
European Social Science Fisheries Network

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**A Socio-Economic Data Base Framework
for Fisheries Dependent Areas :
Baseline Report**

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Universities of Hull and Trondheim
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European Social Science Fisheries Network: FAIR CT95 0070

A socio-economic data base framework for fisheries dependent areas : baseline report

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Preface

The development of a social data base framework for fisheries dependent areas forms a key task within the remit of the European Social Science Fisheries Network, funded under Concerted Action through the FAIR Programme. Responsibility for the task has been vested with Oddmund Otterstad (Task Group Leader, University of Trondheim) who has at his disposal a task group comprising David Symes (Network Coordinator, University of Hull), Jeremy Phillipson (Network Manager, University of Hull), Peter Friis (Roskilde University), and Babis Kasimis (University of Patras).

This report has relied heavily on the earlier contributions and comments from each of the Task Group members and, in particular, a meeting of the group in Sliven, Bulgaria in July 1996.

The Task Group would like to thank all individuals within the statistical services of the states covered within this report, who have offered valuable comments and information during the initial activities of the group.

*J.Phillipson
Hull, January 1997*

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0.0 Executive Summary

- 0.1 The European Social Science Fisheries Network has undertaken to develop the framework for a comparable national social science data base. This would seek to make good the deficiencies in existing data sources for the socio-economic analysis of fisheries dependent regions and fishing based communities. This report provides a baseline analysis through: (a) an elaboration of key parameters surrounding the development of a socio-economic data base for fisheries dependent areas; (b) an initial analysis of statistical sources as part of an ongoing analysis of national statistical cultures; and (c) an elaboration of initial conceptions of and recommendations for an appropriate data base framework and dependency indices.
- 0.2 Serious problems are faced by policy makers across the European Union and within the policy institutions of the Commission and Council of Ministers, because of the lack of socio-economic data related to fishing communities and regions. The need for such data is likely to intensify as the social effects of restructuring, within the context of the Common Fisheries Policy, become increasingly evident. Such a data base would enable the identification of fisheries dependent areas; assist the design of more appropriate socio-economic measures and effective targeting of regional development initiatives; and aid the analysis of the social impacts of policy measures upon fishing communities.
- 0.3 Existing data base related developments within European fisheries are predominantly steered towards economic and biological perspectives. Some data is provided by Eurostat and other international organisations but it is generally coarse spatially; fisheries data is also presently oriented to maritime regions and describes the physical rather than socio-economic characteristics of fisheries. In an attempt to find appropriate data for an analysis of fisheries dependent areas, it is therefore necessary to turn to statistical sources within individual states.

0.4 *Parameters of data base*

Five overarching parameters are identified which serve to delimit the scope of the data base framework:

- (i) a modest approach is selected in terms of geographical and data coverage, which will accommodate the great majority of European countries; this requires a coarsening of the fine grained data base material held in some countries and a limited amount of estimation of key parameters for those countries which can only provide relatively coarse-grained information;
- (ii) the framework is geared towards the harvesting sector as the dependence indicator; emphasis is placed upon levels of dependency as a product of sea fisheries (marine fisheries and mariculture);

- (iii) two forms of data are considered: dependent areas should be identified and described on a basis of absolute levels of fisheries activity and also in relation to the general socio-economic characteristics of the areas in which fishing activities are embedded;
- (iv) a coastal data base approach is preferred as offering utmost relevance in terms of fisheries dependence;
- (v) the framework utilises existing administrative and statistical divisions within the international NUTS system of area classification; preference is attributed to administrative units approximating to NUTS 4, as the optimum scale for dependency representation.

0.5 *National statistical cultures and sources*

The form of a socio-economic data base will, in practice, be decided by the actual nature and availability of data. The analysis draws upon the statistical experience of six fishing nations including Denmark, France, Greece, Norway, Spain and UK. In terms of *general socio-economic data sources*, all display a range of socio-economic data sets located within national statistical services and government departments. The most comprehensive and common source of socio-economic data is provided by the decennial census of population. Other sources of data may be available in order to piece together a social profile and obtain the most up to date or reliable data for a specific variable. There are a number of data challenges and imperfections relating to reliability, definitional complexity and intra-state comparability, which may ultimately condition the final selection of variables for inclusion within the framework.

Fisheries specific socio-economic data provides the basis for the identification of fisheries dependent areas, either independently based upon absolute levels of activity, or through combination with the more general socio-economic statistics. There is a considerable diversity of fisheries data across the states under study, reflected in numerous fisheries specific data sources, although in Southern Europe the situation appears to be less well developed. The most common collection unit for fishery data (landings, numbers of fishermen etc) is the port and this, therefore, forms the basic data unit within the data base framework. Unlike census of population statistics, fisheries data are less often collected by the administrative divisions arranged within the NUTS framework. A major task will be found in the allocation of fisheries based data to NUTS 4 administrative units.

While the development of a data base is a policy necessity there will certainly be imperfections in the level of comparability and reliability of data, reflecting diverse national statistical cultures and different socio-economic systems and approaches. Further analysis is required in order to locate and develop areas of definitional consistency and to acknowledge any inconsistency. There is certainly a need for more detailed fisheries data at low spatial scales and in some countries more than others. In many cases published data is slow in

emerging and this is only occasionally compensated for by provisional statistical statements.

0.6 *Recommendations*

Based on an analysis of national statistical cultures the proposed data base framework can be elaborated in 14 recommendations:

1. An area's dependence on sea fisheries should be based ideally on the harvesting sector, involved in marine fisheries and mariculture.
2. Two forms of data should be collected; fisheries specific data indicating levels of fisheries activity; and more general socio-economic data describing the areas in which fishing activities are embedded.
3. Allowing for opportunities for development in terms of dependency criteria as well as flexibility to account for changing dependency patterns, data should be collected for all coastal areas.
4. In terms of data production and retrieval, where possible, the basic unit of data collection should be utilised, allowing for maximum possibilities for aggregation. General socio-economic data would arise primarily from decennial population census sources and therefore the basic unit in these instances is the enumeration district; if this is not possible, then the next available level of data will suffice (NUTS 4). In most cases, port level should represent the basic collection unit for more fisheries specific data. The data in all cases should be collected on a basis of absolute numbers to allow for maximum statistical transparency.
5. Where available in alternative sources, general decennial socio-economic data should be supplemented by annual inputs. Fisheries data should be available on an annual basis. Where there are a number of alternative sources for a particular variable then these should also be included within the data base.
6. In most cases, data variable headings will need to be rather general allowing for flexibility in precise criteria between states. As a general rule all dependency representations should contain explanatory notes describing any definitional and temporal data inconsistencies between and within states.
7. For each dependent area the data file should also record any independent reports, surveys and ethnographic analyses of relevance to the region.
8. National socio-economic data sets should be complemented by regional sources (NUTS 3) within existing European data bases, such as those provided by Eurostat.

9. The data base should utilise existing administrative and statistical divisions within the international NUTS system of area classification. Based on available data sets, a scale 'approximating' to NUTS 4 would appear to represent the most comparable, policy relevant and optimum scale for the presentation of fisheries specific and socio-economic dependency data. In some countries NUTS 3 may be a more realistic level given data availability. A key challenge will be found in the allocation of fisheries data to levels approximating to NUTS 4.
10. The production of a dependency analysis every 10 years, based upon census intervals, would form a key data base output.
11. A minimum list of dependency indices might include:
 - 1) Numbers of fishermen based in area (based on home port or main port of operation)
 - 2) Fishermen based in area as % of total area employment
 - 3) Fishermen based in area as % of national fishing employment
 - 4) Total value and volume of landings into area
 - 5) Total value and volume of landings into area as % of total national landings
12. A minimum list of variables to be used to provide a socio-economic community profile, based on the analysis of national statistical cultures and available data, might include:
 - * *total population* for ten year intervals (and latest annual estimate); providing an indication of population development.
 - * *age, gender composition and marital status* of population for 10 year intervals; has there been a masculinisation of the community which might signify remoteness or backwardness?
 - * *economically active and inactive population by gender*; percentage of total population which are employed and economically active, percentage of males and females in 20-39 year age group (the most active age category), dependency ratio.
 - * *unemployed males and females*; indicating alternative employment opportunities.
 - * *numbers of births and deaths*; a potential indicator of outmigration.
 - * *numbers employed in primary, secondary and tertiary sectors*, using a merging of categories within national industrial classifications; is there a diversified economy?
 - * *household data*; number of households, age of households (an indicator of development), persons per room, tenure, basic amenities, numbers of cars per household.

The development of a comparable set of variables and indices is clearly at an early stage. The minimum lists of indices listed above have important utility, but progress is needed in identifying their policy relevance and in developing new variables and indices. Also required is a workable mechanism with which to operationalise dependency variables and indices in order to guide policy decisions and assess policy impacts on fisheries dependent areas.

- 0.7 This framework for a socio-economic data base addresses the clear policy need to systematically identify and analyse fisheries dependent areas. What is evident from the analysis is the formidable challenge involved in producing an effective comparative approach. This would certainly be facilitated through developments in national and European statistics, in order to produce more up to date, reliable, temporally and spatially consistent data, and particularly at low spatial scales.
- 0.8 In the medium term the Task Group will consolidate its base line analysis of socio-economic and fisheries data sources. This will include consultation and comments from key statistical services within Europe and will lead to a revised framework and selection of dependency indices, to be presented in the final report of the Task Group. The final report will also consider issues of data retrieval and presentation and the functioning of such a data base.

1.0 Introduction

1.1 *Aims and agenda*

The European Social Science Fisheries Network has undertaken to develop the framework for a comparable national social science data base. This would seek to make good the deficiencies in existing data sources for the socio-economic analysis of fisheries dependent regions and fishing based communities. The intention is not to compile datasets for European fisheries *per se* but to develop the framework within which such a project might be achieved. This will involve:

- (i) the development of comparative indicators or key indices for the socio-economic conditions of fisheries communities e.g. demographic trends, labour structure, skill composition, community structures, education, health etc., and identifying key sources and reliability;
- (ii) coordination with national or international organisations, scientific institutions and existing databases to increase collaboration and avoid unnecessary duplication of effort;
- (iii) the development of the technical specifications of a system for data storage and retrieval, and;
- (iv) the formulation of outline research projects which would test the utility of the database.

The aims will be approached through the production of two reports within the duration of the data base Task Group of which this is the first. As a baseline report, it will contribute primarily towards the first of the aims listed above, through the following agenda:

- (a) an elaboration of key parameters surrounding the development of a socio-economic data base for fisheries dependent areas (section 2);
- (b) an initial analysis of statistical sources as part of an ongoing analysis of national statistical cultures (section 3); and
- (c) an elaboration of initial conceptions of and recommendations for an appropriate data base framework and dependency indices (section 4).

The second data base report is likely to consider the functioning, development and presentation of such a data base and more specifically aims ii, iii and iv listed above. It will also revisit the themes considered within this baseline report, as well as posing more ideal social data base designs as possible developments in the socio-economic analysis of fisheries dependent regions and communities.

1.2 *Policy relevance*

Serious problems are currently faced by policy makers across the European Union and within the policy institutions of the Commission and Council of Ministers, because of the lack of adequate socio-economic data related to fishing communities and regions. The need for such data is likely to intensify as the social effects of restructuring, within the context of the Common Fisheries Policy, become increasingly evident.

Such a data base would provide an essential baseline survey of *fisheries dependent areas* (a term raising fewer political connotations and definitional inferences than is the case with dependent 'regions' or 'communities'), including their status in terms of human resources and their links to the broader regional society and economy. This would offer three particular benefits with regard to fisheries, social and regional policies:

- (i) it would help to identify fisheries dependent areas in the first instance and highlight those which are most economically and socially vulnerable;
- (ii) it would encourage the design of more appropriate socio-economic measures and effective targeting of regional development initiatives or support for fisheries dependent areas;
- (iii) it would complement an analysis of the social impacts of policy measures arising from the CFP and other policy areas, upon fishing communities.

In terms of future research, the data base would also help to facilitate collaborative and comparative research.

1.3 *Review of existing data bases*

1.3.1 *Fisheries related data bases*

Existing fisheries data base related developments within European fisheries are frequently steered towards economic and biological perspectives. Recent examples have been oriented, in particular, to the subject of modelling; involving multi-gear/multi-fleet/multi-stock, spatial-temporal or bio-economic analyses.

Two further initiatives in the field of socio-economics are perhaps closer to the objectives of a social data base on fisheries dependent areas. The first involves recent activities within the STECF (Scientific Technical and Economic Committee for Fisheries) aimed at 'assessing the economic performance of the

EC fishing industry'¹. Under the STECF initiative, two future developments are proposed:

- (i) the preparation of an annual report on the economic state of EC fisheries; and
- (ii) the development of a routine methodology for assessing the likely economic impacts of alternative management measures, with the wider purpose of facilitating the closer integration of biological and economic considerations in the decision making process related to fisheries management.

The proposals of STECF point to annual reports based mainly upon representations of time series data describing a limited number of performance criteria, such as fleet efficiencies, supported by brief commentaries. For the immediate future, the reports will be confined to a selection of sample fisheries in European waters, through which the evaluation procedures can be refined. It is clear that the activities of the STECF act as a useful prototype in terms of an assessment of data base frameworks and possible opportunities or outcomes.

The second initiative is perhaps closer to the thematic and methodological issues considered within this report. While not providing a comprehensive data base framework as such, important lessons can be gained from the approaches employed in the production of the *Regional Socio-Economic Studies in the Fisheries Sector* commissioned by DGXIV in 1991 and published in 1992. Here a total of 21 separate Regional Studies were conducted as part of the project and they uncovered a total of 311 fisheries dependent zones accounting for c95% of all fishermen and 75% of employment in 'related activities'. This report will attempt to provide a more critical analysis of dependency related issues than was adopted in the regional studies.

Some note should also be made of the analysis of the European Association of Fisheries Economists (Concerted Action) which includes within its agenda the development of an economic data base. Its progress to date, however, is relatively uncertain.

Some fisheries-specific data is also provided by Eurostat and this complements statistical fisheries output from several other international organisations. The data are generally of a coarse spatial nature and in most cases are linked to national statistical presentations. They are not socio-economic in nature and, instead, describe and summarise the physical outputs from fisheries (FAO, ICES), with some additional economic data referring principally to international trade (FAO, OECD). In all cases data are collected according to maritime regions. Where there is a land based relevance (eg landings) the data are primarily restricted to national time series level data rather than being

¹ Assessing the economic performances of the European Community fisheries industry, Commission staff working paper, Commission of the European Communities

regional or spatial in orientation. Given the socio-economic and regional remit of a data base on fisheries dependent areas, there is a need for more regionally specific land based fisheries data.

1.3.2 *General socio-economic data bases*

The notion that there is a lack of attention to social data related to fisheries dependent areas would appear to contradict the availability of several comprehensive socio-economic data bases. There are notable examples of well developed, EU wide socio-economic data bases within international institutions such as Eurostat, the official statistical service of the European Union. The data, however, even within Eurostat's regional statistical output (Regio), is also generally confined spatially (NUTS 1, 2 or 3) and this reduces its utility in the context of spatially more confined fisheries dependent areas. In the attempt to find a solution, attention therefore turns within this report to statistical sources within individual states.

This is not to say that such international sources are irrelevant in the context of a discussion of a socio-economic data base for fisheries dependent areas. Indeed, such a wealth of information would be of particular utility at aggregated spatial scales and in order to cross reference outputs derived from other statistical routes. Even if the problem of spatial level of data were ameliorated in these cases, which would be a significant development, there is still a formidable task in order to apply such data in the context of fisheries dependence.

1.3.3 What these developments highlight at a basic level is a lack of attention to social data related to fishing communities. There is little linkage of fisheries data and policies to dependence questions or the social characteristics (demographic, occupational, health, education etc. variables) of fishing communities. It should also be noted that, as yet, there do not appear to be any equivalent social data bases for other industry dependent communities, whatever the sector's economic significance; the fishing industry is not alone in displaying a dearth of socially relevant data for policy analysis and response. Fisheries certainly provide a prototype, perhaps worldwide, for a dependency data base. However, the case for such an analysis is perhaps more pressing in fisheries on two important counts:

- * Fisheries communities are, in several senses, isolated geographically, and often concentrated in form with fishing activity based in a particular port or region. Other sectors, such as agriculture, can be seen to be more integrated into the wider fabric of society and are often more diffuse spatially. The concentration of activity in the fishing industry tends towards spatial analysis and diagnosis.
- * There is also a matter of policy timing and relevance. The fishing industry currently faces a major period of structural change and there is much policy interest in threshold levels of crisis and social impacts of different regulatory approaches.

1.4 *Methodology*

Before attention turns to the key parameters of a socio-economic data base brief mention should be made of methodology. The challenge of developing this initiative rests with a Task Group spanning four European states, Denmark, Greece, Norway and the UK. Its activities were initiated within an meeting of the group in Sliven, Bulgaria in mid-1996 which involved attention to the theoretical choices involved in such a data base and an exploration of data sources available within individual European countries. This report presents some of the key decisions made at this meeting. It also reflects a subsequent survey of socio-economic and fisheries data sources in each of the Task Group member countries (and including analysis from Spain and France) and a subsequent meeting of the Task leader and Network Manager in Hull, November 1996.

2.0 Parameters of data base

Before there is consideration of national statistical cultures and main data sources (section 3), attention is given to some overarching parameters which, at the outset, delimit the scope of the data base framework. Five issues are central here. The first defines the overall approach that is taken (2.1); the second involves the data bases' sectoral scope and selection within the fishery chain (2.2); the third the nature of data to be held within the data base (2.3); fourth, there is the geographical extent of the data base and specifically whether data should be collected for a selection of coastal units or for a universal national coverage (2.4); and finally, there is the geographical level and unit of data (2.5).

2.1 *Strategy : a modest approach*

There are three overall potential strategies that could guide the development of a data base framework:

(a) *Strategy 1*

Avoid the formidable task of developing a single, standardised and comparable database for European countries and instead aim to produce *national data bases* at the highest level of competence and relevant coverage but without any intention of using such data bases to compare areas from different countries.

(b) *Strategy 2*

Go for the highest (i.e. most sophisticated) form of data base, which is known to be attainable in some but not all countries, and 'require' those countries that fall short of this standard *either* to 'catch up' by ensuring that missing data/scales of presentation will become available in future *or* by devising systems by which missing data can be simulated through alternative data inputs *or* by the disaggregation of national data to the appropriate spatial units on a notional basis (i.e. guesstimates). There are problems with this approach: (i) the future availability of missing data cannot be guaranteed - it is unlikely that such statistics could be produced upon request within a whole new data base frame; (2) where key data are inputted as 'guesstimates', the data base may be seen as unreliable.

(c) *Strategy 3*

Settle for a more modest goal in terms of areas and data, which will accommodate the great majority of European countries. This will require a coarsening of the fine grained data base material held in some countries and a limited amount of estimation of key parameters for those countries which can only provide relatively coarse-grained information. Although this falls far short of the

ideal situation, this strategy seems to offer the most useful solution, and it is applied throughout this report.

2.2 Sectoral scope of data base

Ideally it would be useful to consider the whole fishery chain in the context of dependence on fisheries. This would include harvesting, processing, distribution, marketing and even retailing activities (see Fig. 1). Additional sectors such as aquaculture, ancillary support industries or even fishing tourism could be included; categories which have varying degrees of prominence for different countries and regions. All components of this chain can claim at least partial dependence on the fishing sector. If the chain is broken at say the harvesting sector, then all other sectors will be affected to some degree. Each sector involves a series of different policy impacts and circumstances which certainly deserve specific attention.

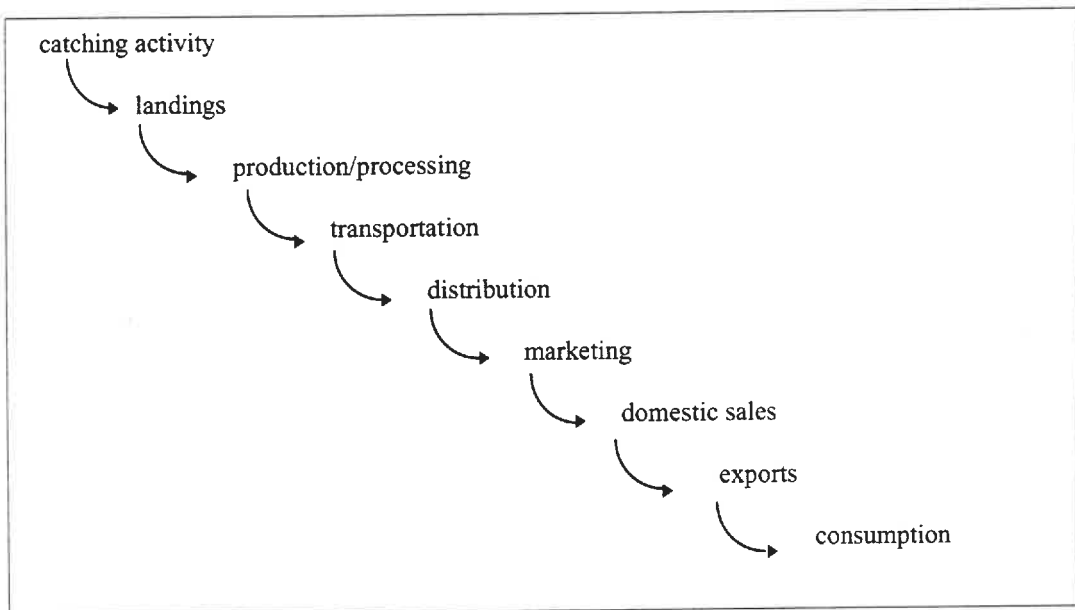


Figure 1: The Fishery Chain

Despite the temptation to include all sectors within the framework, **the data base proposal in this report is primarily geared towards the harvesting sector as the dependence variable** for a number of reasons:

- * its direct dependence upon fishing activities compared to other sectors;
- * it is the key locus for regulation and subsequent policy impacts; and
- * practical considerations - if other sectors are fully acknowledged, these often harbour a whole range of additional statistical difficulties in terms of definition and data availability.

Some attention is given to processing and freshwater aquaculture sectors within this report. Furthermore, with future developments in data sets, it may be that these sectors could be more fully incorporated into such a framework.

There is, however, further need for definition when one considers the degree of dependence based on harvesting sector activity. **In the context of this report emphasis is placed upon levels of dependency as a product of sea fisheries. Hence, references to the harvesting sector refer essentially to marine fisheries (excluding inland waters and freshwater fisheries) and mariculture (i.e. salt/brackish water rather than freshwater aquaculture).**

2.3 *Data coverage*

A socio-economic data base framework for fisheries dependent areas would aim, in the first instance, to identify levels of fisheries activity. Dependent areas would then be identified on a basis of absolute levels of activity and also in relation to the socio-economic characteristics of the areas in which the fishing activities are embedded (e.g. alternative employment opportunities). Hence, a data base on fisheries dependent areas would not solely consider data relating to the fishing industry *per se*.

Absolute levels of fishing or related activities offer an important indication of dependency and particularly when associated with basic socio-economic variables such as total employment. It would certainly be useful if the whole range of levels of fishing activity featured within dependency analyses. A case of dependency is clear where high or even low absolute levels of fishing activity are essential for a community with few alternative forms of employment. However, such a case is less well founded where there are high numbers of fishermen within an area that has a multitude of alternative employment opportunities and a booming economy - in this instance the importance of the region for the fisheries sector should not be understated.

A number of fisheries based dependency indices can be posited which form a basic set of criteria, which when used individually or in combination, could be used to define fisheries dependent areas. They might include:

- 1) Numbers of fishermen (marine)
- 2a) Marine fishing employment as % of total area employment
- 2b) Marine fishing employment as % of national marine fishing employment
- 3) Landing data for region (value)
- 4) Numbers employed in processing
- 4a) Processing employment as % of total area employment

4b) Processing employment as % of national processing employment

2.4 *Geographical extent of data base*

Three options present themselves concerning the geographical coverage of a fisheries dependence data base:

- * Within a *universal approach*, data for a total national territory would be collected, for interior and exterior areas alike. This would allow maximum possibilities for the development of the data base in terms of:
 - (i) the aggregated level of data (eg local, regional, national); and
 - (ii) the expansion of dependency criteria e.g. the inclusion of freshwater aquaculture or distribution employment which would feature strongly in interiors.

This approach would incorporate those fishermen who live and exceptional fisheries activities which are based in inland municipalities. Furthermore, from a practical perspective, data sets are generally available for all areas within a national territory; the effort in handling a complete as opposed to a partial data set is not dissimilar (indeed, selections of specific geographical areas within a data set would often require the effort of de-selection of data at the time of collection).

- * **The second option, and the preferred option for the data base framework, involves exclusively a *coastal data base approach* (incorporating coastal municipalities).** Coastal units could be identified as those bordering salt water or brackish waters. It might be appropriate to extend coverage to include those municipalities bordering a coastal unit. This option is closest to the optimum criteria for presentation of dependency data referring specifically to marine fisheries and mariculture.

While the levels of fisheries dependence in interiors would remain unspecified with this option it does have certain benefits. Crucially, attention would be drawn to the regions of utmost relevance in terms of fisheries dependence and large areas without any trace of sea fishing activity (such as Madrid, Paris or Berlin) would be discarded. Like option one, although within a coastal setting, there would be the same opportunities for development of dependency criteria and for a range of aggregated data levels. Any changes in area dependency, as fishing communities disappear or develop, would also be evident.

- * a final option might operate with fisheries dependent areas only (either those areas that have directly involved persons in the harvesting sector, or only areas where fishermen account for a high percentage of the

population or contribute significantly to regional income), excluding all other areas from the dependency profile. This *selective dependence approach* is the least favoured option as it would not be responsive to changes in fisheries dependency or in the basic criteria for inclusion or exclusion of areas.

2.5 *Geographical level of data base*

Given the emphasis on spatial comparison, **a social data base for fisheries dependent areas will demonstrate a land based orientation and will utilise existing administrative and statistical divisions. For the point of international comparison, national administrative units are already built within the international NUTS system of area classification (Nomenclature of Territorial Units for Statistics) and this is now widely employed throughout Europe as the basic reference system for the collection and storage of statistical data; this would form the obvious spatial framework for a dependency data base (Table 1).**

Integral to the process of identifying fisheries dependent areas is the choice of *scale* and *area unit*; at which level within the NUTS hierarchy to operate. Different choices can have significant implications. For example, a finer spatial mesh will often suggest a higher apparent dependency. In contrast, while larger areas may include a greater number of fishermen, there may be less sense of dependence given a wider catchment of alternative employment activities and dilution of the dependency profile. Furthermore, a policy relevant scale and unit is required for representations of dependency output which is not too coarse (preventing effective targeting of policy initiatives) or too fine (cumbersome in a policy sense, preventing a full awareness of regional dynamics and with added likelihood of data suppression for anonymity reasons). Figure 2 highlights the importance of scale comparing fisheries activity for NUTS 3, where the picture is rather coarse, and NUTS 4, using the case of Norway.

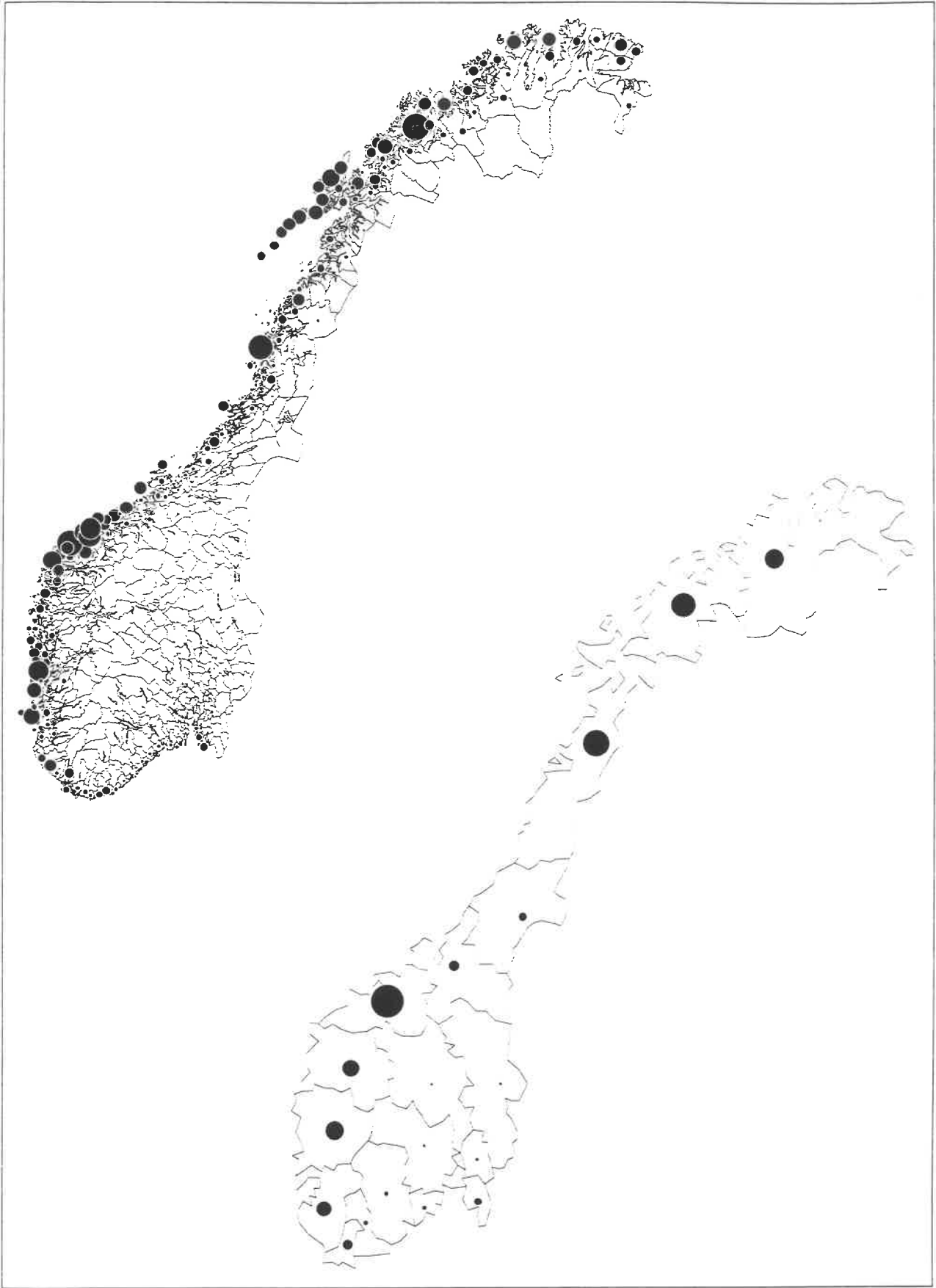
It is difficult to argue a case for dependency on a basis of NUTS 3 level or county boundaries despite the fact that data may be more readily available at this scale; there would always be many employment opportunities within alternative labour district areas within the scale of reference. **Preference within this data base framework is therefore attributed to administrative units approximating to NUTS 4, or municipality level, as the optimum scale for dependency representation.** NUTS 4, in many cases, involves administrative units which offer the most realistic boundary for 'work place' and a sense of proximity, which is useful in the context of dependency.

In some cases NUTS 4 level may represent actual labour district boundaries, or Travel to Work Areas, which describe average self contained labour market areas. Generally, however, it is rare for many aspects of socio-economic data to be collected or presented on this basis. Labour district boundaries also suffer markedly in terms of diversity in size given varying patterns of mobility

Table 1: Geographical scales

	Denmark	France	Greece	Norway	Spain	United Kingdom^a
NUTS 1	Denmark	Zeal	Groups of development regions	Norway	Agrupacion de comunidades	Standard Regions
NUTS 2	Denmark	Regions	Development regions	Landsdel	Comunidades autonomas	Groups of counties
NUTS 3	Amter	Departements	Nomoi (prefectures)	Fylker	Provincias	Counties/local authorities
NUTS 4	Kommuner (NUTS 5)	Communes	Nomoi (prefectures)	Kommuner	Municipalities	District councils

a- NUTS 3 and 4 areas within the UK have recently been revised to create Unitary Local Authority Areas.



*Figure 2: Catch value 1980-89 by vessel registration
Norwegian municipalities (NUTS 4) and counties (NUTS 3)*

in different states. Where there are these drawbacks there will be a need to resort to best-fit administrative boundaries.

Before progressing, two drawbacks to a 'NUTS administrative boundary' approach do need to be acknowledged:

- * administrative *boundary changes* over time; this is less of a problem in the context of a spatial rather than longitudinal analysis of dependent areas.
- * as the Regional Socio-Economic studies showed there is also a difficulty in obtaining *standardisation* in the scale and status of area units; within the NUTS system there is disparity of areas and population sizes at each level between and within countries (see Figure 3 for map of European coastal NUTS 3 areas), a difficulty perhaps implicit in any data base oriented upon land based administrative divisions; it may be partially avoided through the use of different NUTS levels which approximate to a particular scale.

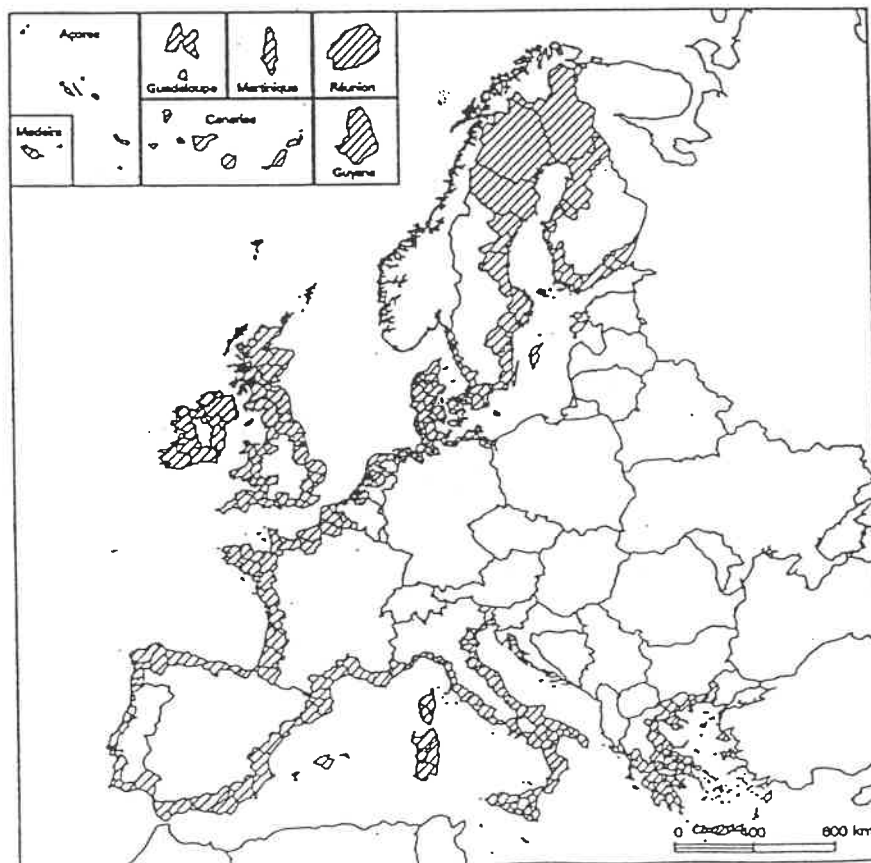


Figure 3: Coastal NUTS 3 Areas

2.6 *Summary*

Choices referring to the sectoral scope, geographical extent and level of a data base have clear implications upon fisheries dependency analyses and representations. The picture is certainly complex. For example, even when the 'fisheries' definition is restricted to the harvesting sector only, there can be significant differences in dependency output depending on definition and criteria. Whether data are based on activities at sea or in a fishing harbour, or even the home addresses of fishermen or vessel owners, then each will have a particular influence on the dependency picture. Indeed, employment, landing or catch based activity analyses would engender considerably divergent results.

3.0 National statistical cultures and sources

The form of a socio-economic data base will, in practice, be decided by the actual nature and availability of data across Europe. The following preliminary analysis has drawn upon the statistical experience of six fishing nations including Denmark, France, Greece, Norway, Spain and UK; such a national emphasis is required in order to locate more regionally specific data (NUTS 4), which appears to be unavailable from current international sources. The following paragraphs assess main sources and the availability of data within these states, considering firstly general socio-economic and secondly fisheries related statistics, as the basis for identifying and describing fisheries dependent areas.

3.1 *Socio-economic data sources*

All six countries considered display a range of socio-economic data sets, located primarily within national statistical services and government departments (some key sources are identified in Table 2). The scope of statistics held is generally impressive covering numerous aspects of society including population (census of population, birth and death records, migration, health, marriage and divorce etc), travel, housing and households, labour force (employment surveys, hours at work etc), economy and industry (primary, manufacturing and service) etc..

The most comprehensive and common source of socio-economic data is provided by the decennial census of population. Here, data are collected on a local census unit level basis (block census or enumeration district) allowing for aggregation to higher levels; in most cases there is a delay in the publication and processing of results (up to 5 years). Several other sources of data may be available in order to piece together a social profile and obtain the most up to date or reliable data for a specific variable. In many cases, for example, there are annual population related data (births, deaths, total population etc.); furthermore, employment statistics are often available through separate sources on an annual basis. Table 3 includes a selection of some key socio-economic variables to demonstrate some of the important data sources and issues in the different states. In all cases, data under each general heading within the table is available, sometimes at cost, at NUTS 1, 2, 3 and fisheries dependent area (4) levels (as detailed in Table 1), unless otherwise specified.

There are a number of accepted socio-economic data challenges and imperfections from the perspective of an up to date and comparable data base for fisheries dependent areas which may ultimately condition the final selection of variables for inclusion within the framework (an initial selection is made in 4.2). They include:

- * variable *reliability* between states;

Table 2: Main sources of socio-economic data

	Denmark	France	Greece	Norway	Spain	United Kingdom
Main sources	<p><i>Statistics Denmark (DS)</i> Also two further key sources:</p> <ul style="list-style-type: none"> - Kommunal Statistisk Data Bank for local statistics (KSDB) - Industrial statistical data bank (ESDB) 	<p><i>The National Institute for Statistics (INSEE)</i> - decennial population census (some re-estimates year by year) And local statistical offices (Departements) which provide data on employment zones based on urban attraction</p>	<p><i>The National Statistical Service of Greece (NSSG)</i> - decennial population census (last 1991) - natural movement of Greek population - labour force survey</p>	<p><i>Statistisk Sentralbyrå (SSB)</i> - decennial population census (last 1990) - annual population and unemployment statistics Also <i>Norsk Samfunnsvitenskapelig Datajeneste (NSD)</i> - collections of socio-economic data for social sciences</p>	<p><i>National Statistics Institute (INE)</i> - decennial population census - Active population inquiry (EPA) each 3 months Also <i>Regional Statistics Institutes</i></p>	<p><i>The Office for National Statistics (ONS)</i> -decennial Census of Population based on households and individuals (2-3 yrs delay in availability of data, last census 1991) -Annual Employment survey (1 yr delay) based on business addresses.</p>

Table 3: Breakdown of a selection socio-economic variables

Variable	Denmark	France	Greece	Norway	Spain	United Kingdom
Population data (including gender and age breakdowns)	annual data from DS - NUTS 5 from KSDB	not available at time of report drafting	COP as well as mid-year population estimates	annual data from SSB and NSD	COP and 5 year PADRON	COP as well as annual resident population estimates
Economically active (employed, self-employed, government scheme, unemployed) and inactive (students, permanently sick, retired, other) including gender breakdown	annual data from DS - NUTS 5 from KSDB	not available at time of report drafting	COP - economically active and non-active by gender and age (employed, unemployed)	annual data available from SSB	INE; Ministry of Labour statistics, EPA	COP - includes full/part time breakdown for economically active; as does the annual employment survey
Unemployed	annual data from DS - NUTS 5 from KSDB (also weekly and monthly data)	not available at time of report drafting	annual labour force survey - population of 14 years and over by employment status. Nomoi level from COP.	annual data available from SSB (also weekly and monthly data)	INE; Ministry of Labour statistics, EPA	-COP also monthly claimant unemployment statistics
Life expectancy	annual data from DS - NUTS 5 from KSDB	not available at time of report drafting	annual Life tables of Greece (survivors at exact age x, probability of dying, expectation of life)	annual data available from SSB	not available at time of report drafting	available from ONS annually on a national and regional health authority basis (similar to NUTS 1) only
Numbers of births and deaths	annual data from DS - NUTS 5 from KSDB	not available at time of report drafting	annual rates and numbers marriages, births, deaths	annual data available from SSB	annual data from registry office, church registry and COP	available from ONS annually and including age breakdown
Marital status	annual data from DS - NUTS 5 from KSDB	not available at time of report drafting	COP	annual data available from SSB	church registry and COP	COP
Average number of children	annual data from DS - NUTS 5 from KSDB	not available at time of report drafting	COP - population by major age groups	annual data available from SSB	annual data from registry office, church registry and COP	COP
Numbers of lone parents	annual data from DS - NUTS 5 from KSDB	not available at time of report drafting	not available	annual data available from SSB	annual data from registry office, and COP	COP - % of individuals in households age 16+ with 1 person age 0-15
Qualifications	annual data from DS - NUTS 5 from KSDB	not available at time of report drafting	annual school population and education level	annual data available from SSB	COP	COP - Persons above 18 qualified at level higher degree, degree and diploma
Health	not available at time of report drafting	not available at time of report drafting	Ministry of Health, Welfare and Social Insurance- annual reported cases of infectious diseases	annual data available from SSB	not available at time of report drafting	COP - % with limiting long term illness Causes of death, infant deaths etc. from ONS
Tenure (owner occupied, rented etc.)	annual data from DS	not available at time of report drafting	COP - occupied regular dwellings by tenure status	annual data available from SSB	COP	COP
Occupancy	annual data from DS	not available at time of report drafting	COP- number of persons per room	annual data available from SSB	not available at time of report drafting	COP - average no. of persons per room
Amenities	annual data from DS	not available at time of report drafting	COP and annual statistics - type of basic facilities, motor vehicles in operation	annual data available from SSB	COP	exclusive use bath/shower/WC, no use bath/shower/WC, shared bath/shower/WC, central heating, number with no cars

COP - census of population

* *definitional complexity* - while data sets are generally available for a particular variable (eg health or occupation), there are often definitional variations in actual data categories between states and sources; even if categories are similar there may be complications as seen in the following examples of population and employment data:

- the basic population figure from a census can be based on several criteria (such as population present on census night or population resident on census night) and be affected by cultural influences e.g. while the norm is for people to be registered by their place of residence, in Greece, the population return to their town of origin on census night - an important aspect if the intention is to compare population distributions.
- employment data may involve variations in industrial classifications or individual sector definitions; the precise meaning of the terms 'occupation' or 'industry' can also vary e.g. in the UK there are two employment classifications, one according to the nature of activities performed the other according to industry to which work activities contribute; sometimes those who are unemployed on census night, but who have worked in an industry in a recent time period, are also included within an industrial count.

Where a number of sources are identified within a state for a particular variable, definitional or periodicity differences may arise. For employment data, for example, there may be different reference points involved e.g. whether the information is based on individual, household or business address records. Alternative employment data sources may also utilise different area units, for example labour market versus administrative divisions.

* *intra-state comparability* issues are important where there are regional variations in statistical output; in Spain this problem emerges through the system of autonomous regions, each with their own statistical cultures; in the UK, with separate provincial data outputs in England and Wales, Scotland and Northern Ireland, the problem appears to be more one of complexity than comparability.

3.2 *Fisheries specific data sources*

3.2.1 Fisheries specific socio-economic data would provide the basis for the identification of fisheries dependent areas, either independently based upon absolute levels of activity, or through combination with the more general socio-economic statistics considered in 3.1. Three categories of data are primarily considered, employment, landings and related industries - these reflect the dependency indices posited in section 2.3.

- 3.2.2 There is a considerable diversity of fisheries data across the states under study, reflected in numerous fisheries specific data sources (see Table 4). Denmark, France, UK (complicated by provincial arrangements of data collection and presentation) and Norway appear to display particularly well organised and comprehensive traditions in statistics and this is evidenced through the availability of a wide range of fisheries data for a number of geographical scales. In Southern Europe the situation is less well developed. In Greece, for example, there is a lack of a well organised fisheries statistical system; data are often discontinuous and based on estimation, in part, due to the dispersed production and landing areas and the often small size of operational vessels. The Spanish system suffers in similar ways but the situation is intensified by the regional administrative structure. There are limited national annual data on employment and landings available from the Ministry and National Statistics Institute; at the regional level the availability and reliability of fisheries data varies with regional administration with the autonomous communities of Andalucia and Galicia appearing more effectively catered for than others; there is no national data base of regional statistics.
- 3.2.3 Crucial to the development of a social data base framework for fisheries dependent areas is the unit of fisheries data collection. The most common collection unit for fisheries data (landings, numbers of fishermen etc) is the port and this, therefore, forms the basic data unit within the data base framework proposed in this report. In some countries there are other possibilities. In Norway, for example, there are numerous data access points and landings can be linked to vessel owner address via sales notes and landing records. In England and Wales, vessel, landing and fishermen distributions can be produced according to Inspectorate Districts and in Scotland, Base Districts and localised creeks. Unlike census of population statistics, fisheries data are therefore less often collected by the administrative divisions arranged within the NUTS framework. A major task in the development of a socio-economic data base for fisheries dependent areas will be found in the allocation of fisheries based data to the NUTS 4 administrative units identified for the more general socio-economic information.

Diversity at the basic level of fisheries data aggregation between and within states can be the cause of definitional inconsistency as well as alternate dependency analysis outcomes. This is the case when using data arranged by port. In some representations, for example, landings may be recorded according to a vessel's port of registration rather than the port of landing or operation. Representations by port of registration would not necessarily reflect the real distribution of fishing activity. Some estimates of regional fishing employment arise from vessel distribution data (either through multiplier calculations based on vessel length or from actual vessel employment statistics) and these can suffer similar activity distortion if the geographical marker is based upon port of registration (or vessel owner address) which may be different to the crew's home base or main port of operation. If one considers data for activities beyond that of the catching sector then the scope for data unit variation is increased.

Table 4: Elaboration of national statistical sources for fisheries specific data.

Denmark	France	Greece	Norway	Spain	United Kingdom
<p>Statistics from Fisheries Directorate (through Fiskeristatistisk Årbog), auctions and Ministry of Agriculture. Landing data available on weekly basis at Kommuner and auction level. Processing employment is also available at NUTS 3 level annually as well as through a separate private processing data base,</p>	<p>The National Institute for Statistics (INSEE) and local statistical offices (Departements) provide a range of fisheries data. Production data is available from national to main auctions levels. In the Mediterranean direct sales are estimated annually.</p>	<p>The National Statistical Service for Greece provides a monthly and annual statistical survey of marine fisheries (vessel, production and employment data). e.g. numbers of fishermen by kind of fishing tool (full-time and part time); annual quantity of fish landed, catches, including species breakdown - including regional and Nomoi data. Other sources: Agricultural Bank of Greece (production and vessels); the National Company for the Development of Fisheries (landings and auctions); marine authorities.</p>	<p>Comprehensive data sets available to municipality level for harvesting and related industries (catches, fleet, employment etc..).</p>	<p>National Statistics Institute (INE), Ministry of Agriculture and Fishing (MAPA), Autonomous Communities; Social Marine Institute (ISM). Data on catches, landings, fleet, fishermen and types of fishing. Available at regional levels to differing extents depending on Autonomous Community. The Marine Fishing Annuary (1978-1986) provides monthly landing data (including species breakdown and value) for marine regions (North East, South Atlantic, South Med etc.) and maritime districts (eg. San Sebastian, Bilbao etc.).</p>	<p>Vessel, employment and landing data available from provincial fisheries departments. Usually annual outputs and provisional monthly landing statistics. Scottish vessel and employment data broken down by individual creeks and districts; in England and Wales according to inspectorate district. Landings breakdown by port. Annual statistics also prepared by Sea Fish Industry Authority.</p>

3.2.4 The socio-economic data challenges listed in 3.1 have specific relevance for fisheries data. Combined with intra state complexity (3.2.2) there are a number of specific definitional complexities and reliability issues associated with fisheries statistics:

- * definitional diversity between and within states may arise in terms of:
 - definitions of landing weight - live weight, landed weight equivalent (gutted, head on), whole fish (shellfish);
 - definition of landings - landings into area by vessels based in area; landings into area by registered national vessels; landings into area by non-national vessels; landings by vessels from area into other ports in country; landings abroad by vessels from area; total landings by vessels from area;
 - definitions of vessel length (registered, overall etc.); and
 - whether there is specification of full time from part time employment and commercially active from inactive fishing vessels; the particular criteria utilised in the respective cut off points may also vary.

- * significant question marks are placed upon the reliability of fisheries data; many data sets are based upon estimation - estimating numbers of fishermen is a considerable challenge, given the often part time and infrequent nature of fishing and crew work and the complicating factor of non-national crew members (whom may also distort a dependency analysis); reliability of landings data is questioned given the challenges of illegal landings and misreporting.

The suggestion in 2.2-2.3 is that where possible the remit of the data base could be in part extended to cover other sectors such as processing and freshwater aquaculture. In general there are less comprehensive data sets available for these sectors. In fact, data are unavailable in some cases, and in most states restricted to national level data and stand alone reports. Attempts to locate accurate estimates of numbers of sites, employees, output figures etc. encounter similar problems of definition and in delimitation of sector boundaries. This is particularly the case for the processing industry where there is considerable fragmentation, range, integration and diversification in activities.

3.2.5 In some instances, fisheries specific data relating to employment, is available from some of the general socio-economic sources, like the census of population, identified in section 3.1. Where this is the case, the information will be more readily available according to the NUTS divisions. This avenue might also facilitate the identification of processing or freshwater aquaculture employment for different regional scales and would provide a useful cross check of fisheries data derived from other sources. In numerous instances this

employment data has been aggregated within industrial classifications to a universal figure incorporating freshwater, inland and marine fisheries and aquaculture and in some cases forestry and agriculture. In no cases are mariculture and freshwater aquaculture separated within these classifications. An approach which uses sources like the census of population to identify fishing employment would face the same data challenges as listed in 3.1.

3.3 *Summary*

3.3.1 As a whole, based upon an analysis of existing data sets, the task facing the development of a socio-economic data base for fisheries dependent areas is a formidable one and this justifies the selection of a modest approach outlined in section 2.1. While the development of such a data base is a policy necessity there will certainly be imperfections in the level of comparability and reliability of data, reflecting diverse national statistical cultures and socio-economic systems and approaches. Further analysis is required of the different variables in different states in order to locate and develop areas of definitional consistency and to acknowledge any inconsistency. There is certainly a problem in terms of the availability of fisheries data at low spatial scales and in some countries more than others. In many cases published data is slow in emerging and this is only occasionally compensated for by provisional statistical statements.

3.3.2 *Social data on fishing populations*

This report focuses upon two sources of dependence data:

- (i) fisheries based data applying specifically to fisheries populations and activities;
- (ii) broad socio-economic statistics applying to total populations and circumstances of coastal areas (eg census of population)

At this point it is important to note that the intention has not been to consider a data base framework on fishing populations *per se*, that is the socio-economic characteristics of fishermen and their families. Instead the focus is upon the communities within which these populations are located, hence an analysis of fisheries dependent areas.

This is not to say that social data on fishing populations would not have policy utility; there would certainly be benefit in understanding the demographic, health, education and social characteristics of fishermen. The most obvious source if this avenue were taken, would be to access the individual records for fishermen or processor workers etc. within the socio-economic sources like the census of population. At present, however, this appears, with few exceptions, to exceed the statistical capacities of the different states involved: it would require disaggregated sector data within industrial classifications which are not often available; data are often restricted to small samples of census records; and individual records may not be available. If the aim was to compare the

social characteristics of fishermen between different regions then there are considerable statistical challenges; even if this information is available at say municipality level there are enhanced anonymity problems at such scales and differences in the absolute numbers of fishermen between regions would complicate percentage comparisons. It is the case that some fisheries specific sources, such as fisheries departments or fishermen's organisations, might hold some social data on fishermen such as their age structure or income levels. To date this kind of information is restricted to occasional stand alone reports and studies at national level.

4.0 **Data base framework and recommendations**

Based on the previous appreciation of national statistical cultures and sources, this section reviews the recommendations and features for a socio-economic data base for fisheries dependent areas. Attention first turns to some basic characteristics and parameters, drawing on some key decisions identified in section 2. Following this there is consideration of a provisional identification of some important dependency criteria and indices, conditioned by data availability and suitability.

4.1 *General characteristics (recommendations 1-10)*

The basic characteristics of the proposed data base framework can be elaborated in the following 10 recommendations:

1. **An areas dependence on sea fisheries should be based ideally on the harvesting sector, involved in marine fisheries and mariculture.**
2. **Two forms of data should be collected:**
 - * **fisheries specific data indicating levels of fisheries activity;**
 - * **more general socio-economic data describing the areas in which fishing activities are embedded.**
3. **Allowing for opportunities for development in terms of dependency criteria as well as flexibility to account for changing dependency patterns, data should be collected for all coastal areas.**
4. **In terms of data production and retrieval, where possible, the basic unit of data collection should be utilised, allowing for maximum possibilities for aggregation (to all NUTS levels or even other 'customised' area definitions, such as labour market areas). General socio-economic data would arise primarily from decennial population census sources and therefore the basic unit in these instances is the enumeration district; if this is not possible, then the next available level of data will suffice (NUTS 4). In most cases, port level should represent the basic collection unit for more fisheries specific data. The data in all cases should be collected on a basis of absolute numbers to allow for maximum statistical transparency.**
5. **Where available in alternative sources, general decennial socio-economic data should be supplemented by annual inputs. Fisheries data should be available on an annual basis. Where there are a number of alternative sources for a particular variable then these should also be included within the data base.**

6. **In most cases, data variable headings will need to be rather general allowing for flexibility in precise criteria between states. As a general rule all dependency representations should contain explanatory notes describing any definitional and temporal data inconsistencies between and within states.**
7. **For each dependent area the data file should also record any independent reports, surveys and ethnographic analyses of relevance to the region.**
8. **National socio-economic data sets should be complemented by regional sources (NUTS 3) within existing European data bases, such as those provided by Eurostat.**
9. **The data base should utilise existing administrative and statistical divisions within the international NUTS system of area classification. Based on available data sets, a scale 'approximating' to NUTS 4 would appear to represent the most comparable, policy relevant and optimum scale for the presentation of fisheries specific and socio-economic dependency data. In some countries NUTS 3 may be a more realistic level given data availability. A key challenge will be found in the allocation of fisheries data to levels approximating to NUTS 4.**
10. **The production of a dependency analysis every 10 years, based upon census intervals, would form a key data base output.**

4.2 *Variables and dependency indices (recommendations 11-12)*

- 4.2.1 Fisheries dependency should be measured on a basis of absolute levels of fisheries activity and also with regard to the socio-economic conditions of areas in which the fisheries activities are located.

The availability of regionally specific fisheries related data is poor in some states and this poses a considerable barrier to the development of a comparable data base on fisheries dependent areas. As a result, the exploratory list of indices identified in 2.2 needs to be partially refined. A minimum data requirement would be to include numbers of fishermen by port (using a range of sources and estimates based on local knowledge, vessel length, or actual vessel data) and level of landings, which would be ascribed to NUTS 4 divisions. Some data may be available according to vessel owner address and while this facilitates its allocation to administrative divisions, like using port of registration this may introduce some discrepancy with the residences of fishermen or main ports of operation. It is unlikely that all countries would be able to produce a full / part time fishermen breakdown.

Through conventional fisheries data sources (such as fisheries departments), obtaining comparable employment data on related sectors such as processing or freshwater aquaculture appears less feasible at present and particularly at

low geographical scales, although this does not discount the possibility of using multiplier calculations for these sectors.

Other employment estimates (and possibly also for the processing sector) might be available through other avenues such as the census of population as noted in 3.2.5. In most cases, at best, an overall fishing employment figure might be available, covering marine and freshwater fisheries and aquaculture. Such a figure is still highly relevant in the context of fisheries dependence despite a lack of disaggregation. Furthermore, if coastal areas are the focus for the analysis then the assumption is that fisheries will refer predominantly to marine fisheries and mariculture. Similarly, even if fisheries employment is grouped with forestry or agriculture in industrial classifications, this data should be included at some point in the data base; it may be possible to estimate the fisheries component by inference, if figures for other sectors are available elsewhere.

Landings data are similarly complex and definitional choices will have significant affect on a dependency representation. Preferably, landing data should refer to total landings into a port or area. Where other landing data are available this should also be included e.g. landings by vessels from an area into other ports and dependence on non-domestic landings.

11. A minimum list of dependency indices might therefore include:

- 1) Numbers of fishermen based in area (based on home port or main port of operation)**
- 2) Fishermen based in area as % of total area employment**
- 3) Fishermen based in area as % of national fishing employment**
- 4) Total value and volume of landings into area**
- 5) Total value and volume of landings into area as % of total national landings**

Some states clearly have more developed fisheries data systems than others and this minimal list of indices would suggest under-utility of data in these cases. Norwegian statistics, for example, can offer a multitude of other variables at municipality level, of particular utility to a dependency analysis. There is a detailed understanding of the activities of fishing vessels (eg. days at sea, number employed, daily income levels and payment structure), through detailed landing and activity records from each vessel. Landing data can be presented on a basis of vessel owner address and postal districts though use of sales notes. Species breakdown and gear information are well developed; this is particularly useful in identifying policy impacts if certain regions lack diversification in gears or species interests. A region's dependence on coastal, mid- or distant-water fisheries can also be established (distant water

enterprises arguably having more flexibility in activity), as can the technological development of the fleet through catch value distributions by vessel length. Well developed data sets are available for aquaculture and processing sectors. If information for the whole chain is available then this provides indicator of an area's level of diversification.

4.2.2 So far attention has been given to fisheries based data indices that will be instrumental in the identification and classification of fisheries dependent areas. However, there are a whole range of other socio-economic variables that can be posited that provide the vital socio-economic profile of the communities in which the fisheries activities are embedded. From the list below it is seen that some have more dependency relevance than others in terms of understanding the likely impact and ramifications of policy measures for a community and fishing population.

12. **A minimum list of variables to be used to provide a socio-economic community profile, based on the analysis of national statistical cultures and available data, might include:**

- * ***total population*** for ten year intervals (and latest annual estimate); providing an indication of population development.
- * ***age, gender composition and marital status*** of population for 10 year intervals; has there been a masculinisation of the community which might signify remoteness or backwardness?
- * ***economically active and inactive population by gender***; percentage of total population which are employed and economically active, percentage of males and females in 20-39 year age group (the most active age category), dependency ratio.
- * ***unemployed males and females***; indicating alternative employment opportunities.
- * ***numbers of births and deaths***; a potential indicator of outmigration.
- * ***numbers employed in primary, secondary and tertiary sectors***, using a merging of categories within national industrial classifications; is there a diversified economy?
- * ***household data***; number of households, age of households (an indicator of development), persons per room, tenure, basic amenities, numbers of cars per household.

Some of the aspects in this list have little direct dependence relevance but nevertheless provide vital community socio-economic data. For those with dependency relevance, for some this can only be understood in combination with other variables. For example, a higher than average percentage of males in the active age group takes on additional meaning if considered against unemployment and employment data.

Overall, this selection of variables is restricted on a basis of apparent availability and definitional consistency. There would clearly be other variables of utility and a second subset of data can be posited. These would, however, face greater challenges of definition.

- * *income levels*; perhaps using the number of personal tax payers in different tax bands or above a certain income level.
- * *health data*; life expectancy among economically active population; numbers of economically inactive, numbers of pensioners, child mortality rates, number of hospitals and doctors etc..
- * *education levels*; division of national data sets into four categories: obligatory qualifications, practical qualifications, lower academic qualifications, higher academic qualifications.
- * *geographical data*; population density and cultivated area; is this a scarcely populated region?

A third set of variables can be introduced which represent some more ideal possibilities, which would only be available, at present, to NUTS 4 level, in a very limited number of countries. These might include: social stability, ethnic characteristics, social problems (crime, drug abuse, suicide, social help budget), market position (is the area located within the core or periphery within the nation state), technological development (research, number of computers), economic health and political system.

4.3 *Summary*

The 14 recommendations listed above represent initial proposals for a socio-economic data base for fisheries dependent areas allowing for their identification, classification and analysis.

The development of a comparable set of variables and indices is clearly at an early stage. The minimum lists of indices listed above have important utility, but progress is needed in identifying their policy relevance and in developing new variables and indices. Also required is a workable mechanism with which to operationalise dependency variables and indices in order to guide policy decisions and assess policy impacts on fisheries dependent areas. This may be based upon the establishment of groupings of high, medium and low dependence (see Figure 4). In other cases it might involve deviation from national and European averages for particular variables, e.g. an above average

number of fishermen or unemployment level or, an above average level of diversification. Within the dependency analysis the absolute levels of fishing activity within different areas should not be lost.

Figure 4: Example of dependency grouping

		Level of male unemployment		
		High	Medium	Low
Numbers of fishermen	High			
	Medium			
	Low			

5.0 Future developments

This baseline report has attempted to begin to sketch an outline framework for a socio-economic data base which would address the clear policy need to systematically identify and analyse fisheries dependent areas. What is evident from the analysis is the formidable challenge involved in producing an effective comparative approach. This would certainly be facilitated through developments in national and European statistics, in order to produce more up-to-date, reliable, temporally and spatially consistent data, and particularly at low spatial scales.

Also evident are the complicated issues surrounding an understanding and presentation of fisheries dependence. Changes in criteria can significantly affect the outcome of a dependency analysis. Furthermore, different decisions clearly have different political outcomes and implications for different fisheries communities.

Before considering the future activities of the Task Group, attention now turns briefly to some possible ways in which the proposed data base framework might be extended.

5.1 *Data base developments*

A number of possibilities can be envisaged for the development of such a data base on fisheries dependent areas. These include the:

- * extension of the data base to incorporate time series analysis of fisheries dependent areas; how has the dependency map changed and what development trends can be identified?
- * extension of data base to a universal coverage of data units;
- * extension of the data base to related industries such as processing and freshwater aquaculture; this would require improvement in the statistical capacities of particular countries; this analysis would be complemented by separation of fisheries and related sector definitions within national industrial classifications;
- * extension of the data base to include other socio-economic variables;
- * extension of the data base to lower geographical scales allowing more focused policy impact and dependency analyses;
- * extension of the data base to include socio-economic analyses of fishing populations rather than communities; again this would require improvement within industrial classifications as well as the availability of individual records within census outputs;

- * extension of the data base to consider the issue of indicator communities where specific analyses of fishing populations and dependency dynamics might be performed; and
- * extension of the fisheries data base prototype to other industrial sectors such as agriculture.

5.2 *Future strategy for task group*

In the medium term the Task Group will consolidate its base line analysis of the form and availability of socio-economic and fisheries data sources. This will include consultation and comments from key statistical services within Europe and will lead to a revised framework and selection of dependency indices, to be presented in the final report of the Task Group. The final report will also consider issues of data retrieval and presentation and the functioning of such a data base. Of key importance will be the development of a systematic approach to assessing policy impacts and fisheries dependence. Of likely prominence will be the notion of indicator communities as a potential focus for dependence analysis. The report will conclude with the formulation of outline research projects which would test the utility of such a database.