook database are comparable in 75% of all cases.

**Table 3.3** Fishing technique survey (in percentages)

|                | N  | %    |
|----------------|----|------|
| Gillnets       | 28 | 30.4 |
| Fykenets       | 25 | 27.2 |
| Hook and line  | 16 | 17.4 |
| Pots and traps | 10 | 10.9 |
| Otter trawl    | 9  | 9.8  |
| Other          | 10 | 10.9 |

### 3.4 Catches

The most important target species in 2006 were European sea bass, European eel and mullet (see table 3.3).

The target species as mentioned by the respondents were compared to the species caught as registered in the official logbook database. Table 3.5 shows the results of this comparison.

| <b>Tabel 3.4 Target species survey</b> |       |      |
|--|-------|------|
|  | Count | %    |
| European Sea bass                      | 36    | 39.1 |
| European Eel                           | 26    | 28.3 |
| Mullet                                 | 22    | 23.9 |
| European flounder                      | 17    | 18.5 |
| Chinese River crab                     | 17    | 18.5 |
| Sole                                   | 13    | 14.1 |
| Other                                  | 12    | 13.2 |
| Common dab                             | 12    | 13.0 |
| Cod                                    | 11    | 12.0 |
| Turbot                                 | 9     | 9.8  |
| Brill                                  | 9     | 9.8  |
| Lobster                                | 8     | 8.7  |
| European smelt                         | 5     | 5.4  |
| Plaice                                 | 4     | 4.3  |
| Shrimp                                 | 3     | 3.3  |
| Mackerel                               | 3     | 3.3  |
| Northern pike                          | 3     | 3.3  |
| Sea bream                              | 2     | 2.2  |
| Cockle                                 | 2     | 2.2  |
| European anchovy                       | 1     | 1.1  |

Most of the respondents mentioned target species that were comparable to the species caught as registered in the official logbook database (72%).

| <b>Table 3.5 Comparison between target species (in survey) and species caught (in VIRIS): percentage of vessels</b> |          |
|---|----------|
|   | <b>%</b> |
| 0-25% of target species equal to logbook database   | 10.9     |
| 25%-60% of target species equal to logbook database   | 17.4     |
| 60% tot 100% of target species equal to logbook database  | 71.7     |

### **3.5 Representiveness of the sample**

The representativeness of the survey is quite good. The reported sea days in the survey are not significantly different from the number of sea days as found in the official logbook database. The main species and fishing technique used are also comparable between the survey results and the official logbook database. The survey results have a slight bias towards the more active vessels, many of the non-active vessels have not responded to the survey. This has been dealt with by putting some extra effort in determining whether a vessel has been active or not.

## 4 Average economic performance per vessel

---

The survey included several open questions about the gross annual revenue and various costs. In this section the average revenue and costs per vessel per segment are presented.

### 4.1 Annual income and investment values

The average gross annual revenue in the non-commercial small-scale fleet was equal to 40,600 euro, ranging from 250 euro to 500,000 euro. The standard deviation of the gross annual income is quite large, as the previous mentioned range already implies (see table 4.1).

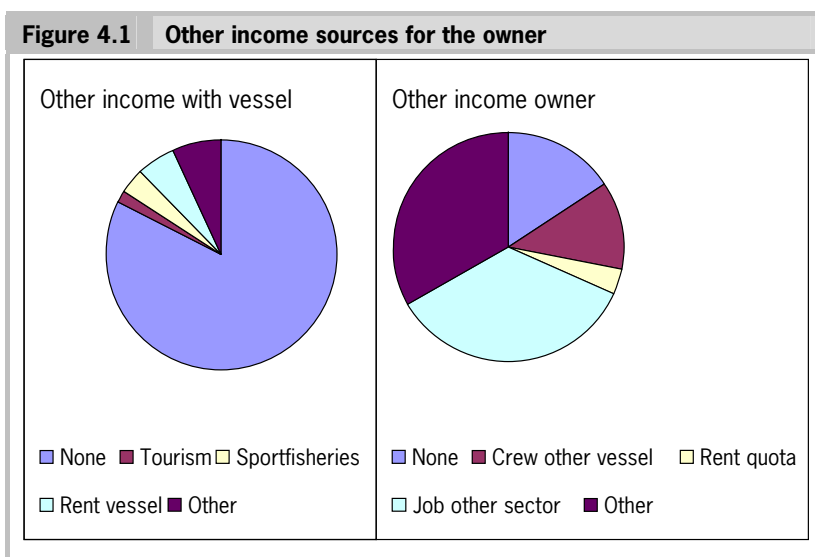
|                 | Length (metres) | N  | Mean | Std. Dev. |
|-----------------|-----------------|----|------|-----------|
| Beam trawl      | 12-24           | 4  | 32.2 | 17.6      |
| Passive gear    | 0-12            | 48 | 32.6 | 73.0      |
| Polyvalent gear | 12-24           | 4  | 65.3 | 59.4      |
| Total           | all             | 59 | 40.6 | 79.3      |

The variation in the gross annual revenue can partly be explained by the large variation in sea days that the vessels are making. In table 4.2 the average gross annual revenue per sea day is shown. The segment 'polyvalent gear 12-24m' makes the highest gross annual revenue per sea day. On average a vessel in the non-commercial small-scale fleet makes about 1.800 euro per day. The variation in gross annual revenue per sea day is however still quite large, indicating that the non-commercial small-scale fleet is very heterogeneous.

|                 | Length (metres) | N         | Mean           | Std. Dev.      |
|-----------------|-----------------|-----------|----------------|----------------|
| Beam trawl      | 12-24           | 4         | 1,641.0        | 678.7          |
| Passive gear    | 0-12            | 46        | 1,658.6        | 2,341.0        |
| Polyvalent gear | 12-24           | 4         | 2,437.5        | 2,444.5        |
| <i>Total</i>    | <i>all</i>      | <i>57</i> | <i>1,752.7</i> | <i>2,213.3</i> |

In the survey respondents were asked two questions about other sources of income. They were first asked if they used the vessel in question for any other activities than fishing and after that they were asked whether they had any other source of income besides fishing.

Hardly any of the respondents (15%) used the vessel in question for other commercial activities, such as tourism, sport fisheries or renting out the vessel, as figure 4.1 shows. Most of the respondents of the survey indicated however that fishing with this vessel was not their main occupation (66%). Most of them had either a job outside the fishing sector, worked as crew on another vessel or had any other source of income, such as a pension, selling fish, or owning another commercial fishing vessel (see figure 4.1). About 22% of the respondents indicated that fishing with these vessels was their only source of income.



## 4.2 Technical costs

### 4.2.1 Fuel costs

The average amount of fuel used per year was 4,400 litres. Vessels in the segment 'beam trawl 12-24m' used the highest amount of fuel per year. Like the revenues, the amount of fuel used per vessel differed a lot. This is illustrated by the standard deviation as shown in table 4.3.

| <b>Table 4.3</b> | <b>Average use of fuel per year per segment (in 1,000 litres)</b> |           |            |            |
|------------------|---|-----------|------------|------------|
|                  | Length (metres)   | N         | Mean       | Std. Dev.  |
| Beam trawl       | 12-24   | 4         | 20.3       | 28.7       |
| Passive gear     | 0-12  | 49        | 3.2        | 4.8        |
| Polyvalent gear  | 12-24   | 3         | 1.9        | 1.0        |
| <i>Total</i>     | <i>all</i>  | <i>61</i> | <i>4.4</i> | <i>8.9</i> |

On average, a vessel in the non-commercial small-scale fleet spent 2,300 euro per year on fuel. The segment 'beam trawl 12-24m' has the highest fuel demand but relatively low costs. However, the deviation in this segment is quite large and the number of respondents is low in this segment, indicating that one respondent with unusual high fuel demand can have a large impact on the average demand of fuel.

| <b>Table 4.4</b> | <b>Average cost of fuel per segment (in 1,000 euro)</b> |    |      |           |
|------------------|---|----|------|-----------|
|                  | Length (metres)   | N  | Mean | Std. Dev. |
| Beam trawl       | 12-24   | 2  | 2.6  | 2.7       |
| Passive gear     | 0-12  | 43 | 2.3  | 2.8       |
| Polyvalent gear  | 12-24   | 4  | 2.7  | 1.9       |

### 4.2.2 Repair costs, fixed costs and other costs

On average a vessel in the non-commercial small-scale fleet spends 6,300 euro per year on repair and maintenance costs. The repair and maintenance costs



were the lowest in the segment 'passive gear 0-12m' and the highest in the segment 'polyvalent gear 12-24m' as table 4.5 shows.

|                 | Length (metres) | N  | Mean | Std. Dev. |
|-----------------|-----------------|----|------|-----------|
| Beam trawl      | 12-24           | 2  | 8.6  | 9.0       |
| Passive gear    | 0-12            | 42 | 3.5  | 5.0       |
| Polyvalent gear | 12-24           | 4  | 10.9 | 16.3      |

The average fixed costs were equal to 27,400 euro as table 4.6 shows. Not many of the respondents however knew the total amount of their fixed costs. Only 11 respondents (about 20% of all respondents) answered this question.

|                 | Length (metres) | N | Mean | Std. Dev. |
|-----------------|-----------------|---|------|-----------|
| Beam trawl      | 12-24           | 2 | 6.8  | 6.0       |
| Passive gear    | 0-12            | 7 | 34.7 | 56.7      |
| Polyvalent gear | 12-24           | 2 | 22.5 | 24.7      |

Finally, table 4.5 shows all other costs, like for example insurance, transport, provision and administration costs. The average other costs were equal to 440 euro per year. The average other costs were the highest in the segment 'beam trawl 12-24m' as table 4.7 shows.

|                 | Length (metres) | N  | Mean | Std. Dev. |
|-----------------|-----------------|----|------|-----------|
| Beam trawl      | 12-24           | 4  | 20.3 | 28.7      |
| Passive gear    | 0-12            | 49 | 3.2  | 4.8       |
| Polyvalent gear | 12-24           | 3  | 1.9  | 1.0       |

### 4.3 Crew cost and employment

The average crew costs were equal to 27,400 euro per year. Not many respondents answered the question about the crew costs, however. This is mainly because many respondents fish alone and do not pay themselves

wages; therefore they cannot calculate their crew costs. Because of the low response, it is difficult to provide any meaningful figures about the average crew costs. The crew costs ranged from 1,000 euro to 160,000 euro. Because of the limited response, outliers have a strong effect on the average figures.

|                 |        | N | Mean | Std. Dev. |
|-----------------|--------|---|------|-----------|
| Beam trawl      | 12-24m | 2 | 6.8  | 6.0       |
| Passive gear    | 0-12m  | 7 | 34.7 | 56.7      |
| Polyvalent gear | 12-24m | 2 | 22.5 | 24.7      |

On average about 34% of the respondents practiced fisheries as their main profession (see table 4.9). In the largest segment, 'passive gear 0-12m', only 28% of the respondents indicated that fishing with this vessels was their main profession. In the other two segments most respondents indicated that fishing with this vessel was their main profession.

|                 |        | N  | %     |
|-----------------|--------|----|-------|
| Beam trawl      | 12-24m | 2  | 100.0 |
| Passive gear    | 0-12m  | 13 | 27.7  |
| Polyvalent gear | 12-24m | 3  | 75.0  |

A vessel in the non-commercial small-scale fleet fishes on average with 1.9 persons on board, ranging from 1 to 4 persons (see table 4.10). About 40% of the vessels fish with only one person on board. In the segment 'polyvalent gear 12-24m', the average number of persons on board is slightly higher than in the other two segments.

|                 |        | N  | Mean | Std. Dev. |
|-----------------|--------|----|------|-----------|
| Beam trawl      | 12-24m | 4  | 1.8  | 1.0       |
| Passive gear    | 0-12m  | 49 | 1.9  | 0.9       |
| Polyvalent gear | 12-24m | 4  | 2.5  | 1.3       |

#### 4.4 Investment value and financing

The average investment value of a vessel in the non-commercial small-scale fleet is about 71,000 euro. The value of the investment in the vessels is not influenced by the activity level, Table 4.9 shows the average investment value in all the different segments including the non-active vessels. The highest average investment value is found in the segments 'beam trawl 12-24m' and 'dredges larger than 40m'. The lowest average investment value is found in the segment 'passive gear 0-12 m'.

| <b>Table 4.11</b>          |        | <b>Investment value (x 1,000 euro)</b> |       |           |
|----------------------------|--------|--|-------|-----------|
|                            |        | N                                      | Mean  | Std. Dev. |
| Beam trawl                 | 12-24m | 4                                      | 141.3 | 42.5      |
| Demersal trawls and seines | 0-12m  | 1                                      | 20.0  | .         |
| Pelagic trawls and seines  | 12-24m | 2                                      | 65.0  | 49.5      |
| Dredges                    | 24-40m | 1                                      | 80.0  | .         |
|                            | >40m   | 2                                      | 625.0 | 388.9     |
| Passive gear               | 0-12m  | 56                                     | 46.2  | 52.8      |
| Polyvalent gear            | 12-24m | 4                                      | 86.3  | 39.0      |

| <b>Table 4.12</b>          |             | <b>Part of the investment value financed with own capital</b> |       |           |
|----------------------------|-------------|---|-------|-----------|
|                            |             | N   | Mean  | Std. Dev. |
| Beam trawl                 | 12-24m      | 4   | 97.5  | 5.0       |
| Demersal trawls and seines | 0-12m       | 1   | 100.0 | .         |
| Pelagic trawls and seines  | 12-24m      | 2   | 50.0  | 70.7      |
| Dredges                    | 24-40m      | 2   | 100.0 | 0.0       |
|                            | >40m        | 1   | 80.0  | .         |
| Passive gear               | 0-12 meter  | 57  | 93.8  | 17.2      |
| Polyvalent gear            | 12-24 meter | 4   | 88.8  | 22.5      |

Most of the vessels in the non-commercial small-scale fleet are financed with own capital as table 4.10 shows. The differences in financing between segments are small. On average about 93% of the investment value is financed with own capital. This percentage is much higher than in the commercial large-scale fleet.

## 5 Economic importance non-commercial small-scale fleet

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In this chapter the total costs and revenues of the non-commercial small-scale fleet are presented. On the basis of the average values and the standard deviation as presented in the previous chapter, the total costs and revenues of the entire population can be calculated. To show how reliable these estimations of the total costs and revenue are for the entire population, the average (stratified) standard error of the mean will also be presented. The results are compared to the total costs and revenues as calculated last year. However, the survey sent out this year was not exactly the same as last year, so figures will sometimes differ due to differences in the way respondents were asked for the figures instead of due to differences between the two years. This will be indicated in the accompanying text.

Although we cannot report on all the different segments because the number of vessels in some segments is too low, these vessels are included in the estimated total costs and revenues of the entire non-commercial large-scale fleet.

### 5.1 Total revenue

The total gross revenue in the non-commercial small-scale fleet was equal to 11.3 million euro in 2006. In 2005, the estimated total revenue was equal to 5.3 million euro. The increase in total revenue can mainly be explained by the different way of asking the respondents for the total revenue. In the survey sent out in 2005, respondents were asked for their total revenue in multiple-choice questions. This year, respondents had to fill in an open question. Consequently, the estimation of total revenue this year is more precise.

|                 |               | <b>Table 5.1 Total gross annual revenue (in 1.000 euro) and standard error of the mean (%)</b> |                 |               |            |                |               |
|-----------------|---------------|--|-----------------|---------------|------------|----------------|---------------|
|                 |               | 2006   |                 |               | 2005       |                |               |
|                 |               | N  | Revenue         | S.E. mean (%) | N          | Revenue        | S.E. mean (%) |
| Beam trawl      | 12-24 meter   | 10   | 322.0           | 27.3          | 15         | 262.5          | 49.5          |
| Passive gear    | 0-12 meter    | 159  | 5,100.7         | 32.8          | 165        | 3,025.0        | 14.9          |
| Polyvalent gear | 12-24 meter   | 12   | 783.0           | 45.5          | 9          | 900.0          | 25.0          |
| <i>Total a)</i> | <i>All a)</i> | <i>194</i>   | <i>11,314.7</i> | <i>25.2</i>   | <i>245</i> | <i>5,361.2</i> | <i>29.8</i>   |

a) Total consists of all segments including segments that are too small to report on.

The standard error of the mean is quite high in both years. In fact higher than what is normally considered acceptable to EU-standards (12.5%). The high standard error is caused by the large variation in reported annual revenues.

## 5.2 Technical cost

### 5.2.1 Fuel cost

Table 5.2 shows the total fuel costs of the non-commercial small-scale fleet. In total about 480,000 euro was spent on fuel costs, most of which in the largest segment 'passive gear 0-12m'. The total fuel costs are less than 10% of the total costs. Compared with the commercial fleet, this is extremely low. The total standard error of the mean is slightly above the 12.5% that is acceptable according to EU standards.

| <b>Table 5.2</b> |               | <b>Total fuel costs (x 1,000 euro) and standard error of the mean (%)</b> |              |             |            |              |             |
|------------------|---------------|---|--------------|-------------|------------|--------------|-------------|
|                  |               | 2006  |              |             | 2005       |              |             |
|                  |               | N   | Cost         | S.E. mean   | N          | Cost         | S.E. mean   |
| Beam trawl       | 12-24m        | 10  | 26.3         | 71.4        | 15         | 32.6         | 39.1        |
| Passive gear     | 0-12m         | 159   | 360.1        | 18.5        | 165        | 230.4        | 15.7        |
| Polyvalent gear  | 12-24m        | 12  | 31.8         | 34.9        | 9          | 56.3         | 28.0        |
| <i>Total a)</i>  | <i>All a)</i> | <i>194</i>  | <i>483.1</i> | <i>22.8</i> | <i>245</i> | <i>408.5</i> | <i>10.8</i> |

a) Total consists of all segments including segments that are too small to report on.

### 5.2.2 Repair and maintenance cost

The total repair and maintenance costs were about 1.3 million euro in 2006. This is considerably larger than the repair and maintenance costs reported in 2005. The difference is mainly caused by a couple of vessels which reported exceptionally large repair and maintenance costs. These vessels were all in the segment 'passive gear 0-12m'.

| <b>Table 5.3</b> |               | <b>Total costs repair and maintenance (x 1,000 euro) and standard error of the mean (%)</b> |                |             |            |              |             |
|------------------|---------------|---|----------------|-------------|------------|--------------|-------------|
|                  |               | 2006  |                |             | 2005       |              |             |
|                  |               | N   | Cost           | S.E. mean   | N          | Cost         | S.E. mean   |
| Beam trawl       | 12-24m        | 10  | 86.3           | 73.9        | 15         | 32.5         | 65.7        |
| Passive gear     | 0-12m         | 159   | 553.9          | 22.0        | 165        | 227.8        | 16.7        |
| Polyvalent gear  | 12-24m        | 12  | 130.5          | 74.7        | 9          | 148.5        | 51.5        |
| <i>Total a)</i>  | <i>All a)</i> | <i>194</i>  | <i>1,333.9</i> | <i>34.5</i> | <i>245</i> | <i>479.2</i> | <i>14.1</i> |

a) Total consists of all segments including segments that are too small to report on.

### 5.2.3 Other operational and fixed costs

This year respondents were asked to specify both their fixed costs and their other operational costs. In 2005 these two costs were combined in the category other operational costs. It is therefore not surprising that the other operational costs are lower in 2006 (see table 5.4) In 2006 the total other operational costs were equal to 785,000 euro.

|                 |               | <b>Table 5.4 Total other operational costs (x 1,000 euro) and standard error of the mean (%)</b> |              |             |            |                |             |
|-----------------|---------------|--|--------------|-------------|------------|----------------|-------------|
|                 |               | 2006   |              |             | 2005       |                |             |
|                 |               | N  | Cost         | S.E. mean   | N          | Cost           | S.E. mean   |
| Beam trawl      | 12-24m        | 10   | 46.7         | 57.2        | 15         | 43.1           | 48.4        |
| Passive gear    | 0-12m         | 159  | 447.7        | 25.2        | 165        | 551.1          | 44.0        |
| Polyvalent gear | 12-24m        | 12   | 76.2         | 60.6        | 9          | 216.0          | 37.5        |
| <i>Total a)</i> | <i>All a)</i> | <i>194</i>   | <i>785.1</i> | <i>30.3</i> | <i>245</i> | <i>1,086.2</i> | <i>22.4</i> |

a) Total consists of all segments including segments that are too small to report on.

The total fixed costs were equal to 824,000 euro (table 5.3). Not many respondents answered the question regarding the fixed costs, probably because they were not known. The respondents who did answer this question, mentioned considerable costs. The estimated total fixed costs, then, are biased and could be higher than they should have been. Because of the low number of respondents, the standard error of the mean is high.

|                 |               | <b>Table 5.5 Total fixed costs (x 1,000 euro) and standard error of the mean (%)</b> |              |             |
|-----------------|---------------|--|--------------|-------------|
|                 |               | 2006   |              |             |
|                 |               | N  | Cost         | S.E. mean   |
| Beam trawl      | 12-24m        | 10   | 18.3         | 40.1        |
| Passive gear    | 0-12m         | 159  | 553.6        | 21.6        |
| Polyvalent gear | 12-24m        | 12   | 96.0         | 64.1        |
| <i>Total a)</i> | <i>All a)</i> | <i>194</i>   | <i>823.9</i> | <i>31.8</i> |

a) Total consists of all segments including segments that are too small to report on.



### 5.3 Crew cost and employment

Because the response on the question about crew costs was not sufficient, we could not estimate the total crew costs based on the reported averages. Instead the share of labor costs compared to the total income minus the fuel costs were calculated for those vessels that filled in all these questions. On average the share of labour costs was 42%, this percentage is comparable to shares found for the commercial large scale fleet. Based on the estimated share of labour costs and the reported annual income and fuel costs, the total crew cost could be estimated. The estimated total crew costs were equal to 3.8 million euro in 2006.

|                 |        | 2006 |         |           | 2005 |         |           |
|-----------------|--------|------|---------|-----------|------|---------|-----------|
|                 |        | N    | Cost    | S.E. mean | N    | Cost    | S.E. mean |
| Beam trawl      | 12-24m | 10   | 81.4    | 35.0      | 15   | 226.0   | 55.3      |
| Passive gear    | 0-12m  | 159  | 2,152.7 | 34.1      | 165  | 756.2   | 27.5      |
| Polyvalent gear | 12-24m | 12   | 328.9   | 45.5      | 9    | 1,080.0 | .         |
| Total a)        | All a) | 194  | 3,781.6 | 26.4      | 245  | 3,049.3 | 17.8      |

a) Total consists of all segments including segments that are too small to report on.

In 2006, 393 persons worked in the non-commercial small-scale fleet, either full or part time employed. This number is only slightly less than the number of persons employed in 2005. The number of estimated FTE, calculated based on the average number of sea days and the average number of crew on a vessel, was 127. The average number of FTE's in 2005 was much smaller, however the figures in 2005 were based on multiple choice answer regarding the number of trips and length of a trip. This year, respondents were asked to fill in open questions, thus the estimation of sea days and FTE is far more precise than in 2005.

|   |               | Total employment (in number of persons and FTE) |            |            |             |
|---|---------------|---|------------|------------|-------------|
|   |               | Persons   |            | FTE        |             |
|   |               | 2006  | 2005       | 2006       | 2005        |
| Beam trawl  | 12-24 meter   | 17  | 26         | 3          | 2.7         |
| Passive gear  | 0-12 meter    | 295   | 290        | 81         | 47.9        |
| Polyvalent gear   | 12-24 meter   | 30  | 27         | 11         | 7.5         |
| <i>Total a)</i>   | <i>All a)</i> | <i>393</i>                                      | <i>434</i> | <i>127</i> | <i>68.1</i> |
| a) Total consists of all segments including segments that are too small to report on. |               |   |            |            |             |

## 5.4 Total investment value

Finally, table 5.8 shows the total investment value of the vessels belonging to the non-commercial small-scale fleet. Because the characteristics (such as age, length and tonnage) between 'less active' 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 roughly 32 million euro. Most of the total investment value is present in the segment 'passive gear 0-12m' and the segment 'dredges over 40m'. The investment value of the fleet is higher than in 2005, mostly because in 2005 the segment 'dredges' was not included in the analysis.

| Table 5.8                  |            | Total investment value (x 1,000 euro) and standard error of the mean (%) |                |             |           |                |             |
|----------------------------|------------|--|----------------|-------------|-----------|----------------|-------------|
|                            |            | 2006   |                |             | 2005      |                |             |
|                            |            | N  | Value          | S.E. mean   | N         | Value          | S.E. mean   |
| Beam trawl                 | 12-24m     | 36   | 5,085.0        | 15.0        | 22        | 6,281.0        | 63.2        |
| Demersal trawls and seines | 0-12m      | 25   | 500.0          | .           | 19        | 1,314.3        | 41.4        |
| Pelagic trawls and seines  | 12-24m     | 11   | 715.0          | 53.8        | 16        | 1,701.3        | 56.1        |
| Dredges                    | 24-40m     | 18   | 1,440.0        | .           | .         | .              | .           |
|                            | >40m       | 19   | 11,875.0       | 44.0        | .         | .              | .           |
|                            |            | 24   | 11,219.7       |             | 23        |                |             |
| Passive gear               | 0-12m      | 3  | 7              | 15.3        | 0         | 7,399.3        | 24.1        |
| Polyvalent gear            | 12-24m     | 14   | 1,207.5        | 22.6        | 9         | 1,170.0        | .           |
|                            |            | <i>36</i>  | <i>32,042.</i> |             | <i>31</i> | <i>18,307.</i> |             |
| <i>Total</i>               | <i>all</i> | <i>6</i>   | <i>2</i>       | <i>84.6</i> | <i>7</i>  | <i>4</i>       | <i>27.0</i> |

## 6 Conclusions

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### *Survey and coverage*

To collect data about the non-commercial small-scale fleet in the Netherlands a survey was sent to all vessels, which according to the LEI definition, belong to this part of the fleet. In this survey, information was asked about the activity level of the vessels, fishing techniques and target species, and costs and revenues of the vessels per year. With the results of the survey, it is possible to estimate the total costs and revenues of the non-commercial small-scale fleet.

The response to the survey was adequate. On average about 37% of the so-called 'less active' vessels (according to the EU-classification) and 10% of the non-active vessels responded. However, the variance among vessels even within the same segment is large despite the relative high response rate of the survey. Consequently, the uncertainty about the total revenue and costs in this part of the fleet is also large. The activity level of the vessels differs considerably: most of the vessels hardly fish at all and naturally their revenue and costs are low. A small part of this fleet manages to fish with their vessel as their main profession; for these fishermen the revenue and costs are on average much higher.

### *Stratification based on activity level*

The non-commercial small-scale fleet consist of two completely different groups of vessels. One group is totally inactive. These vessels are mainly used to store quotas on. The other part is active in the sense that the vessel does go out to fish. These are the vessels that, according to the EU classification, are called less-active vessels. Extra attention was paid to the activity level of the vessels and LEI now has a fairly accurate overview of the activity level of the vessels in the non-commercial small-scale fleet. Only three segments, 'beam trawl 12-24m', 'passive gear 0-12m' and 'polyvalent gear 12-24m' have enough active vessels to report on, the other segments are so small that anonymity of the response cannot be guaranteed.

### *Representativity of the survey and sample size*

Part of the observed variation in revenue and cost structure within a segment can be diminished by taking into account the differences in fishing effort. However, the example of the revenues shows that the gain of calculating the cost and revenue per sea day is small. Consequently, the coverage of the population must be very high to attain sufficient statistical accuracy to meet the EC stan-

standards for this part of the fleet. For example, to attain precision levels of 12.5% for the total income, 60% of the population should be sampled.

|                               | Total value | Accuracy estimates |
|-------------------------------|-------------|--------------------|
| Revenue (million euro)        | 7.9         | -                  |
| Costs (million euro)          | 8.4         | -                  |
| - Fuel cost                   | 0.5         | -                  |
| - Labour costs (million euro) | 5.3         | -                  |
| - Repair and maintenance      | 1.2         | -                  |
| - Fixed costs                 | 0.7         | -                  |
| - Other operational costs     | 0.7         | -                  |
| Net Revenue                   | -0.5        | -                  |
| Total employment (FTE)        | 106         | +                  |

*Relative importance of the non-commercial small-scale fleet*

The total gross annual revenue of the non-commercial small-scale fleet was equal to 11.3 million euro in 2006. In this same year, the total gross annual revenue of the commercial large-scale fleet was equal to 381 million euro. The share of the gross annual revenue of the non-commercial small-scale fleet, then, was equal to 2.8%

The total costs in the non-commercial small-scale fleet were equal to 7.2 million euro. The total costs of the commercial large-scale fleet were equal to 287 million euro. Consequently, the share of the non-commercial small-scale fleet in the total costs is 2.5%. Comparing the total costs and the total revenue, it is clear that the non-commercial small-scale fleet made a slight profit in 2006. The total employment costs were equal to 3.8 million euro. This is about 52% of the total costs in this part of the fleet. The total labour costs in the commercial fleet were equal to 97 million euro. In the commercial fleet, the share of the labour costs in the total cost was only 34%.

The share of the total labour costs of the non-commercial fleet as compared to the entire fleet is equal to 5.5%. Note, however, that the question regarding the labour costs was answered by only 20% of the respondents and therefore had to be estimated using a different method. Consequently, the uncertainty surrounding the total labour costs is high.

Based on the figures above, it can be concluded that the economic importance of the non-commercial small-scale fleet is low compared to the commercial large-scale fleet. Also, most of the respondents (66%) indicated that fishing

with this vessel was not their main profession. Most of these respondents had other sources of income. This means the dependence of the people working in this segment of the fleet is also not very high.

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