

**REGIONAL SOCIO-ECONOMIC STUDIES ON  
EMPLOYMENT AND THE LEVEL OF DEPENDENCY ON  
FISHING**

**DGXIV EUROPEAN COMMISSION**

**METHODOLOGICAL GUIDELINES FOR REGIONAL  
STUDIES**

**Megapesca Lda./Centre for Agricultural Strategy  
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## **1 Introduction**

DGXIV (Fisheries) of the European Commission has commissioned 22 regional socio-economic studies on employment and the level of dependency on fishing in the European Union. The regional studies are executed through a total of 7 different services contracts, requiring a degree of coordination in the methodological approach to ensure comparability of results. DGXIV has therefore also commissioned a Coordination and Consolidation study to manage the methodology and collation of results, this role is undertaken by Megapesca Lda. of Portugal and the Centre for Agricultural Strategy (Reading University UK)

This paper therefore proposes a detailed approach to the methodology for the studies. The guidelines were developed from the technical proposal submitted by Megapesca Lda, and the discussions held between the participants and DGXIV at an inception meeting in Brussels on 14<sup>th</sup>.December 1998. As far as possible the guidelines take into account the technical approaches proposed by the participants in their tenders to DGXIV.

The guidelines are intended to establish the outline methodologies to be applied by each of the regional studies, but are not intended to be definitive instructions, since each study area will differ in terms of data availability and compatibility, and in the nature of its fishery dependency.

Please also note that the guidelines now follow the proposed structure of the interim report and final report, more details of which are given in Section 4 and Annex 1. The guidelines also include relevant data tables designed to assist in the identification and collation of data for each task.

The indicators to be measured are listed in the project's Terms of Reference (ToRs). However, the Coordination/consolidation study also has the task of developing further indicators and analysis. This paper also provides detailed suggestions for the development of such indicators, to provide greater understanding in depth of fisheries dependency in selected representative areas.

The document provides guidelines in the form of checklists, discussion sections, blank data tables and examples where appropriate. Key references relating to the development of methodology are reviewed in Annex 2. In addition two key references, considered by the consultants to be of great use to the regional studies recommended for further reading. These have already been distributed to participants.

## **2 Overall Structure and Approach**

### **2.1 Overview of tasks**

There are four main tasks described in the Tors. These are summarised in the Table below.

Summary of tasks and NUTS level expected

	<b>Task 1</b>	<b>Task 2</b>		<b>Task 3</b>	<b>Task 4</b>
Description of task	Overview	Dependency indicators for comparison	Case studies	Trends	Policy Evaluation
No. of areas	All	Main dependent	Few		All
NUTS Level	3 or, where data not avail. for inland aquaculture, 2	4 or 5	4 or 5	3, and 4 or 5	All

The first task requires a broad description of fishing and related activities in each region and will be undertaken at NUTS 3 level to collect detailed information on a broad scale.

The second task involves the calculation of dependency indicators and will be undertaken, where possible, at NUTS level 4 or 5 (the lowest for which data are available) for a selected number of inland and coastal areas identified as relevant for fisheries dependency. Some of these will be the same as in the 1991 study. This task also involves case studies which will look in greater detail at the economic linkages of the fishing industry, and also provide information to help interpretation of the indicators. These case studies will involve two or three of these selected areas, chosen to illustrate a different types of fishing dependent areas, in terms of size, types of fishery, extent of processing etc.

The third task examines the development of the industry since the last study, by comparing indicators and following trends. The regional level at which this task is performed will depend upon the data and indicators from the 1991 study. If the indicators in the previous study were calculated for NUTS levels other than 4 or 5, then these indicators will need to be re-calculated for the 1996/7 data for proper comparison.

The fourth task examines the socioeconomic measures already in place in these regions, and proposals for improving these measures, and will use data from all the other tasks to make recommendations.

## **2.2 General notes on data and data collection**

### **2.2.1 Collection of basic data**

Blank tables have been devised (see Annex 3) to help us compile comparable data sets for all the regions. We will supply blank tables (in Excel for) completion.

These tables are divided into three sets.

- The first set is designed to collect the data required for task 1, and needs to be collected at a NUTS 3 level.
- The second set is for the calculation of dependency indicators and will, ideally be collected at NUTS 4 or NUTS 5 level.

- The third set are for the case studies, and thus the data will only be required for the chosen case study areas, and this will enable greater detail to be collected for example for input cost structure of different processing types.

Annual data will make task 3 easier, and we suggest collecting these for a number of the tables i.e. total landings (value & tonnage) by region, and also all employment and population data. Every effort has been made to ensure these tables are as comprehensive as possible, but it may well be that further data requirements become obvious further down the line, in which case, additional blank tables will be sent round.

### ***2.2.2 Regional Disaggregation***

It was agreed at the Brussels meeting that, in general, for regional disaggregation, NUTS level 3 is the minimum required. However, data are available in many of the regions at NUTS 4 and NUTS 5 level. For example in the UK, a lot of the MAFF fishery statistics are by port or by district (e.g. for employment). Although this will be necessary for the case studies and hopefully available for the calculation of the main dependency indicators, we would ask you to fill in the first set of tables as far as possible at NUTS 3 level to provide a comparable data base.

The example tables here give the NUTS 3 regions for Ireland, but we will send a list of each participants' NUTS 3 regions to avoid any confusion. However, even if the data are available at this level of disaggregation, a lot of it will not be simple off-the shelf statistics – it will need to be hunted out from national sources and that will take time. A major constraint will be what was done before since, at least for the third task, consultants should ensure that there will be the comparison to reveal the trends

### ***2.2.3 Consistency of Definitions***

The data and analysis must have consistency of definitions across countries to enable its interpretation by the Coordination Study. Under each data table, the following information would therefore be appreciated:

- Source of information by organisation and method of collection
- The lowest regional division of data available
- The years for which the data is available, noting changes in methodology from one year to the next.

It would also be useful to follow the classifications that have been suggested in the tables, but where this is not possible, the participants will have to use whatever is available. The PRODCOM classification (six-figure) is one that has been used previously for a Europe-wide study on the fish processing industries. More details of this is given in Annex 6, and we propose its use wherever feasible. However, there may be some regions where this is not possible.

### **2.2.4 Choice of target reference year**

Regional studies have been requested to supply details of data availability for the different years. On the basis of the information received, the following suggestion for target reference years is made.

- The target reference year of 1997 for all tasks for the following countries (total 12 study regions):

- Belgium and Luxembourg
- France
- Italy
- Ireland
- Finland
- Denmark
- Netherlands

- Target reference year of 1996 for all tasks for the following countries (10 study regions):

- Germany and Austria
- Spain
- Greece
- Portugal
- UK
- Sweden

In these 1996 target year countries, it is also proposed that as far as is possible, the data for task 1 should also be provided for 1997. This will provide the Commission with as much data as possible for inter-state comparisons on the common year of 1997. This also applies to task 4; socio-economic measures of Regulation 3699/93 (Article 14 bis) were not introduced until the end of 1995 and their implementation is recent; in addition job potential must be appreciated on a recent basis.

### **2.2.5 Case Studies**

The secondary data on dependency rations is also expected to be supported by case studies of selected areas. These areas may be defined by the travel-to-work-areas (TTWA) of fishery dependent areas, by regions in which there are a number of fishery dependent areas, or by individual fishing ports themselves. Selection of the area for study will be driven by the nature of dependency in each case. These studies will not involve full formal surveys, but rather a combination of:

- in-depth quantitative study of employment multipliers using input/output analysis
- qualitative rapid appraisals (as in rapid rural appraisal techniques in the agricultural context).

This work will facilitate interpretation and is necessary for sociological analysis. These might be completed in perhaps two weeks per study.

### **3 Relevant literature on methodology**

We would draw the attention of the Regional Studies to a number of key previous research studies in this field, all of which we have reviewed as part of the development of the methodological guidelines. We attach in Annex 2 a brief summary of the most important papers, and have distributed copies of those which we consider to be essential reading.

### **4 Task 1 Brief analysis of fishing (and related activities)**

Task 1 calls for quite a lot of detail to meet the requirements of the list in section 3.4 of the ToRs. This should provide a description of what is involved in ‘fishing’ in the region concerned – what are the local activities and what are national. The local activities should be at NUTS 3 and below, except for inland aquaculture where NUTS 2 will be acceptable should NUTS 3 be unavailable. Below is a check list of data required, but the descriptions should be as detailed as possible. Blank data tables are included as Annex 3, and these should be followed as far as possible to give maximum comparability between regions. These will form the basis of the database

#### **4.1 Structure of Coastal Fisheries**

Key data to establish are:

- Fleet structure: number, power, tonnage, size, capital, legal status See tables 1-4
- Production: fishing methods and gear, landings by quantities and value, seasonality, input structure and sales. See tables 5-7
- Processing: type, business turnover and volumes, input structure, dependency on local catches, destination of produce. See tables 8-10
- On-shore infrastructure/marketing and related activities: Management and upkeep of port facilities, handling, storage, distribution, major distant markets. vessel services, vessel construction, upkeep and repair
- Employment: by gender, part-time/full-time, age, seasonality, variability by region, including time series to show evolution. See tables 11-15
- Coastal Aquaculture: production, types of enterprises, profile of operators and employment. See tables 16 & 17

The extent to which there are linkages within the region, in particular, the importance of processing locally or elsewhere and landings outside the home regions needs to be noted. If landings are outside the home regions, the local multiplier effects of fishing will be quite small but a wider geographical coverage would result in larger values. For example a study of Scotland's Highlands and Islands found highest multipliers in the Shetland Islands, where most of locally caught fish was also processed locally. Processing and landing may even be

in different countries. On the other hand, also note that fishing related activities are not always dependent on a local catching industry (as in the case of Fleetwood in England).

In two countries, Spain and Portugal, distant water fishing (DWF) in non-EU waters provides a significant source of income and employment. Where this is conducted under third country fishing agreements, we propose that this should be included (and noted in Table 1) in the description of the fleet structure and landings (eg. in terms of proportions of fish landed in home and foreign ports). However such vessels need to be distinguished from those fishing in international waters or under direct licensing agreements with third countries, since such vessels are not subject to the CFP.

## **4.2 Structure of Inland Fisheries**

This should cover:

- Capture fisheries: production, types of enterprises, profile of operators and employment. See table 18
- Aquaculture: production, types of enterprises, profile of operators and employment See table 19

## **4.3 Compliance with Community Directives**

Also there is a need for information on compliance with community directives on some key health, environmental and safety issues as specified below.

- Health and Hygiene

Animal health conditions governing the placing on the market of aquaculture animals and products.

Directive 91/67/EEC of 28 January 1991  
OJ L 046 19/02/1991

Council Directive laying down the health conditions for the production and placing on the market of live bivalve molluscs

Directive 91/492/EEC of 15 July 1991  
OJ L 268/1 24/09/1991

Council Directive laying down health conditions for the production and placing on the market of fishery products

Directive 91/493/EEC of 22 July 1991  
OJ L 268/15 24/09/1991

Council Directive laying down the minimum hygiene rules applicable to fishery products caught on board certain vessels

Directive 92/48/EEC of 16 June 1992

OJ L 187/41 07/07/92

- Safety at sea

Council recommendation on the ratification of the International Convention of Torremolinos for the safety of fishing vessels, 1977

Recommendation of 23 September 1980

OJ L 259 02/10/1980

Council Directive concerning Minimum safety and health requirements for work on board fishing vessels

Directive 93/103/CE

OJ L 307 13/12/1993

Council Directive concerning setting up a harmonised safety regime for the fishing boats 24m in length and over

Directive 97/70/CE

OJ L34/1 9/2/1998

#### **4.4 Brief review of the industry strength and weaknesses**

There is a requirement for identification of industry's strengths and weaknesses. This can be done under the following headings.

- Resources and fisheries management
- Catching sector
- Processing
- Markets

## **5 Task 2 Quantifying, describing and examining the level of dependency of each area on fishing**

### **5.1 Introduction**

The consolidation study has the role of developing meaningful indicators of dependency. The tender document suggests a number of ratios as indicators of dependency, and some of these ratios were calculated in the previous studies. Three indicators to be measured are listed below.

### **5.2 Economic Indicators of Dependency**

#### **5.2.1 Pre-selection of NUTS 4/5 areas for indicators of dependency**

Areas expected to be the most 'fishing dependent' will have to be pre-selected at this point as it will not be possible to examine all NUTS 4/5 regions. These may mirror those chosen for the 1991 study, or chosen using expert local knowledge. Differences from 1991 will

have to be justified.

### **5.2.2 *Ratio no. 1 Share of value added***

This ratio represents the share of fishing in the value added of the area, (and where appropriate, the share of value added attributable to joint ventures operating under the fisheries agreement.

### **5.2.3 *Ratio no. 2 Social employment indicators***

These include population, unemployment rate, employment in various segments of the industry, by age, gender, full-time and part-time, FTE, where employment will be shown in absolute values and also as a percentage of total employment. The ratio required for the indicator here is to represent the employment in fisheries divided by total employment.

### **5.2.4 *Ratio no. 3 CFP dependency indicator***

This indicator represents the share of catches subject to TACs in total catch, and will show the level of dependency on the CFP.

Macro-economic data needed for these ratios:

- national and regional employment data for all fishery related sectors (ft/pt)
- value added for region as a whole and separately for all the fishery related sectors
- total allowable catch (TAC) for ratio
- local labour market data ie employment, unemployment, pluriactivity, age structure, gender, full-time/part-time. This to be collected as time series where possible, to illustrate the evolution of the population and demographic structure.

Tables 20-23 are designed to assist the sourcing and presentation of data for this part of Task 2.

## **5.3 Detailed case studies of dependency**

The indicators described above quantitative, do not always demonstrate the full importance of the fishing sector in regional economies. Specifically, these fail to account for the full economic contribution since they tend to measure only rather direct contributions to regional employment and value added. Therefore, in each region we propose that a number of 'local areas' are selected for more in depth study. This will comprise a combination of

- the development of multipliers and employment effects of fisheries
- development of qualitative case materials based on rapid appraisal techniques

### **5.3.1 *Pre-selection of local areas for detailed case study***

We envisage this being undertaken for two or three local areas within each participant's region, chosen to illustrate the different nature and extent of fishing dependency that exists.

### **BOX 1 An example of different types of fishery dependency in Portugal**

*Several of the main fishing ports for example Peniche have high numbers of people employed in the fish processing industries. However, a significant proportion of this fish is imported, implying a lower dependency on local fish landings.*

*On the other hand, many of the small fishing villages have processing industries which rely almost entirely on local fish landings. One of each type will be selected for in-depth study.*

### **5.3.2 Development of multipliers based on input-output methods**

The development of employment multipliers will take into account second round effects through the calculation of regional income and employment multipliers as in standard input-output analyses, as in the UK example shown in box 2.

#### **BOX 2**

*In the UK, as an indication of the relative magnitude of these second round backward linkage effects in Scarborough the 1993 EU study found 225 fishermen employed, 75 employed in processing and 63 in other jobs. However, local estimates put these other jobs at more than 250. These other jobs include harbour administration, merchanting supplies, repair and servicing, boxes. General services like transport may also be significant. A recent additional study (SFIA) estimated national multipliers at around 2 – 2.5 for fishing and 2 for fish processing. So the Scarborough estimates above seem to be of around the right magnitude. Similar multipliers were calculated for the Highlands and Islands studies.*

The method proposed by the Coordination study is based on the Generation of Regional Input-output Tables (GRIT) technique, first devised by Jensen and used in Scotland by Johns & Leat (1987) in a study of Grampian Agriculture. A copy of this paper will be distributed by Megapesca. It involves the mechanical adjustment of national input output tables with employment data, and then the use of any 'superior' data where available in relevant branches. From this regional input-output table, employment and income multipliers will be calculated.

Backward multipliers are the usual ones calculated, to show the impact of a change in the industry of concern on other industries upstream, but it is also possible to calculate forward multipliers, which will show the impact on downstream industries. One difficulty which may arise with these, however, will be the substitution of fish inputs with imports. So it will be necessary to look at current and potential importation rate for the processing industries.

The basic steps to follow are detailed below. Technical details of the methodology are

described in Annex 3.

- Obtain the most recent input-output table available, preferably on disk.
- Disaggregate the fisheries sector if it is combined with agriculture & forestry. To do this, it will be necessary to obtain values of total output for sectors involved for the year of the table, details on the input structure of the sectors and also on the destination of output. Further guidance will be given on this if requested.
- Create technical coefficients for forward and backward multipliers. This is done by dividing intermediate inputs by the column totals to create a matrix for calculation of backward multipliers, and by row totals to create a matrix for calculation of forward multipliers.
- These tables are then adjusted using simple location quotients (SLQ) to better represent the regions. These are the ratio of employment in the region in a particular industrial sector with that nationally i.e

$$SLQ = \frac{E_j^r / E_t^r}{E_j^n / E_t^n}$$

where E stands for employment, j is the purchasing industry, t is the total of the industries, r represents the region, and n the nation. If the SLQ for a particular industry is greater than one, then the coefficients for that industry will remain the same. If the SLQ is less than one, the coefficients will be multiplied by the SLQ.

- The next step involves adjusting the regional tables with any extra data that may be available, ie the average regional input and output structure (to see if it differs from the national balance) and more vital, how much of the input is derived and how much of the output is processed within the region. This may be obtained from previous studies (e.g. Tzamarias, Revell & Marketou 1996 for Scotland, as described above) or from local knowledge and estimates. Another possibility would be account analysis of the fishing industry. One study did this using accounts of the boats handed into the fishing board.
- Direct employment coefficients must be calculated to represent the average number of full-time equivalent (FTE) to produce one unit of output in value for each industrial sector and then these can be used to calculate employment multipliers (see Annex 3).
- Direct income coefficients must be calculated to represent the average amount of income generated by the production of one unit of output. For this, regional value added for each industrial sector is required. The income multipliers can be calculated in a similar fashion to the employment multipliers.

As an illustration of the industrial sectors with which fishing has economic linkages, the fishing branches of the UK 1990 input-output table are shown in Box 3 below.

**Box 3: Section from the 1990 Input-Output for Fisheries - UK (£million)**

Purchasing industries→

Selling industries

↓	F	SM	FP	B	C	M	SD	H	ST
Fishing	19	1	196	13	3	8	4	11	16
Coke, Min Oil	16								
Ship building	32								
Instr. Eng	5								
An. Feeds	35	(←fish farming included within this fishing definition)							
Misc. Foods	2								
Jute, Yarn etc	12								
Wholesale	14								
Hotels	1								
Sea Transport	1								
Trans. Serv.	6								
Insurance	16								
Real Estate	2								
Sanitary Serv.	13								
Health Serv	3								
Personal Serv.	12								
Total intern	198								
Total	552								

Where F	Fishing
SM	Slaughtering & Meat Processing
FP	Fruit, Veg & Fish Processing
B	Bread, Biscuit confectionery
C	Confectionery
M	Miscellaneous
SD	Soft Drinks
H	Hotels & Catering
ST	Sea Transport

Macro economic data required for this exercise are:

- Most recent national input-output tables. The Standard Industrial Classification used will be very important. In particular, we need to ensure that the fishing industry is

categorised separately, and better still divided into sea fishing and aquaculture, and maybe further? Also is fish processing separate?

- Regional employment data to fit industrial classification as used in input-output table. It would also be useful to have income and output data for each industrial category if possible. Information on the smallest territorial unit for which it would be available.
- Fishing accounting information (from actual accounts which may be available from fishing boards, or from survey) of incomes, inputs and outputs (local value added for each).
- Value of fish imported for processing both nationally and regionally (to gauge how accurate forward multipliers would be).
- Also information from fish processing (and possible other sectors of particular interest) on incomes, sales and purchases, either from accounts or survey.

See tables 24-28, where the data requirements are specified.

#### *5.3.2.1 Some Issues in the Use of Multipliers*

A useful discussion of the estimation of employment multipliers in fisheries is provided by J.Gibbs in the paper "The UK Multiplier values for the fishing and fish processing industries; an input/output analysis". A copy of this has been distributed by Megapesca Lda.

It is important to ensure that all fishing activities are covered, not just the larger scale operations in major ports. The smaller inshore boats can provide a disproportionate amount of employment compared to the more capital intensive bigger vessel operations. This was indicated by the employment calculations for the Scarborough study, although the smaller boats tended to be discounted in much official thinking, and in much published data. They provided employment in the smaller and vulnerable fishing communities with few alternative employment opportunities. The loss of employment in fishing in these communities compromises their very existence since their ability to support a full range of services is reduced. Smaller boats also provided a rather important training function. It might be argued that the smaller boats are more ecologically sound. Small boats may also be part-time operators – potting boats may also run angling trips for tourists in the summer season, or other seasonal businesses. Each study will therefore need to establish a factor for the numbers of small boats that may not be included in the official statistics.

We also need to consider the importance of ranking multipliers with absolute values i.e. find some kind of index which represents not only the multiplier but also the actual size of the fishing industry itself, or just calculate the approximate amount of income and employment "dependent" on fishing. Otherwise, a large multiplier, indicating a first glance a heavy 'dependency' on fishing may only represent a very small number of people.

Another issue relates to the amount of unemployment in an area and how realistic the multipliers are in areas with low unemployment. This will no doubt depend on the type of employment and how interchangeable jobs are but we are also considering devising some formula to 'downgrade' the multipliers in such areas.

### 5.3.2.2 *Qualitative development of case studies using rapid appraisal*

Multipliers will vary regionally depending upon technology – whether small or big boats predominate for example - and also depending on the extent to which processing is carried out in same region. It is important, therefore to collect background information to help interpretation.

In each region we propose the development of a number of case examples on a number of key fishery dependent areas. These areas should be selected so that they cover the range of different types of fishing dependent areas, particularly defined in terms of size, but maybe also in other key characteristics (type of fishery, extent of processing etc).

The case examples should cover issues discussed in the following paragraphs. We propose the use of Rapid Appraisal techniques to identify the issues and gather local data. An overview of the technique is provided in Annex 4.

For the interviews, it will be necessary to identify key informants which are likely to include:

- Fishery workers
- Representatives of fishermen's organisations
- Business operators
- Traders in fish and fishery-related goods
- Suppliers of other goods and services to the community

Local measures of dependency do not tell the whole story because of linkages outside the region - landings outside the home regions (which can be the majority) mean local multiplier effects of fishing can be quite small but a wider geographical coverage would result in larger values. On the other hand, local fishing related activities may not be dependent on a local catching industry. In fact, the issue of need for local landed supply is an important one in this project, and for each area it is necessary to establish:

- the percentage of local fleet landings that take place in the locality
- the degree to which imports may be able to substitute for local landings, which will be affected not only by the price, but also by quality and marketing considerations.

The calculation of aggregate indicators of dependency can also overlook very important seasonal variations. A lot of fishing ports are in tourist areas with very pronounced seasonal employment and income patterns. An annual calculation masks the true importance of fishing in the off-season. Incidentally, although it is hard to measure, a further important contribution of fishing industries is as a tourist attraction in their own right. This is certainly recognised by many town and regional councils. The linkages between fishing and tourism thus need to be explored, albeit in a qualitative manner.

The fishing industry also has positive external effects on the food industry in general – development of skilled labour reserve, infrastructure, product development and marketing skills etc. Also has positive effects on provision of general port facilities in some cases

(although in others the fishermen can be regarded as a financial nuisance – e.g. negative externalities on tourist development, marina development, freight shipping).

The capital structure of local fishing fleets is likely to affect the impact of changes in fishing policy. Artisanal fishery with large numbers of small vessels, although involving a greater number of people, may, on the other hand, be able to continue for longer with lower returns than industrial fishery with small numbers of large vessels often funded by loans. This is especially likely where alternative employment is available. Also, where vessels have been owned over a long period and been paid off, the owners will be more flexible. The industrial fishing although employing fewer people, is likely to be more sensitive to management changes (numbers of days at sea and changes in total revenue), and also have a greater impact upstream and downstream on vessel withdrawal.

Other issues to consider are;

- Self-consumption of fish
- Family composition and number of dependents
- Ethnic enclaves – measures of separateness of fishers and land-based host society
- Age profile and links with educational level to identify likely employability of redundant fishers.

## **6 Task 3 Examination of the development of the industry**

This will refer to the results of the earlier DGXIV studies for the particular region concerned and compare the current position to provide explanation of apparent trends. Annual data where available will help interpret changes since 1991. Comparability with the 1991 indicators will be of key importance. In addition trends in the global evolution of the sector and of each sub-sector should be considered. The results will need to be evaluated and discussed.

## **7 Task 4 Examination of existing socioeconomic measures; proposals for improving them and forward study of trends**

### **7.1 Specification**

Task 4 requires regional studies to:

- Examine the degree of implementation of the socioeconomic measures
- Examine the attitude of those involved in the sector, proposals for improving the measures
- Assessment and description of potential for creating new jobs, possibilities for conversion and deployment towards new activities outside the industry; identification of populations affected by job losses, conversion to alternative forms of employment and creation of new activities.

The work is expected to fall into the following stages.

## **7.2 Identify and define of support measure**

The first stage is to identify and define the support programmes. Support measures need to be considered which are both:

- Focused specifically on fisheries dependency and alleviation of the effects of the CFP
- General programmes, accessible to fisheries amongst other sectors

Focus should be placed on social support measures, but commercial support, example for diversification of activities in fishery dependent areas should clearly be included. In many cases support for investment in fish processing and aquaculture have been included, and in such cases their effectiveness in job creation should be assessed.

Possible source of information on existence and nature of programmes, and the method of local delivery may be:

- Fisheries administrations
- Employment offices/administrative centres
- European Delegation to the Member State
- Fishermens organisations
- Local employment and business development centres

A good source of information on assistance delivered to specific member states under the FIFG and the PESCA programmes (1994 to 1999) can be found on the following web site:

<http://europa.eu.int/comm/dg14/ifop/XXYY.htm>

where XX is the country (fi, es, pt, uk, de, gr, it, fr, be, nl) and YY is the language (en for English, fr for French). It appears that there is no site for Ireland, Sweden or Denmark, but please check with common acronyms.

Some examples which should be specifically investigated are;

## **7.3 Article 14b of FIFG**

Clearly a main source of support to fishery sector will be under Article 14b of the FIFG consolidated regulation:

- aid to encourage early retirement of fishermen provided the beneficiary has been a fisherman for at least 10 years and is over 55 years old.
- one off allowance up to 7,000ecu to fishermen who have lost their job on a boat that subject to permanent withdrawal of fishing activities or to permanent transfer to a third country in the context of the establishment of a joint enterprise.

These measures are not implemented in all countries. The retirement support was implemented only in Denmark, Spain and Netherlands (and then only to a limited extent). Withdrawal support was only implemented in Portugal. These measures will require investigation in these countries.

#### **7.4 Pesca funded measures**

The Community Initiative is aimed at helping the industry restructure and to diversify, and to cope with the social and economic consequences of decline through aid for redeployment of the workforce and creation of new enterprises.

#### **7.5 Structural Fund Assistance**

Also bear in mind that some regions will have qualified for general assistance under EU Regional Policy which coordinates three structural funds: the regional development fund (FEDER), the social fund (ESF), and the agricultural guidance and guarantee fund (EAGGF). For the period we are studying these were used to satisfy five Objectives at European level. Three of these were only for specifically defined regions:

- Objective 1 - for regions lagging economically (GDP less than 75% of the EU average)
- Objective 2 - conversion of regions in industrial decline
- Objective 5b - promoting the development of rural area

while three were horizontal measures and apply throughout the community;

- Objective 3 - combating long term unemployment
- Objective 4 - increasing youth employment
- Objective 5a - adjustment of agricultural structures.

Of these, Objective 1 was given priority and the majority of the resources.

The structural funds work on the principles of partnership (between local/regional/national and Community level) for programming and implementation, and additionality of funding including financial participation at regional/national and Community level.

It will be necessary to identify which, if any, of the fishery dependent areas in each study region fall within any of the specially defined regions, and of so what measures have been directed, or available to, the sector.

#### **7.6 National programmes**

Consider also that support measures may have been delivered through national programmes which do not involve Community co-financing. Such programmes should be identified on an *ad hoc* basis.

## **7.7 Identify target beneficiaries and means of delivery/administration**

Agencies involved in programme implementation should be contacted. In many cases information material has been printed and distributed which will describe the target populations (beneficiaries) and the qualification criteria which will be applied.

Meetings may be held with officials involved in administering programmes. Examples may be Pesca coordinators, Producer Organisation Officials. Some examples of issues to explore are:

## **7.8 Assess impact of each measure**

The impact of the socio economic measures should be assessed in terms of :

- Budget
- Commitment/disbursement
- No of Jobs maintained
- No of Jobs created
- No of fishermen supported to leave profession
- No of fishermen trained in different activities
- No of experiments aided
- No of studies aided; and outcome

Views of the participants in the effectiveness of the measures need to be sought, along with the positive and negative features in design and delivery.

The impact of the measures needs to be set in the context of the changes in the structure of employment in different segments of the fisheries sector eg. fishing, processing and aquaculture and I different fishing activities.

Importantly, support measures which focus on assisted diversification of economic activity need to have their impact assessed in the context of a realistic view of the potential for such diversification. Particular issues to consider are the focus on tourism-fisheries links, availability of supplies and markets for fish processing, and markets for aquaculture products.

## **7.9 Define problems**

Problems may arise in two areas. Measures maybe invalid in that even if they are effectively executed, they will not provide the necessary support to those who need it. Alternatively, valid programmes may fail because of ineffective delivery and execution. Each type of problem should be addressed separately, since they require a different policy response.

## **7.10 Appropriateness of the measure to solve the problems**

Were the right beneficiaries targeted? This is an issue to be considered particularly in the

context of gender and employment in fisheries.

Were the measures selected appropriate for the needs of the beneficiaries?

Were the amounts adequate

Did the allocation to different regions/ groups reflect the pattern of needs.

### **7.11 Effectiveness of delivery**

How relevant were the criteria used to decide of support should be allocated

Was there easy access to the measure (bureaucratic procedures, cost of access, complexity applications and forms, numbers of offices/visits required)

What information was provided about the support measure; was this timely, and was it properly targeted

Was support delivered in the appropriate time after the application, or was it too late (in relation to the needs it was to satisfy).

What was the rate of uptake of the measure in terms of:

- Disbursement (percentage of funds disbursed)
- Satisfaction of the needs of beneficiaries (eg. percentage of unemployed fishermen placed in new jobs)

### **7.12 Use of case histories**

We would encourage the use of case histories to illustrate selected particular points and experiences in the delivery of support measures. These need only be a few lines long.

### **7.13 Quantitative surveys**

In countries where there is a clearly identified body of individuals involved in delivery of support measures (eg. Producer Organisations, or Pesca coordinators), the use of semi-structured survey of opinions could be considered. This may yield some useful quantitative data on programme management.

### **7.14 Suggestions for improved socioeconomic support measures**

This part of Task 4 should focus on the opportunities for the creation of new jobs in fisheries dependent areas, both in general terms within the study region, and in those particular areas where dependency and quota ratios indicate a high degree of sensitivity to changes in landings. This will require a broader economic appreciation of the issues, and regional SWOT analysis will provide strong background for this. A brief local SWOT analysis may also prove to be a useful tool to identify where some of the new jobs may be created.

The analysis should consider:

- Potential sectors for creating new job opportunities
- Opportunities for multiple-activities (eg. where fishing becomes more of a marginal activity supplemented by other income generation activities).

- Target populations who would most need assistance in exploiting new job opportunities, bearing in mind age profile, extent of full-time or part-time work, and gender.

Particular areas for diversification may be based on existing affinities and trends, such as in conversion from fishing to aquaculture, or from fishing to tourism. Improvements to existing measures, or new measures may be suggested, to better meet the economic diversification needs of fisheries dependent areas. Issues to consider in the types of measure, their beneficiaries and methods of delivery may include:

- Age, gender, activity and location of fisheries dependent groups as potential beneficiaries
- Information targeting methods and communication of availability of support measures to groups they are designed to assist
- Accessibility of support measures to ensure that the extent, nature and content of the measures, as well as their administrative characteristics (location, entry qualifications, and procedures) are effectively targeted so as not exclude principal beneficiary groups

## **ANNEX 1: REVIEW OF PREVIOUS STUDIES – LITERATURE REVIEW**

Regional studies will obviously need to review the previous EU studies, but there is also a need for comprehensive review of other sources. The most relevant studies that we have come across are;

1) "A Study of the social and economic impact of investment in the fisheries of the Highlands and Islands".(1972). As part of this study commissioned by the Highlands and Islands Development Board, an economic multiplier study was done by Michael Greig, Stirling University. Using the detailed accounts that the boats are required to hand in to the fishing board, he used data on incomes, expenditure and sales (adjusted to indicate local value added) within a Keynesian type multiplier model to give income and employment multipliers for the region and sub-regions and also boatbuilding and processing ( for which he obtained survey data). It might be possible to follow a model of this sort, although results depend heavily on estimation of unknowns e.g.: average propensities to consume, to save, to import and the model does not have the comprehensive coverage of input-output analysis.

2) "UK Multiplier Values of the Fishing industry" Sea Fish Industry Authority (1990)  
JL Gibbs

This paper shows completely straightforward calculations of fish catching and fish processing output, employment and income multipliers from the national input-output table. It is useful as an illustration of the basic methodology for those that are not familiar with input-output analysis, and also the multipliers provide a basis for comparison. However, it is not helpful as far as developing a method for regional analysis.

3) *Economic Efficiency of CFP and Social Objectives in Social Areas: A comparative study in Greece and Scotland (1996)*

*Regional Analysis of Employment in Greek Fisheries Sector: Selection and Socio-economic profiles of the study areas*

*Regional Analysis of Employment in the Scottish Fisheries Sector (1981-1991). Selection and Socio-Economic Profiles of Study Areas.*

These studies are the first part in the overall study, and at this stage trying to isolate areas dependent on the fishing industry for a socio-economic survey. They do this using location quotients (which show the fishing industries' share of regional employment compared to that nationally) calculated for 1981 and 1991. These illustrate areas, not only where the quotients are much greater than 1 (showing regions where a greater proportion of the employed are employed in the fishing industry than is the case nationally) but also where the quotients have changed from less than 1 to greater than 1 i.e. where regions have become more 'dependent' on the fishing industry. They also estimate 'export employment' - where if the regions employment in fishing is greater than that nationally, this fraction is multiplied by the regional employment. Ratios of export employment to actual employment give a measure of the dependency of the region on inter-regional exports of the product in question. This work is interesting in its varied use of the location quotients and is undertaken at NUTS 3 level in Greece, and NUTS 4 level in Scotland. Also, the interview work, which, at the stage this report was written, had not yet been undertaken, should provide some detailed

information about the fishing industries in Greece and Scotland on input structures, vessels, marketing, wages, and pluriactivity.

*4) The Shetland Fishing Industry: its impact on local economic activity - I H McNicoll Marit.pol.mgmt, 1982 vol 9, no 4, 259-272*

This paper analyses the contribution of the fishing industry (catching and processing) to economic activity in the Shetland Islands. National input-output tables were already prepared for the Shetlands, so methodology is completely standard. Again, this will provide a useful guide for comparison of multipliers.

*5) Employment Impact Assessment in the Fishing Industries of the UK, Portugal and Denmark*

*European Commission DGXIV - Project 94/62 - Final Report COWI in association with Fisheries Development Ltd, and Megapesca Lda.* Three input-output models are created for regions in the UK, Portugal and Denmark to explain changes in the local employment situation from changes in fish landings. These are regional models which also show the flows of goods from the 'region' in which we are interested, to the rest of the nation (and thus sum up to the national tables). Regional output data was collected from official sources where possible, but for the fish catching and fish processing industries, a survey was undertaken to get detailed information on inputs and outputs, and how much was locally bought and sold. The local economy models then underwent a mechanical optimisation process to ensure consistency. The models differ from the standard input-output models in that they are supply (as oppose to demand) driven. Usually, the multipliers are calculated to represent how a unit change in final demand will impact on the total output. However, for this situation, they were interested in changes in fish supply and its impact on employment, thus a supply-driven model is more suitable.

The objective of this study differs from our project in that we are looking for indicators of dependence, i.e. numbers that we can rank and apply in lots of different circumstances, whereas they were looking specifically for changes in employment related to local fish landings. This means they are not calculating multipliers, but putting in possible landing scenarios (i.e. quota cut of 50%) and then analysing the employment change. It would be far too time-consuming to repeat this modelling exercise for all the different regions in our project. However, the models should prove very useful in providing data, data and methodological sources, and multipliers for comparison.

*6) Evaluating socio-economic impact of EEC fishery policy using a social accounting matrices approach - G Cella, V Placenti & M Spanolo. IREPA, in " Comparison et Harmonisation des Methodoloies d'Analyse des Effets Economiques Induits par la Peche" Actes de l'Atelier de travail, Rennes 30 November 1995*

A 'quasi' Social Accounting Matrix has been developed to estimate the indirect impacts on income and employment of changes in gross output of the fishing industry for five Italian administrative regions (NUTS 2). The methodology is that of input-output with the inclusion of data on the generation and distribution of incomes so that the impact of changes in household expenditure can be estimated. Regional input-output models exist for Italy, but

the level of industrial classification is very aggregated and fishing is included with agriculture and forestry. Thus, the fishing had to be disaggregated from the other sectors and this was done using data from the national input-output tables and direct information from each region. The results show multipliers of about 2 for each region, comparable to other input-output studies on fishing. They also show a tendency for the sizes of direct and indirect effects to vary in opposite directions across regions, thereby dampening regional differences. Because of this, the study is very sceptical of the value of the results at the regional level and it is stressed that the fishing activities in each region are the sum of a series of highly localised situations with widely varying characteristics. The huge variability in labour productivity highlight the importance of obtaining data to illustrate this in our study, possibly more important than adjusting the actual output multipliers, as this will have an enormous effect on the employment multipliers. The same applies for incomes. As with many other studies of this type, they are only looking at backward multipliers i.e. only those upstream of the fishing industry.

*7) Pavel Salz, (1995) Determination of the upstream effects on the basis of production costs in "Comparison et Harmonisation des Methodoloies d'Analyse des Effets Economiques Induits par la Peche" Actes de l'Atelier de travail, Rennes 30 November 1995*

This study was to examine the regional dependence of the West Germany on the fishing industry, including upstream and downstream effects, in terms of value added and employment. Scarcity of data on value added and employment in the upstream activities led to a simple method based on intermediate production costs of the fishing fleet being adopted. Gross landings were taken as a starting point, and it was assumed that this could be divided evenly between value added and intermediate production costs. The production costs were then decomposed, and it was assumed that about 30% of these would be labour costs. Having obtained the direct average labour cost per man year from national statistics, the estimated employment in man years could then be estimated by dividing the assumed labour cost by the average labour cost per man year. The basic calculation revealed a total employment of 910 man-years in the upstream activities, which is taken to be insignificant compared to the total labour force along the West German coast line.

There have also been a number of studies performing this kind of analysis to aid agricultural and rural development. One which may prove useful to this study is summarised very briefly as follows.

*8)The Application of Modified GRIT Input-Output Procedures to Rural Development Analysis in the Grampian Region, (1987) P M Johns & P Leat, Journal of Agricultural Economics*

A regional input-output model was developed for the Grampian Region in North-East Scotland. It was created by adjusting mechanistically a national input-output table by an employment-based location quotient procedure, and then improved the results by adding more detailed local information where available. The model estimates multipliers for the agri-business and food complex. This appeals as a model to follow, as it can create a regional model with limited data, which can then be improved with the data that can be found for the

industries that are under study. The methodology suggested below is based on the GRIT (Generation of Regional Input-Output Tables) technique used in this study.

## ANNEX 2: CALCULATION OF EMPLOYMENT MULTIPLIERS FROM INPUT/OUTPUT DATA

Input-output tables show all purchases by and sales to each industrial sector, thus dividing the gross output for each industrial sector between final consumption (including exports) and further use or processing by other industrial sectors. Detailed input structures of each industry can therefore be established, making it possible to derive the average relationship of each sector's requirement for inputs from all other sectors.

This structure can put into more convenient mathematical terms. The basic table can be described as the matrix **W**, with final demand **f** and gross output **q** along the horizontal axis and primary input **y** and gross output **q** down the vertical column as shown below<sup>1</sup>;

Fig 1 Basic Accounting Framework of the Input-Output Table

	Production sectors	Final demand	Totals
Production sectors	<b>W</b>	<b>f</b>	<b>q</b>
Primary inputs	<b>y</b>		
-----			
Totals	<b>q</b>		

Source:CSO (1988)

We can then express the whole economy as a series of equations;

$$\begin{aligned}
 q_1 &= w_{11}+w_{12}+w_{13}+\dots+w_{1n} + f_1 \\
 q_2 &= w_{21}+w_{22}+w_{23}+\dots+w_{2n} + f_2 \\
 q_n &= w_{n1}+w_{n2}+w_{n3}+\dots+w_{nn} + f_3
 \end{aligned}$$

which can easily be put into matrix form  $\mathbf{q} = \mathbf{W}\mathbf{i} + \mathbf{f}$ . This is useful, as a matrix form of the equation is more adaptable for building models and analysis.

Often the inter-industry matrix is described not as the actual values of goods but as the average value of the good from the selling industry *i* that would be required to produce one unit of gross output for the purchasing industry *j*. These are known as the technical coefficients of the matrix and are described mathematically as  $a_{ij} = w_{ij}/q_j$ , where  $a_{ij}$  is the amount required from industry *i* to produce one unit for industry *j*. We can substitute this in our original equation to produce the equation  $\mathbf{q} = \mathbf{A}\cdot\mathbf{q} + \mathbf{f}$ .

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<sup>1</sup> where matrices are represented as bold uppercase, vectors as bold lower case and scalars as ordinary lower case letters.

From the previous paragraph, it has been established that  $\mathbf{q} = \mathbf{A} \cdot \mathbf{q} + \mathbf{f}$ . Therefore from some basic matrix algebra, it can be determined that

$$\begin{aligned} \mathbf{f} &= \mathbf{q} - \mathbf{A} \cdot \mathbf{q} \\ \mathbf{f} &= (\mathbf{I} - \mathbf{A})\mathbf{q} \\ \mathbf{q} &= (\mathbf{I} - \mathbf{A})^{-1} \mathbf{f} \end{aligned}$$

where  $\mathbf{I}$  is the identity matrix.  $(\mathbf{I} - \mathbf{A})^{-1}$  represents the direct and indirect amount of commodity  $i$  used to produce one unit of commodity  $j$ , and is known as the *Leontief Inverse*. The column sums of the matrix  $(\mathbf{I} - \mathbf{A})^{-1}$  describe the total effect on gross output in the economy given a unit change in final demand for the  $i$ th commodity, ie the output multiplier. It is then possible to use this information to calculate income and employment multipliers.

If it is the whole economy that is being examined, then it is correct just to use these 'backward' multipliers, as when applied throughout the economy, they will cover all the inter-industrial linkages. However, when the concern is with only one sector of the economy, by examining only the backward linkages, the effects of changes of output of that sector on the industries that purchase its output will not have been taken into account. In this piece of research where it is the agricultural sector that is being analysed, the repercussions of the effects of agricultural change in the processing sectors must not be ignored. To calculate the forward linkages, output (as oppose to input) coefficients need to be determined. These represent the increase in output of the  $j$ th industry required to utilise the increased output brought about by a unit of primary input into the  $i$ th industry (Jones,1976) and can be written  $w_j/x_i$ . The  $i$ th row sum of the output inverse is the increase in total output of the system required to utilise the increased output from an initial unit of primary input into industry  $i$ .

## **Calculation of Backward and Forward Multipliers**

### Calculation of Backward Multipliers

Input coefficients - Having aggregated the matrix, the input coefficients were calculated by dividing  $w_{ij}$  by  $q_j$  to create matrix  $\mathbf{A}$ . This was then subtracted from the identity matrix  $\mathbf{I}$  to give  $(\mathbf{I} - \mathbf{A})$  and inverted to give  $(\mathbf{I} - \mathbf{A})^{-1}$ . The column sums then give the backward multipliers of industry. These are the output multipliers. To relate these to employment, the employment coefficients must first be calculated.

Employment Coefficients - These represent the relationship between the number of people employed in an industry and its output, and thus enable an estimate to employment of an industry to be gauged from the output figure. Ideally this relationship could be expressed by an employment production function  $E = a + bX$ , where  $E$  is the employment of each industry, and  $X$  is the production of the industry. Unfortunately these figures are not readily available from any known statistical source so an approximation  $E = bX$  has to be used. This will tend to yield an overestimate of the employment effects of any change in output.

To determine the employment multiplier, the total direct and indirect effect is calculated by

multiplying each value  $(1-a_{ij})^{-1}$  of the  $j$ th industry by the  $i$ th industry employment coefficient and summing the column. This total direct plus indirect effect, divided by the direct coefficient  $b$  gives the employment multiplier.

#### Calculation of Forward Multipliers

These are calculated by first creating output coefficients, dividing  $w_{ij}$  by  $q_i$ , to create matrix  $C$ , then using following the steps as with the backward multipliers to find  $(I-C)^{-1}$ . The row sums then show the change in total output of the system that is needed to cope with the initial change of output from industry  $i$  resulting on a change in its input of one unit. These can then be used with the direct employment coefficients to calculate downstream employment multipliers.

#### Calculation of Income Multipliers

Direct income coefficients are calculated from the ratio of the value added from each industry to its total output. These can then be used to calculate the indirect income impact and the ratio of the direct plus indirect over the indirect gives the income multiplier.

### **ANNEX 3: OVERVIEW OF RAPID APPRAISAL METHODS**

The project requires the gathering of a wide range of information, and it is envisaged that much of this will be available from secondary sources. However, there will inevitably be gaps, and certain pieces of information may require primary data collection and case study work. Some will be 'harder' information which is not available from secondary sources. The project Tors for the regional studies call for detailed information at the local level which may not be routinely collected by official bodies. Attitudinal information is also called for, notably under Task 4. With no resource restrictions and no time constraints, both of these types of information might be gathered through formal surveys. Detailed survey work is clearly beyond the scope of the regional studies. However, it is expected that satisfactory and valid information can be gathered quickly and at minimum cost using rapid appraisal methods of the kind routinely employed in studies of the agricultural sector. Such analysis will provide additional information which is important in its own right, but it will also provide useful background for the interpretation of information gathered from more conventional sources.

The main relevant features of rapid appraisal are as follows.

- *Reliance on secondary data* where possible. This will not be the kind of information routinely collected by official sources and which will be gathered by the regional studies as a matter of course. Rather, it will comprise reports on detailed local studies such as PESCA project reports, studies by regional academic institutions, or local government economic development studies which can provide a wealth of quantitative as well as qualitative information on the local fisheries economy.
- *Direct observation*. This together with the consultant's own experience and knowledge can lead to subjective judgements on local conditions and identification of key issues for further research – structure and ownership of the local fleet, the nature and extent of local processing, the market destinations of fish landed locally, for example.
- *Interviews with industry participants and knowledgeable observers*. These are likely to be the most productive source of information generally, and are obviously essential for canvassing opinions as called for under Task 4. Interviews with individual fishermen, wholesalers, processors etc might be desirable as well as with their representatives in the various trade associations. Although the latter might be expected to have a more general perspective they may not always speak for all parts of the local industry. Knowledgeable observers also include government fisheries inspectors, local government economic development officers, academics and consultants. Knowledgeable observers may be the most productive starting point for interviews since they can provide a strategic overview, and identify other knowledgeable individuals to be interviewed later. Rapid appraisal will not usually involve formal questionnaires, although interview guides or checklists are helpful. Informal interviews should be broadly structured around a set of key issues to be addressed with each interviewee, but should be flexible to allow more detailed discussion of particular, perhaps new, issues as appropriate since this can yield new and unexpected insights. Information from

interviews should be recorded in as uninhibiting and efficient way as possible. The number of interviews necessary will depend upon the objectives and resources available and the amount of information available from secondary sources. Obviously, it will be necessary to select the number and type of interviewees in such a way as to avoid biases in the information gathered. Group interviews might be productive and efficient in terms of time and resources especially in gathering opinions on policy measures etc. However, the groups need to be fairly homogeneous if a common view is to be elicited rather than an argument.

*Analysis of business records.* In some (probably very few if any) cases, access to business records of boats or markets or companies, for example, might be allowed. If this possibility does arise, then scanning such records can provide a great deal of information on landings, product flows, prices and revenues, incomes and employment.

## **Annex 4: Data Tables**

We are distributing these tables to help the compilation of comparable data sets. The first set of tables are for Task 1 and will need to be filled in as far as possible for all the NUTS 3 regions. The example tables here give the NUTS 3 regions for Ireland, but we will send a list of each participants' NUTS 3 regions to avoid any confusion. Inland capture fisheries and aquaculture data may be compiled at NUTS 2, where it is not available at NUTS 3 level.

The second set of tables is designed for the development of dependency indicators and socio-economic descriptions and, where possible, will be done for pre-selected areas at NUTS 4/5 level. The third set of tables are for use with the case studies. The data required are more detailed, but will only be required for just two or three areas. The classifications used are mostly those that have been used for comparisons of data at national level, and if it is not possible to find data under these headings, then the classification available will have to suffice.

Other data for which tables have not been provided, but which will be needed are:

- seasonality of landings (using monthly landing data)
- seasonality of other work (for example in the food processing, preparation factories, tourism)
- size and influence of producer organisations

Every effort has been made to ensure these tables are as comprehensive as possible, but it may well be that further data requirements become obvious further down the line. It must be emphasised that these data tables are to create a data base and to provide the coordination study with a means for comparison for the summary report. It is unlikely that the tables will encompass all areas of interest at a regional level and supplementary details may better capture the nature of the dependency of the individual regions.

Annual data will make task 3 easier, and we suggest collecting these for a number of the variables i.e total landings (value & tonnage) by region, and also all information of distribution of landings, exports and imports, employment and population data.

We will circulate the tables in Excel form, for you to complete. We would ask that these are completed and returned to us.

Under each table, the following information would be appreciated, to help interpret the data correctly and for the database.

- source of information by organisation and method of collection (i.e sample, census)
- the lowest regional division of data available
- the years for which the data is available, noting changes in methodology from one year to the next Please also put the date under the completed table for easy reference.

## A. Broad Overview

These data tables are to create a data base and to provide the coordination study with a means for comparison for the summary report. It is unlikely that the tables will encompass all areas of interest at a regional level and supplementary details will be needed to capture the nature of the dependency of the individual regions.

### Fleet Structure

These tables are to provide an overview of fleet structure and capacity. The first table distinguishes between fishing in EU waters and third country as we are interested in the number of fishers that will be directly influenced by changes in the CFP. The power and tonnage give an indication of the fleet capacity. The data for this table can be found in the Community Register of Vessels 1997, published by the Commission. Table 2 will provide an idea of the distribution of this capacity and may also be important for policy issues, for example, measures targeting small boats. The age of the vessels required for table 3 indicates the investment in the fleet to date, and where investment is likely to be needed in the near future. For both table 2 and 3, an indication of the distribution is more important than following the actual classifications, although, obviously it will make inter-regional comparison more straightforward where these can be followed. The ownership of vessels required for table 4 may give a useful indicator of the response to policy and other changes in the financial climate.

#### 1. Classification of Vessels by Power and Tonnage

NUTS III Region	Number of vessels operating in:		Power (KW)	Tonnage (GRT)
	EU waters	Third country fisheries		

#### 2. Classification of Vessels by Length for NUTS III regions

NUTS III	Classification of Vessels by length					
REGION	Less than	Between 10	Between 15	Over 24m	No	details

	10m	and 15m	and 24m	supplied
Border				
Dublin				
Mid-East				
Mid- West				
South-East				
South- West				
West				
Total				

### 3. Classification of vessels by age for NUTSIII regions

NUTS III	Classification of vessels per age class									
REGION	0<5	5<10	10<15	15<20	20<25	25<30	30<35	35<40	>=40	Other
			5	0	5	0	5	0		
Border										
Dublin										
Mid-East										
Mid- West										
South-East										
South- West										
West										
Total										

### 4. Classification of vessels by legal status for NUTSIII regions

NUTSIII	Classification of vessels by legal status		
REGION	Family	Corporate	Other
Border			
Dublin			
Mid-East			
Mid- West			
South-East			
South- West			
West			
Total			

## Production

The following three tables are to describe the actual harvesting. For table 5, use the species headings that are most relevant to the region, i.e the top five/six species, rather than following the examples given in the table. The individual quotas will probably not be available on a regional basis from published data, but we suggest getting in touch with the producer organisations who are likely to have break down. It appears that that information on the distribution of fish landings required for table 6 is difficult to obtain. If this is the case, this table should then be considered under the case studies section instead. Table 7 requires a breakdown of value and tonnage by fleet segment. Details of the fleet segment are important as their different fishing methods will be affected in different ways by policy changes. An indication of the percentage of fish that do not reach market (own consumption, unregistered landings, wastage) would also be useful.

### 5. Classification of landings by species, value and tonnage

NUTS III		Classification of landings by species, value and tonnage				
Region	Species <sup>2</sup>	Value	Tonnage	Quota	% used	Quota
E.g. Border	Cod					
	Herring					
	Mackerel					
	Others					
	Total					
Dublin	Cod					
	Herring					
	Mackerel					
	Others					
	Total					
Mid-East	Cod					
	Herring					
	Mackerel					
	Others					
	Total					
Mid-West	Cod					
	Herring					
	Mackerel					
	Others					
	Total					

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<sup>2</sup> to include most relevant species to country - it may useful to distinguish between fish for industry and fish for consumption, and frozen/fresh

6. Distribution of Fish Landings

NUTS III REGIONS	% local fleet landings in region	% total landings by visitor vessels	%landings of local based fleets made at other ports
Border			
Dublin			
Mid-East			
Mid-West			
South-East			
South-West			
West			
Total			

### **Fishing Effort<sup>3</sup>**

#### 7. Classification by Fleet Segments

NUTS III	Classification by Fleet Segment			
Region	Fleet Segment	Value of landings	Wt.of landings	Number of vessels
Border	E.g. Trawlers			
	Multi-purpose			
	Purse-Seiners			
Dublin				

### **Processing**

Tables 8 to 10 describe the fish processing in the region. The PRODCOM codes used for table 8 were also used by Eurostat in a European-wide survey of fish processing published in 1993, and therefore available in most of the European countries. Table 9 is to describe the proportion of landings processed in the region. Where data is not available, this table should (as with table 6) be completed for the case studies instead. The compliance with new hygiene regulations is difficult to assess. Table 10, requiring details of the number of premises upgrading to meet the new hygiene regulations, is an attempt to gauge at least the effort going towards compliance. Another possibility would be to get a measure of the pass rate of the premises inspected.

#### 8. Processing, value and tonnage by Region

NUTS III Region	Type of Processing	PRODCO M <sup>4</sup>	Value of output	Tonnage
E.g. Border	Extracts & Juices	15.13.12		
	Fish Products, fresh or chilled	15.20.11		
	Fish Products, frozen	15.20.12		
	Fish products, dried, salted and smoked	15.20.13		

<sup>3</sup> Data on days at sea and no. of trips by vessels if available may also be useful

<sup>4</sup> The Prodcom codes are the ones used by Eurostat and therefore thought to be generally available. However, in the case of this classification not being available, participants should follow the type of processing headings as far as possible.





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12. Employment in Processing Industry

NUTS III	Female				Male				Total
Region	FT	PT	%Self Emp	Total	FT	PT	Total	%Self Emp	

13. Employment in Construction and Repairs Industry

NUTS III	Female				Male				Total
Region	FT	PT	%Self Emp	Total	FT	PT	Total	%Self Emp	

14. Educational Attainments of Fishers by gender

NUTSIII Regions	No Studies			Primary			Secondary			Further		
	M	F	T	M	F	T	M	F	T	M	F	T
Border												
Dublin												



### Marine Aquaculture

Tables 16 and 17 describe the marine aquaculture and its employment in each region. For table 16, the species should be contained to the five/six most important. Please see footnote relating to bivalve molluscs. The last column should indicate the proportion of the product that is transferred from the region before processing.

#### 16. Type of Production by Region in value and tonnage, and exports

NUTS III	Aquaculture				
Region	Species <sup>5</sup>	Value	Tonnage	No. of businesses	% Product transferred out of the region
Border					
Dublin					
Mid-East					
Mid-West					
South-East					
South-West					
West					
Total					

#### 17. Employment in Aquaculture

NUTS III	Female				Male				Total
Region	FT	PT	%Self Emp	Total	FT	PT	Total	%Self Emp	

### INLAND FISHERIES

<sup>5</sup> Bivalve Molluscs should be included here only when active intention to cultivate, rather than just relaying adults.

Tables 18 and 19 describe the production of inland fisheries. If the data is not available at NUTS III level, these may be completed at NUTS II. As for table 17, the species should include up to the five/six most important. The last column refers to the proportion of the raw product transferred from the region before processing.

18. Type of inland aquaculture production by NUTS II/III Region in value and tonnage, and exports

NUTS II/III	Inland Aquaculture				
Region	Species	Value	Tonnage	No. of businesses	% Product transferred out of the region <sup>6</sup>

19. Type of Inland Capture Fishery Production by NUTS II/III Region in value and tonnage, and exports

NUTS II/III	Inland Capture Fisheries				
Region	Species	Value	Tonnage	No. of businesses	% Product <sup>7</sup> exported

## B. Data for first part of task 2

This data will be collected for the main NUTS 4/5 areas for the socio-economic description of the areas and calculation of basic dependency indicators. Employment data collected for table 20 at NUTS4/5 level will also be required at a national level for calculation of the

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<sup>6</sup> This refers to the percentage of product exported before processing

<sup>7</sup> As footnote 5

ratio no. 2. Population data required for tables 21 and 22 will help describe the local populations and put the rest of the data in context. Table 23 requires a measure of value added for all the fishing-related industries and the region as a whole, for the calculation of ratio no. 1.

#### 20. Employment Data for all Industrial Sectors

NUTS region	4/5	Industrial Classification <sup>8</sup>	Employment Total	Full-time	Part-time	Male	Female
		e.g. Agriculture					
		Forestry					
		Fishing					
		Aquaculture					
		Processing					
		Construction & Repairs					

#### 21. Population Data, gender and unemployed.

NUTS Region	4/5	Population Total	Male	Female	Unemployed	Long-term Unemployed

#### 22. Age Profile of Population

NUTS 4/5 Region	Age Profile of Population		
	Less than 25	25-54	Over 54

<sup>8</sup> Needs to follow input-output table where possible



23. Value added for fishing industries and total region

NUTS 4/5 Region	Fishing & related industry	Value added <sup>9</sup>
	E.g. Fishing	
	Aquaculture	
	Processing	
	Ship building	
	Repairs & Maintenance	
	Total region (all industries)	

### Task C Case Study Data

This data will be collected for the case study regions only. The data on costs (tables 24, 25 and 26) will be used in the calculation of regional multipliers, providing extra information for the cost branches of the input-output tables. Table 27 will also help with the multiplier calculations, providing vital information on the actual links between local fish landings and other locally-produced fish, and the processing industries. Table 28 will also provide vital local linkage information for the processing industry. Where data on linkages from the other sections (table 6 and table 9) are not available, this should be collected on a case study basis. These tables are only designed to help collect certain data for the multiplier calculation, and much more detail will be needed to describe the nature of dependency. It will be important to make the best use of existing studies.

#### Costs

24. Input Cost Structure of Fishing

Case Study Region & Segment	Fleet	Input Cost Structure Maintenance & repairs	Fuel	Other costs	Salaries	Professional Services	Depreciation	Net Profits	Value-added	Total Production

<sup>9</sup> Value-added is usually measured as the sum of salaries and wages and profit

Where other costs include expenditure on boxes, ice and other miscellaneous items  
 Professional costs include harbour and landing dues, insurance and salesman's commission

25. Average input structure of processing industries

Case Study Region & type of processing	Raw Materials <sup>10</sup>	Labour	Depreciation	Financial Costs	Net Profits	Value added

26. Average Input Structure of Aquaculture

Case study region and type	Raw Materials <sup>11</sup>	Labour	Depreciation	Financial Costs	Net Profits	Value added
Border						
Dublin						
Mid-East						
Mid-West						
South-East						
South-West						
West						
Total						

<sup>10</sup> Division into main raw materials where possible

<sup>11</sup> Division into main raw materials where possible

27. Source of Raw Fish Imports for Processing

Case Study region and type of processing	Value of processing	% inputs from local landings	% inputs from aquaculture	% inputs from other regions	% inputs from imports

28. Destination of Exports from Processing

Case Study Regions	Types of product (see prod com categories)	PRODCO M	Proportion transported to other regions	Proportion exported
	Extracts & Juices	15.13.12		
	Fish Products, fresh or chilled	15.20.11		
	Fish Products, frozen	15.20.12		
	Fish products, dried, salted and smoked	15.20.13		
	Fish Products, preserved/prepared	15.20.14		
	Aquatic invertebrates, frozen, dried, salted	15.20.15		
	Crustaceans and mollusks, preserved , prepared	15.20.16		
	Fats and oils fish and marine animals, fish meal	15.41.11		



**Annex 5: Table of equivalence Prodcom/Combined Nomenclature**

<b>Prodcom Category</b>	<b>Prodcom code</b>	<b>Equivalent in Combined Nomenclature</b>
Extracts and Juices	<b>15.13.12</b>	160300 – Extracts and juices of meat, fish or crustaceans, molluscs of other aquatic invertebrates
Fish, other than whole fish, fresh or chilled	<b>15.20.11</b>	030270 – Fresh or chilled livers and roes 030410 – Fish fillets and other fish meat, fresh or chilled
Fish, other than whole fish, frozen	<b>15.20.12</b>	030380 – Livers and roes, frozen 030420 – Frozen fillets 030490 – Fish meat (other than fillets), frozen
Dried, salted or smoked fish	<b>15.20.13</b>	0305 – Fish dried, salted or in brine, smoked fish, whether or not cooked before or during the smoking process
Preserved fish	<b>15.20.14</b>	1604 – Prepared or preserved fish, caviar and caviar substitutes, prepared from fish eggs
Aquatic invertebrates, frozen, dried or salted	<b>15.20.15</b>	030611 – Frozen rock lobster 030612 – Frozen lobster 030603 – Frozen shrimps and prawns 030614 – Frozen crabs 030619 – Crustaceans other than rock lobsters, lobsters, shrimps, prawns and crabs, frozen 030729 – Coquilles St Jacques, scallops, including queen scallops, of the genera Pecten, Chlamys, or Plactopecten, frozen, dried or in brine 030739 – Mussels (Mytilus spp. Perna spp.), frozen, dried, salted or in brine 030749 – Cuttlefish (Sepia officinalis, Rossia macrosoma and Sepiola spp. ) and squid (Ommastrephes spp., Loligo spp., Nototodaruss spp.,

		Sepioteuthis spp.), frozen, dried , salted or in brine 030759 – Octopus (Octopus spp.), frozen, dried, salted or in brine 030799 – Aquatic invertebrates, frozen, dried, salted or in brine, not included in 030710 –030791
Preserved crustaceans, molluscs, and other invertebrates	<b>15.20.16</b>	1605 Crustaceans, molluscs and other aquatic invertebrates, prepared or preserved
Fats and oils of fish and marine mammals	<b>15.41.11</b>	1504 Fats and oils and their fractions of fish or marine mammals, whether or not refined , but not chemically modified