European Social Science Fisheries Network

FAIR CT95 0070

Final Report

Department of Geography

University of Hull

September 1999

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PREFACE

The following report describes and evaluates the diverse work of the European Social Science Fisheries Network (ESSFiN) over the period from 1 January 1996 to 30 June 1999 - 42 months of hard but richly rewarding endeavour. As Co-ordinator I wish to acknowledge the unstinting co-operation of the Associate Contractors listed in person below and, in particular, the enthusiasm, resourcefulness and meticulous skills of the Network Manager, Jeremy Phillipson. This report is very much a tribute to their collective efforts and inspirations though, as author, I will bear sole responsibility for the opinions and for any omissions or errors herein.

David Symes
Hull, September 1999

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Bjørn Hersoug, Norwegian College of Fisheries Science, Tromsø
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CONTENTS

(Annexes 2-11 appear as separate bound volumes)

EUROPEAN SOCIAL SCIENCE FISHERIES NETWORK

EXECUTIVE SUMMARY

The European Social Science Fisheries Network (ESSFiN) was established to review the current state of social science research relating to fisheries management in Europe, to identify key issues for future research and to create opportunities for collaborative work in policy related areas. At its conclusion the Network had 349 members drawn from 27 countries; almost two thirds came from within the European Union. ESSFiN's work programme was formalised through a series of specific tasks, *viz*

- to develop a framework for a socio-economic data base on fisheries dependent areas;
- to prepare an annotated bibliography of fisheries social science, 1985-96;
- to organise a programme of thematic and regional workshops; and
- to consider the basis for multi-disciplinary research on fisheries management.

Fisheries social science in Europe comprises a relatively small number of researchers divided between several disciplines, dispersed among a wide range of institutions and lacking a coherent organisational structure. Nonetheless, it contributes a distinctive view of fisheries management stressing the need for a holistic perpective and the importance of contexuality, in contrast to the reductionist approaches of fisheries biology and fisheries economics.

Three intersecting themes provide the basis for the elaboration of a social science perspective

i) *Governance : the institutional frameworks for management.* In contrast to most sectors where the state has reduced its role through devolution, deregulation and privatisation, in fisheries a centralised, hierarchical 'command and control' approach to management remains in place. Two institutional pathologies afflict fisheries management: an unstable management scope, unable to provide a long term vision for the industry, and rigid management structures. In addressing these problems, attention needs to be focused on (a) redefining and prioritising the policy objectives especially in the context of an emerging ecosystem approach, and (b) developing devolved structures appropriate to the demands of a more integrated management system. The concepts of regionalisation and co-management merit closer examination but, in the tradition of the social sciences, such concepts should not be divorced from the particular cultural, social and political contexts of Europe's fisheries.

ii) *Property rights and regulatory measures.* Resolution of the property rights dilemma remains a prerequisite for effective management but the privatisation project involving ITQs, cannot provide a universal solution. Systems of 'differential' or zonal management, distinguishing between offshore and inshore fisheries, may afford a more practical approach. Particular problems

attend the management of inshore waters where complex social relations and economic motives frame patterns of exploitation within sensitive local ecosystems and where Member State responsibility has led to a diversity of management systems.

iii) *Fisheries Dependent Regions (FDRs).* FDRs provide a useful barometer of economic and social change but their analysis is hampered by a lack of accessible, standardised data. Fisheries policy appears to strengthen the dominant modernising processes of concentration and centralisation of fishing activity, resulting in a spiral of economic, demographic and social decline in the least favourable areas associated with the progressive marginalisation of the small boat sector. Development strategies focus on reconversion through diversification of employment opportunities and retraining of fishermen. More attention should be paid to the co-ordination of different strands of policy – fisheries, social welfare, economic development and environmental protection – to ensure the sustainable development of FDRs.

Although further research will be required in all areas of the natural, economic and social sciences, the key development for the future is defined not by reference to particular themes but by an overriding need for a multi-disciplinary approach involving all relevant disciplines. The benefits of single discipline research are approaching their limits in terms of cost and utility. Moreover, there is a growing acceptance of the need for a new management paradigm that can escape the limitations of the reductionist approaches of contemporary management. The development of a new paradigm – possibly around an ecosystem approach to fisheries management – will require the support of multi-disciplinary research including close co-operation between different disciplines working in parallel on common issues. It is therefore important that the European Commission should sponsor multi-disciplinary collaboration through its Fifth Framework Programme.

The detailed results of ESSFiN's work are available in a series of books published by Blackwell Science, Oxford, under the editorship of David Symes:

Property Rights and Regulatory Systems in Fisheries, 1998, 268p
Northern Waters: Management Issues and Practice, 1998, 280p
Alternative Management Systems for Fisheries, 1999, 242p
Europe's Southern Waters: Management Issues and Practice, 1999, 198p
Fisheries Dependent Regions, 2000, *circa* 240p

SUMMARY

Introduction

The Concerted Action has provided the basis for the establishment of the European Social Science Fisheries Network (ESSFiN) and the development of an ambitious work programme over the 42 month period (January 1 1996 to June 30 1999). Its principal objectives were to review the current state of social science research relating to fisheries management in Europe, identify key issues for future research and create opportunities for collaborative engagement in policy relevant research (Section 2.) At its conclusion ESSFiN had a total of 349 members drawn from 27 countries (64% from within the EU) and from a wide range of disciplines both within and outwith the social sciences. Roughly a third of the membership took an active part in ESSFiN's work programme.

The work programme elaborated at the outset of the CA was deliberately wide ranging and intended to provide the basis for the state of the art review as well as outline a social science perspective on fisheries management. Initially the programme comprised two task groups to develop a framework for a socio-economic data base on fisheries dependent regions and to construct an annotated bibliography of fisheries social science for the period 1985-1996 respectively, and five open workshops on themes central to social science interests and on regional perspectives. The workshops attracted an average of 30 participants mainly from the EU and Norway though with occasional contributions from outside Europe. The programme also made provision for the inclusion of additional activities arising from the discourse. In the event two such additions were made to the work programme: a small task group to compare inshore fisheries management in Western Europe and a workshop on multi-disciplinary research on fisheries management. Detailed reports from all activities were submitted to DGXIV and the proceedings of the five open workshops are being published by Blackwell Science to facilitate dissemination of ESSFiN's findings (Section 3).

The Nature of Fisheries Social Science

The CA confirms the impression that fisheries social science, though an expanding and maturing field of research activity, suffers the disadvantages of relatively small numbers highly dispersed among a large number of academic institutes and lacking an organisational umbrella and a dedicated journal for dissemination of its research findings. The social sciences are relative latecomers to research on fisheries management - a field until now dominated by biologists and economists. Although the diversity of disciplines represented in the social sciences is quite striking and a unified research tradition has been slow to develop, ESSFiN has demonstrated the ability and willingness of social scientists to collaborate in formulating a distinctive view of fisheries management. The distinguishing feature of this perspective is to promote a holistic view and to stress the importance of contextuality in relation to particular social and cultural environments in which fishing takes place - in marked contrast to the reductionist approaches of both fisheries biology and fisheries economics.

Analysis of recent literature reveals three main themes structuring social science research: social organisation and social relations; property rights; and institutional frameworks for management. Fisheries management is rather less concerned with controlling fish stocks than with regulating human activity. Social science literature has been enriched by community studies detailing patterns of *social structure and social relations* within the industry and analysing impacts of 'modernisation' in the form of technological change and policy intervention, which are frequently seen to marginalise the artisanal sectors and reduce the flexibility of response in the face of natural and/or economic uncertainty. The issue of *property rights* has dominated the academic discourse in recent years; social scientists have become increasingly audible in their rejection of the privatisation of property rights on theoretical and practical grounds, especially over the implications for the small boat sector and the sustainability of fishing communities. But their most important contribution relates to the *institutional frameworks* - i.e. the principles, processes and policy communities - within which fisheries management is conducted. Here social science has been vigorous in its criticism of the conceptual and practical limitations of the classical bio-economic model and the highly centralised, technocratic 'command and control' management, and in its advocacy of decentralisation, devolution and co-management in the governance of fisheries.

Several weaknesses can be identified in the development of fisheries social science, including the lack of a unifying theoretical perspective, the persistent bias towards the analysis of artisanal fisheries and the neglect of downstream sectors in its analysis of the industry. Detailed description and analysis of the industry and fishing dependent regions is seen to be severely hampered by a lack of comparable economic and social data available at an appropriate (NUTS 4) scale.

Key Themes

Three intersecting themes - governance, property rights and fisheries dependent regions - provide the basis for the elaboration of a social science perspective on fisheries management.

Governance: the institutional frameworks for management (Section 4.5.2.). Whereas in most sectors of the economy, the state has sought to minimise its managerial role through devolution, deregulation and privatisation, the situation in fisheries is strikingly different. The interventionist style involving a centralised, top-down, 'command and control' approach remains in place; a corporate approach implying an active partnership between state and industry is missing. Two fundamental institutional pathologies afflict fisheries management: management scope is variable and unstable and therefore unable to furnish a constant long term vision of the future, while management structures are rigid and contribute to policy inertia. In looking to correct deficiencies of management scope, emphasis was placed on the need to clarify and prioritise policy objectives, including the development of social objectives, in the context of the burgeoning ecosystem approach. In addressing problems of management structure, three related factors were considered - the scale of management institutions, the devolution of management responsibilities and the linkages to other aspects of marine space use through integrated management.

Regionalisation of the CFP, through the establishment of Regional Fisheries Councils, provides one option for a reforming agenda, though it clearly rests on untested assumptions. At the same time, the internal architecture of management institutions - in particular, the narrowly defined policy community and the technocratic policy process - merits critical attention. In attempting to bridge the gap between regulators and the regulated, co-management, involving use groups in the formulation and implementation of policy, remains an important objective. In its detailed design, co-management needs to be carefully tailored to the socio-political cultures of the country concerned.

Property rights and regulatory measures (Section 4.5.3). Resolution of the property rights dilemma is recognised by many as a prerequisite for effective management. But for social scientists the privatisation project, establishing ITQs, is a simplistic solution. Few social scientists would deny the relevance of ITQs in certain situations. The main task, therefore, is to determine in which particular conditions ITQs are appropriate and to make provision, through regulation of the quota market, for safeguarding the more vulnerable sectors and regions, and to adapt the ITQ system to the prevailing institutional structures through, for example, group or community management. Systems of 'differential' or zonal management may afford a solution by distinguishing between inshore and offshore fisheries.

Within the EU, inshore waters present a particular set of management issues, relating to the structural characteristics, social relations and economic motivations of the inshore sector, as well as the complex interactions with sensitive and vulnerable local ecosystems. Currently, management responsibility rests with the Member States and a wide range of approaches - from the centralised to the locally devolved - are to be found.

Fisheries dependent regions (Section 4.5.4.). Fishing dependent regions (FDRs) should provide a useful barometer of economic and social change resulting from the convergence of several strands of fisheries policy. But the analysis of FDRs confronts a number of difficulties: they are difficult to define; their detailed description is hampered by the lack of accessible, standardised and therefore comparable social data and it is difficult to separate out the effects of fisheries policy from those that arise from the basic geographical conditions and from other policy areas.

Fisheries policy is seen to underwrite the dominant modernising processes of economies of scale, technological development, mobility of capital, labour and goods, and the concentration of economic activity in central locations. The modernisation trends within fishing have led to an increasing polarisation of FDRs. In least favoured regions there is a spiral of decline, involving outmigration, demographic ageing, insecure employment, low incomes, weak levels of capital renewal and low levels of aspiration, organisation and innovation. At the level of the household, survival strategies are increasingly structured around a reduction in dependence on fishing and a consequent weakening in the intergenerational continuity in fishing.

Development strategies for FDRs and fishing communities currently focus on reconversion, involving the diversification of employment opportunities through small scale, community based projects and retraining schemes. Changes to the Structural

Funds, the reduction in the regional coverage of Objective 1, 2 and 5b areas and the abandonment of PESCA could leave some FDRs at a disadvantage in terms of access to regional grant aid. Although significantly different in their specific policy objectives, there is an urgent need for the coordination of fisheries, social welfare, economic development and environmental policies at the regional level to ensure the sustainable development of FDRs.

Recommendations for Future Research (Section 6)

Major advances still need to be made in almost all areas of research in fisheries and their management. These advances may come about partly through the infilling of existing gaps in research coverage, partly through closer attention to detail and partly through a reorientation of the hypotheses that structure scientific enquiry - but principally through the development of a multi-disciplinary approach. The themes for social science research are identified; these mainly reflect continuing traditions but new emphasis is placed on the distributional effects of fisheries policy, increasing flexibility and adaptive response in risk minimisation strategies and an integrated approach to the analysis of changing relationships within the 'fish chain' from harvesting to retailing.

It is clear that mono-disciplinary research is approaching its limits in terms of cost effectiveness and utility for fisheries management. Increasing sophistication in modelling and the progress from deterministic modelling to risk management are insufficient. There is growing recognition within the natural and human sciences of the need to create a new management paradigm that can escape the limitations of the rigid, narrow and reductionist approaches of contemporary management. But while it is easy to identify the flaws in existing systems, it is much more difficult to construct an operational form of holistic management which meets the criticisms from the biological, ecological, economic and social sciences, while still satisfying both user groups and administrators. Progress is likely to be incremental, but one concept - *integrated fisheries management*, embodying an ecosystem approach - could prove to be the genesis of a new, holistic paradigm. Integrated fisheries management, based on 'soft predictability' and a precautionary approach to both fisheries and ecosystem sustainability, will define new roles for the natural and human sciences.

At this stage, a multi-disciplinary approach is preferred to more ambitious attempts to frame inter-disciplinary projects. The multi-disciplinary approach requires cooperation between disciplines working in parallel to address common research issues. It requires a commitment to develop a more informed awareness and understanding of other disciplinary perspectives, to pool results and to discuss findings openly and critically but without prejudice. Even this limited progression is likely to confront resistance within both the policy and research communities. There is, therefore, an important role for those who commission policy related research to act as a catalyst for change. It is incumbent on the European Commission, for example, to stimulate multi-disciplinary cooperation through its Fifth Framework Programme.

1.0 INTRODUCTION

The following report provides a consolidated account of the activities undertaken as part of the Concerted Action (FAIR-CT95 0070) during the 42 month period from 1 January 1996 to 30 June 1999. The structure of the report conforms to the guidelines with one important exception: the dissemination of the results was considered a key element in the CA's original objectives and, therefore, an important and integral part of the work programme: accordingly, analysis of the dissemination strategy is brought forward in Section 3 (Results) and summarised only briefly in Section 5 (Dissemination). Otherwise, the report follows the recommended sequence *viz.* (a) a statement of the objectives originally set for the CA (Section 2); (b) a detailed description of the conduct of the CA - organisation, networking, workshops and other tasks and dissemination of results - together with a brief and mainly quantitative 'assessment' of each activity (Section 3); (c) an integrated analysis of the results of the CA (Section 4); and (d) recommendations for further actions in the form of a research agenda (Section 6).

The main body of the report - the analysis of the results of the CA (Section 4) - takes the form of a 'state of the art' review of the contribution of the social sciences to policy relevant research in fisheries. It thus examines the status and structure of the social sciences, the trends evident from recent literature and the principal findings from the diverse activities included in the CA programme. The diversity and breadth of these activities - combined with the fact that the discussions were structured around broad themes rather than specific issues, encapsulating a wide range of opinions from several different disciplinary perspectives both within and outwith the social sciences - means that it is not possible to articulate the findings in very precise and specific terms. Instead, the review provides a more critical and discursive analysis of the main issues within fisheries management where social science perspectives may be judged to be of particular relevance, namely property rights, institutional frameworks for management and fisheries dependent regions.

The final report is based very substantially on the initial reports from the different activities submitted to the Commission during the course of the CA. As common themes tended to pervade discussions in different workshops etc., an attempt has been made to integrate the findings in the ensuing analysis rather than simply summarise the results of each activity separately. Only in a very few instances are the contributions of individual participants identified: ascribing particular arguments to individuals would be both invidious and difficult and, in any case, the papers presented at the workshops are summarised in the initial reports (attached as Annexes 2-11) and, in most cases, presented in full in the final published proceedings. The final report also draws heavily on the two days of discussion at the final ESSFiN board meeting in May 1999 dedicated to a detailed reappraisal of the CA and its work programme.

2.0 OBJECTIVES

"The aim of the Concerted Action (CA) is to establish an active network of social scientists engaged in policy relevant research in fisheries management with the following objectives:

(i) to review and document the current state of social science research relating to fisheries management in Europe;

(ii) to identify key issues for future research particularly in areas relating to the strategic behaviour of fishermen, institutional arrangements for fisheries management, impacts of alternative regulation systems on fisheries dependent regions and the development of appropriate social indicators;

(iii) to represent the social dimensions in policies dedicated to fisheries management;

(iv) to create opportunities for greater collaborative involvement in policy relevant research, with particular reference to establishing links between existing research projects concerned with socio-economic aspects of fisheries management and development;

(v) to facilitate rapid response to requests for information and advice from policy makers".

The successful realisation of these objectives, through the work tasks identified below, will enable: consolidation of existing research findings; development of comparative analyses of management issues and policy development; co-ordination of research so as to achieve more efficient use of intellectual and financial resources; identification of research needs and matching of intellectual resources; and improvements in the dissemination of research findings.

Each of the individual work tasks identified below was given its own separate objectives. These are elaborated at 3.2 below.

As the following sections to this report will indicate all the above objectives have been broadly fulfilled through the conduct of the Concerted Action.

3.0 DESCRIPTION OF WORK

3.1 Organisation of the Concerted Action

The European Social Science Fisheries Network (ESSFiN) was inaugurated on January 1st 1996 and was originally programmed to run for 36 months until December 31st 1998. In the event, the Commission agreed to extend the duration of the Contract for a further six months to June 30th 1999 - within the original budget - to allow for the completion of certain tasks and the organisation of a final workshop on multi-disciplinary research in fisheries (see 3.2.6. below).

ESSFiN was managed by the *Co-ordinator* and the *Network Manager* (Mr Jeremy Phillipson) based in Hull, with the periodic advice and assistance of a Board comprising the seven associate partners. The Co-ordinator and Network Manager worked closely together, meeting on a more or less daily basis. Almost all the administrative and clerical work was conducted 'in house'; only at times of work overload was it necessary to buy in outside assistance in the preparation of workshop reports and manuscripts for publication. Management and administration of the CA required sustained and intensive work inputs from both the Network Manager, employed full time throughout the three and a half years duration, and the Co-ordinator whose involvement in the project greatly exceeded the original estimates. By far the greatest demands on the Co-ordinator's and Network Manager's time came from the preparation of materials for publication and, in particular, from the fine editing of contributions from the great majority of authors for whom English was not the first language. Without this work, the Network could probably have been managed on the basis of one person employed full time throughout the 42 months duration.

The ESSFiN *Board* combined the functions of a sounding board and a watchdog for ESSFiN's progress and development, as well as providing the basis for the detailed planning of the work programme. The Board met on seven occasions. Only the initial meeting in Brussels (15/16th February 1996), called to confirm the aims and objectives of the CA and to initiate the planning of the work programme, and the final meeting in Crete (20/22 May 1999) to review the progress and achievements of the CA, were organised outside the framework of the main workshops. Normally, a half day preceding each workshop was allocated for the conduct of the Board's business. Otherwise, regular contacts were maintained with all Board members through E-mail, phone and fax.

In addition, each associate partner was allocated particular responsibilities within the task groups dealing with the Data Base and Bibliography and/or the organisation of the main workshops. As a result, all five workshops were hosted by one or other of the associate partners.

3.2 ESSFiN Tasks

3.2.1 The Network

(a) *Description.* Networking involved two principal activities: the preparation and revision of the *Register of Members* and the periodic distribution of a *Newsletter* (Fisheries Newsletter for Social Sciences in Europe or *Finesse*). The *Register* giving the names, addresses and a brief description of the members' research interests, was first produced at the outset of the CA and subsequently revised in January 1997 and June 1999. Over the period of the CA membership of the Network rose from 203 to 349. *Finesse*, edited by the Co-ordinator and produced by the Network Manager, was published at frequent though irregular intervals throughout the duration of the CA, providing members with information on the development of ESSFiN, notices of forthcoming meetings, reports on ESSFiN activities and other relevant conferences, together with updates of the ESSFiN Register. It also offered an opportunity to the Network's publishers - Blackwell Science - to advertise ESSFiN publications to members at special discount rates. During the final stages of the CA, *Finesse* was also used to recruit the views of the membership on the success or otherwise of ESSFiN's activities and to invite proposals for the future development of the Network. In total, eleven issues of *Finesse* were distributed to members.

In addition to the formal communications with the general membership through the Newsletter, considerable E-mail, fax and telephone correspondence took place with individual members.

(b) Evaluation. Although the Network has grown quite vigorously throughout the course of the CA, there are some concerns as to its overall coverage and representativeness and the level of participation. Taking account of both new entries and departures, the numbers rose steadily from 203 at the start of the CA to 349 by its completion in June 1999 (see Fig. 3.1.a); numbers were still rising at the end of the project and it is by no means certain that the Network has recruited nearly all those with a genuine and active interest in the social science of fisheries. At one level the statistics are impressive: 27 countries are represented including 18 European countries and all 13 EU Member States with coastal/fishing interests. Moreover, there is a strong non-European 'chapter' with some 37 members in Canada and USA and 14 from 'other countries'. But as Fig. 3.1 clearly shows, membership is dominated by a very few countries: France, Norway, the UK and Spain together account for half the members (Fig. 3.1.c). This is perhaps neither surprising - for it reflects in part the make up of the CA partners and to a lesser extent the relative importance of the social sciences within Europe - nor is it out of balance with the comparative strengths of the fishing industries of Europe. What is disappointing, however, is the failure of the Network to establish a stronger base in Southern Europe and to involve the new democracies in Eastern Europe both in the Baltic and Black Sea regions. These weaknesses may have more to do with the status and stage of development of the social sciences in these regions than with a failure

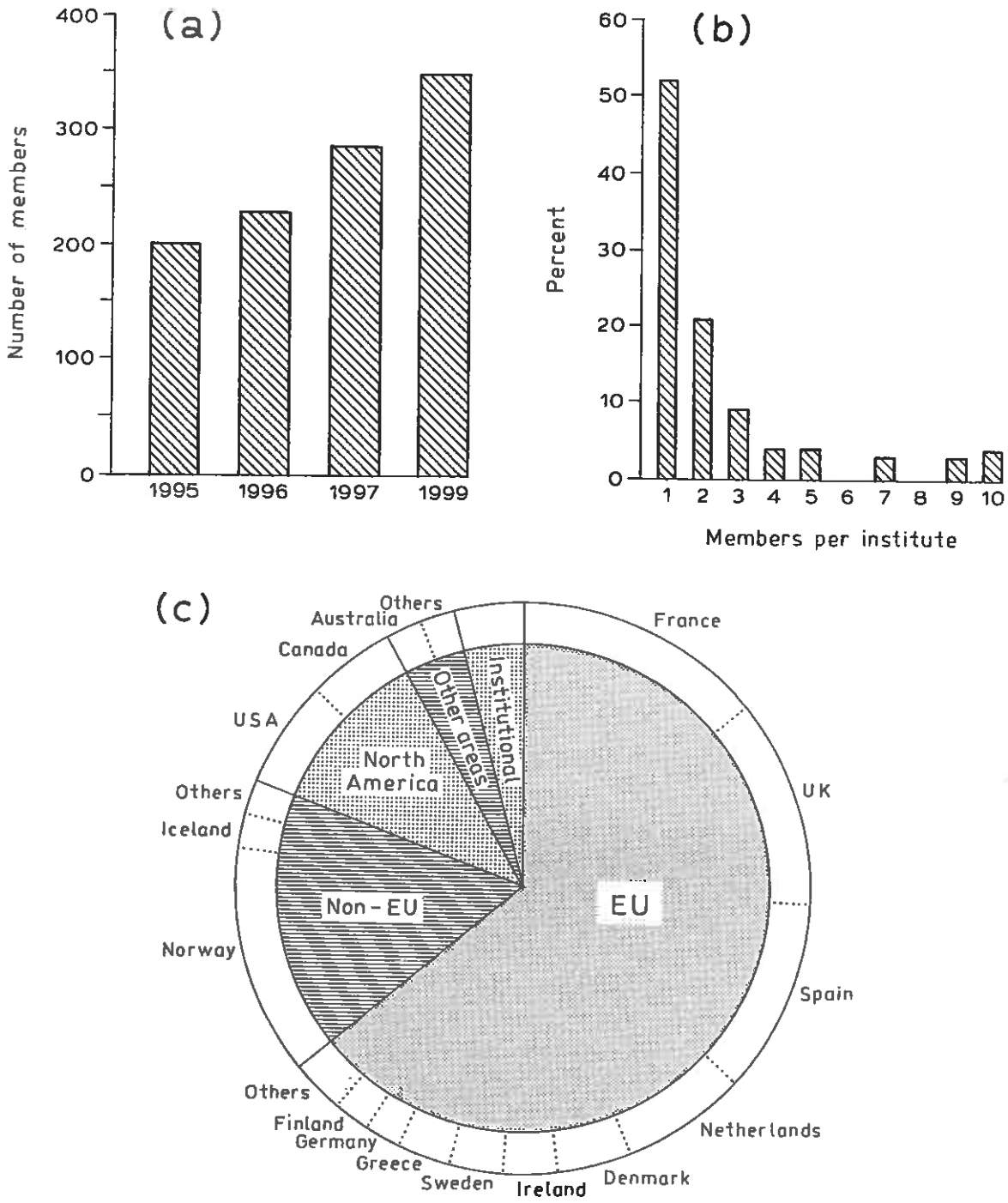


Figure 3.1 ESSFiN Membership
(a) Growth 1995 - 99
(b) Number of members per institutional address, 1999
(c) Distribution of membership by region and country, 1999

of the Network's recruitment strategy, though the strong bias towards the use of the English language may also be a contributory factor.

On the other hand, the Network does boast a broad constituency of membership. The Network was open to all comers irrespective of their employment, disciplinary background or particular research interests. Although the bulk of members were in academic posts, there were significant numbers of fisheries administrators and consultants, as well as institutional members. No detailed analysis of the disciplinary origins of members is possible, but it seems reasonable to estimate that around three quarters could be grouped together under the term social scientists. Others included fisheries scientists, marine ecologists, historians, economists and lawyers.

One feature of the Network which may, in part, reflect the fragmented nature of the social science community engaged in fisheries research is the high proportion of members who were the sole representatives of their particular institutes (Fig. 3.1.b). Of course, there may well be other fisheries social scientists in the same institute who elected not to join ESSFiN. But equally, there are likely to be instances where two or more members from the same institute had no prior experience of working together. Only in a very few instances was there clear evidence of multi-disciplinary groupings already active in fisheries research (see also Section 4.2).

A distinction needs to be drawn between active and passive membership of the Network. Most open networks will tend to attract their share of compulsive, but otherwise inactive 'joiners'. ESSFiN was no exception. Perhaps a third of the registered members took some active part in the work of ESSFiN through attendance at workshops or through responding to requests for information and opinion made in *Finesse*. Two thirds, therefore, were inactive for reasons of geography, low levels of interest in the social science agenda developed by ESSFiN or some other form of inertia.

The two prime tests of involvement in and commitment to the Network were participation in the programme of open workshops (see 3.2.4. below) and response to the membership survey in the summer of 1998. A total of 82 individuals took part in the open workshops: of these 31 took part in two or more (Fig. 3.2.a.). As Fig. 3.2.b. indicates, the majority of participants (61%) were drawn from five countries and, if the total number of workshop places is taken into account, the share held by these five countries is even higher (67%). In this sense, active participation in the workshops reflects very closely the overall distribution of membership (see Fig. 3.1).

The questionnaire survey of members' views on the success or otherwise of ESSFiN and their opinion of its future development provides a second and ultimately sterner test of commitment to the Network. The survey was conducted through *Finesse* (Issue No. 9) in the summer of 1998. In the end - and only after reminders had been sent to those who had participated in the workshops - a total of 60 returns were received, roughly 18% of the membership at that date. Partly as a result of the focused reminders, most of

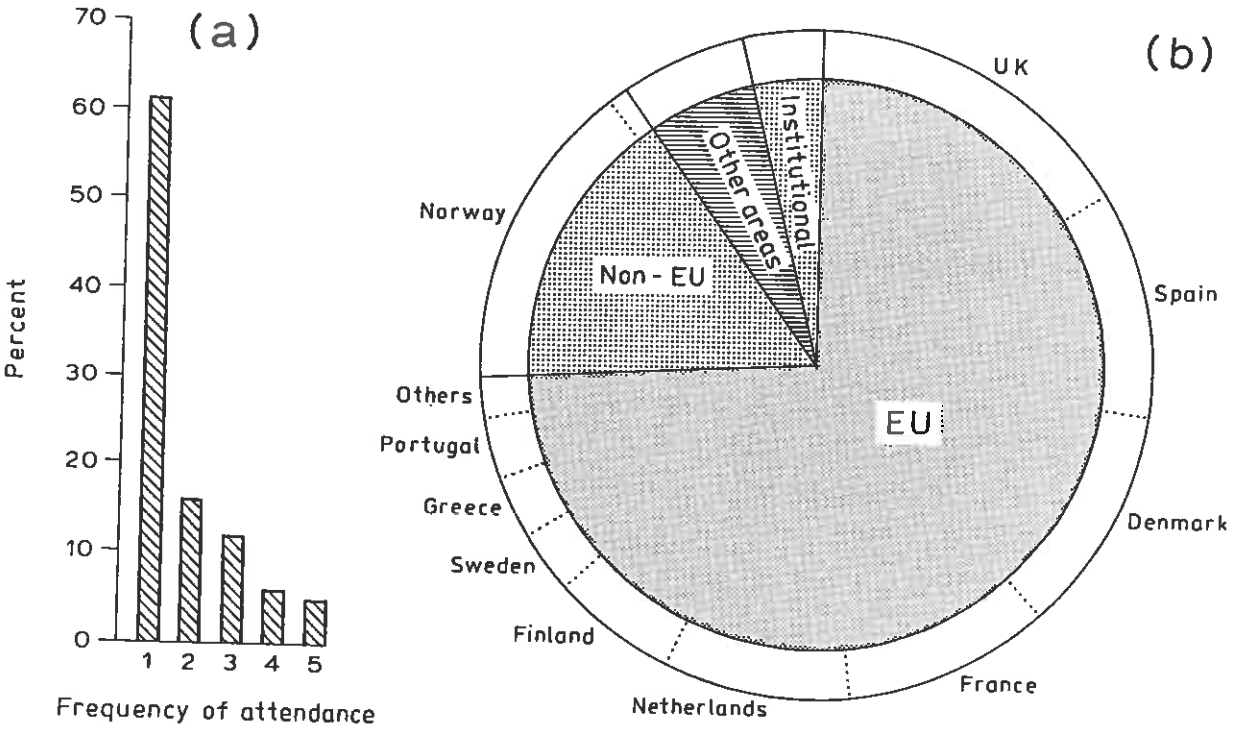


Figure 3.2 Attendance at open workshops
(a) Frequency of attendance
(b) Country of origin of participants

those responding to the questionnaire had already demonstrated an active interest and involvement in the Network's activities - but there were some new 'activists' including a number from non-European countries. The distribution of responses not surprisingly reflected the overall patterns for membership and workshop participation. For the record, the respondents overwhelmingly endorsed ESSFiN's work. 57 out of the 60 respondents believed that ESSFiN was achieving its objectives. The remaining three were ambivalent rather than hostile, and apart from three 'no answers', all respondents regarded it as 'very important' (47) or 'important' (10) that the Network should continue beyond the expiry of the CA. But what the silent majority were thinking is beyond recall. The workshops (see 3.2.4. below) were clearly regarded as ESSFiN's most valuable activity (164 points on a basis of ranked answers), with the Newsletter (126 points) and Register (76) as second and third.

(c) Conclusions. It would seem reasonable to conclude that the Network was successful in recruiting large numbers of social scientists in Europe, and beyond, working on fisheries related topics - though the geographical distribution was somewhat uneven - but rather less successful in persuading more than a third of the membership to become actively involved in ESSFiN's work programme. At a conservative estimate, there may be between 150 and 200 social scientists within Europe working on fisheries; roughly half of these took part in the workshop programme. It is quite possible that we would have developed an even larger and broader base to the Network had we opted to make use of the internet, but experience elsewhere suggests that such networks tend to be 'noisy' and potentially frivolous, and not necessarily well suited to the kind of detailed work programme undertaken by ESSFiN.

As befits the aims and objectives of the CA, most of ESSFiN's activities were 'open events' directly accessible to the general membership of the Network. However, certain specific tasks were undertaken by members of the ESSFiN Board. These 'closed activities' included the Socio-Economic Date Base and Bibliography task groups.

3.2.2 Socio-Economic Data Base

Task group leader: Oddmund Otterstad (Norway)
Members: Peter Friis (Denmark), Babis Kasimis (Greece), Jeremy Phillipson and David Symes (UK)

Aims and Objectives. The aim was to develop the basic framework for a comparative national social data base for fisheries involving (i) elaboration of key parameters for establishing a data base for fisheries dependent areas; (ii) preliminary analysis of the availability of relevant data through national statistical offices; (iii) identification of appropriate geographical scales and key indicators; and (iv) recommendations concerning the format of the data base.

Procedures. Following initial discussion of the project at the ESSFiN Board Meeting (February 1996), the task group met in Sliven, Bulgaria, in June 1996 to outline the Baseline Report which was submitted to DG XIV in November 1996. In the following year, a consultation document and questionnaire were sent to some 63 named individuals in six international organisations and national organisations in six European states, which were thought likely to be potential users of the proposed date base. Consideration of the responses (30% of individuals, 50% of organisations) helped in the framing of the final report submitted in December 1997.

Problems. No major problems were encountered in the carrying out of the project, though it was quickly recognised that the compilation of a comparative social data base along the lines recommended in the final report would be a potentially very complex task beyond the resources of ESSFiN and would require 'field testing' in a number of countries. Some of these issues are now being addressed in a Concerted Action (FAIR CT98-4399), a direct outcome of the ESSFiN task group.

Publications:

(i) *A Socio-Economic Data Base Framework for Fisheries Dependent Areas: Baseline Report,* Universities of Hull and Trondheim, January 1997, 40p.

(ii) *A Socio-Economic Data Base Framework for Fisheries Dependent Areas: Final Report,* Universities of Hull and Trondheim, December 1997, 36p.

3.2.3 Bibliography

Task group leader: Torben Vestergaard (Denmark)
Members: Katia Frangoudes (France), Peter Holm *vice* Bjørn Hersoug (Norway), Juan Luis Suarez de Vivero (Spain), Jeremy Phillipson and David Symes (UK)

Aims and Objectives. As part of the underlying aim of the CA to provide a state of the art review of the social science of fisheries, the principal objective of the Bibliography was to remedy a basic weakness in the current state of social science research - which arises from the widely dispersed and often relatively inaccessible location of publications relating to the social science of fisheries and their management - by creating a consolidated listing of recent research findings. The Bibliography was to take the form of a brief analytical commentary and an annotated selection of publications during the period 1985 - 1996. The intention was to revise and update the Bibliography through periodic supplements.

Procedures. Following an initial outline of the project at the first ESSFiN Board Meeting in February 1996, task group members attempted to track down as many relevant references as possible through a trawl of wide ranging sources and enlisted the assistance of Network members through *Finesse* in

providing details of their own publications. An initial list of *circa* 1200 titles was compiled. The task group met in Aarhus in October 1996 to review the initial list, removing less appropriate and 'duplicate' entries, to decide the detailed format of the Bibliography and to outline the scope and context of the analytical commentary. A revised list of titles was submitted to a panel of four social scientists in Europe and North America for comment and the final version of the Bibliography was released in the summer of 1998.

Problems. Some difficulties were encountered over copyright on author's abstracts which it had been hoped to use in their original form. In the event it was necessary to 'edit' the abstracts and lingering doubts over copyright prevented formal publication. Copies of the Bibliography were made available to all ESSFiN members free on request. The nature of the task and the intervention of other ESSFiN activities delayed completion of the project well beyond the original target date (Month 15) and prevented the updating of the Bibliography to cover the period 1997 - 1998.

Publication:

(i) *Fisheries Social Science: A Selective Bibliography, 1985 - 1996,* ESSFiN, Universities of Aarhus and Hull, June 1998 50p

3.2.4 Thematic and Regional Workshops

Co-ordinator: David Symes (UK)

Aims and Objectives. This core activity was designed to uncover the extent and nature of current social science research in fisheries and so contribute to the state of the art assessment. The purpose of the workshops was to facilitate the pooling, peer group analysis and refinement of research findings and to create a forum for discussion of policy implications and the framing of recommendations to the Commission (DG XIV).

Procedures. Broadly similar procedures were followed for all five workshops, though some small but unimportant modifications were introduced as the programme unfolded. The topics for the five workshops had been identified in the original proposal and confirmed in the work programme forming part of the contract. The workshops were 'open events' advertised through *Finesse*: would-be participants were required to submit titles and brief abstracts of their intended papers. In the event, it was only rarely necessary to reject a particular application, usually on the grounds of relevance to the theme of the workshop. More commonly, it proved necessary to invoke the closing date to contain the size of the workshop. For each of the thematic workshops - but not for the regional ones - a briefing paper outlining the aims and scope of the workshop was prepared by the Co-ordinator and circulated in advance to all participants. The programme for each workshop was the responsibility of the Co-ordinator, but the choice of venue and the domestic arrangements were left very largely to the discretion of the associate partner acting as host.

Each workshop was held over three or four working days, of which one was dedicated to a field excursion intended to introduce participants to some of the local issues relating to fisheries and to other aspects of coastal zone management. Following each workshop, a draft report, containing extended summaries of the papers and the discussions, together with a brief concluding analysis of the proceedings was circulated to participants for comments and corrections before an amended final report was submitted to DG XIV. Subsequently, an edited selection of papers was prepared for publication by Blackwell Science.

Problems. The only problem to emerge in the early workshops was the balance between paper presentations and discussions. This was solved by (a) a reduction in the number of papers or, in the case of the final workshop, an extension to four rather than three working days, to allow time for discussion; and (b) the introduction of rapporteurs, usually but not exclusively drawn from among the associate partners, to provide verbal and written commentaries on the main findings of the workshop.

The details for each workshop are given below.

3.2.4.a Property Rights, Regulatory Measures and the Strategic Response of Fishermen
Seville, Spain: 5-7 September 1996

Host Institutions: University of Seville (Juan Luis Suarez de Vivero): Department of Agriculture and Fisheries, Junta de Andalucia.

28 participants from 12 countries (8 EU Member States)
19 papers presented in English, French and Spanish

Publications:

(i) *Property Rights, Regulatory Measures and the Strategic Response of Fisheries.* ESSFiN, University of Hull, February 1997, 55p.

(ii) ed. David Symes, *Property Rights and Regulatory Systems in Fisheries,* Blackwell Science, Oxford, 1998, x+ 268p.

3.2.4.b Northern Waters: Management Issues and Practice
Aarhus, Denmark: 29-31 May 1997

Host Institution: University of Aarhus (Torben Vestergaard)

36 participants from 10 countries (9 EU Member States)
24 papers presented in English

Publications:

(i) *Northern Waters: Management Issues and Practice,* ESSFiN, University of Hull, August 1997, 55p.
(ii) ed. David Symes, *Northern Waters: Management Issues and Practice,* Blackwell Science, Oxford, 1998, viii+ 280p.

3.2.4.c Alternative Management Systems
Brest, France: 18-20 September 1997

Host Institutions: OIKOS (Katia Frangoudes); CEDEM

26 participants from 9 countries (8 EU Member States)
17 papers presented in English and French

Publications:
(i) *Alternative Management Systems,* ESSFiN, University of Hull, November 1997, 55p.
(ii) ed. David Symes, *Alternative Management Systems for Fisheries*, Blackwell Science, Oxford, 1999, ix + 242p.

3.2.4.d Southern Waters: Management Issues and Practice
Syros, Greece: 14-16th May 1998

Host Institutions: University of Patras (Babis Kasimis) ;
Municipality of Hermoupolis

24 participants from 9 countries (8 EU Member States)
17 papers presented in English and French

Publications:
(i) *Southern Waters: Management Issues and Practice,* ESSFiN, University of Hull, September 1998, 43p.
(ii) ed. David Symes, *Europe's Southern Waters: Management Issues and Practice,* Blackwell Science, Oxford, 1999, x+198p.

3.2.4.e Fisheries Dependent Regions
Lofoten, Norway: 27-30 August 1998

Host Institution: University of Tromsø (Bjørn Hersoug)

32 participants from 11 countries (9 EU Member States)
21 papers presented in English

Publications:
(i) *Fisheries Dependent Regions,* ESSFiN, University of Hull, October 1998, 63p.
(ii) ed. David Symes, *Fisheries Dependent Regions,* Blackwell Science, Oxford, in press.

The remaining two activities, both undertaken in workshop form, differ from the main suite of workshops in two principal respects: first, they were extra tasks added to the original work programme; and, secondly, participation was by invitation.

3.2.5 Inshore Fisheries Management

Co-ordinator: David Symes (UK)

Aims and Objectives. Throughout the early part of the work programme, the special circumstances and particular problems facing the inshore fisheries sector in Europe became ever more apparent. It was decided to develop a special study which would, *inter alia,* describe the general conditions and policy systems for inshore fisheries within EU Member States and identify the main management issues.

Procedures. A small steering group was established in the summer of 1997 with the purpose of defining more closely the objectives and organisation of the task group. Participants were originally selected on the basis of one representative for each country and the intention was to provide a broad cross-section of countries within the EU. Two small workshops were held: the first in Gruissan, Southern France (29-31 March 1998) where 'state of the art' presentations were made for each of the eight participating countries and the thematic programme for the second workshop was defined; and the second in Amsterdam (24-26 September 1998) attended by a somewhat larger group of 14 participants who were involved in the presentation of 13 thematic papers.

Problems. One disappointing feature of this task group was the failure to attract well qualified participants from Southern Europe (except France). As a result the study related almost exclusively to North West Europe (Denmark, Finland, France, Ireland, the Netherlands, Sweden and the UK). Even though nominally working to a common template for describing the nature of inshore fisheries and their management, it proved very difficult to achieve comparability in the state of the art papers - a reflection of both diversity of circumstances and diversity of disciplinary approaches.

Publications:

(i) *Inshore Fisheries Management*, ESSFiN, University of Hull, March 1999, 65p.

Commercial publication of the results of the task group remains under consideration.

3.2.6 Multi-disciplinary Research in Fisheries Management

Co-ordinator: David Symes (UK)

Aims and Objectives. As the main programme of ESSFiN had clearly indicated the importance of a multi-disciplinary approach to fisheries management, it was decided to investigate further the potential role of the social sciences in such an approach as the logical conclusion to ESSFiN's activities. Accordingly, the final workshop was designed to review recent developments in research in the natural, economic and social sciences and to examine the scope for a multi-disciplinary approach to policy related research in fisheries and their management.

Procedures. Invitations were accepted by eleven individual scientists representing fisheries science, marine ecology, economics and the social sciences (social anthropology, sociology, political science and geography), together with representatives from fishermen's organisations and wildlife conservation groups, drawn from six European and two North American countries. A total of 13 papers were prepared and circulated to all participants in advance. The workshop was held over two days at the Sophienberg Slott in Denmark (13-14th April 1999) with short presentations, and sessional and general discussions initiated by a team of rapporteurs drawn from among the participants. Slightly edited versions of all the papers and summaries of the discussions were incorporated into the final report to DG XIV. No problems were associated with this task group.

Publication:

(i) *Multi-disciplinary Research in Fisheries Management,* ESSFiN, University of Hull, June 1999, 139p.

Consideration is also being given to the submission of a review article based on the results of the workshop to a key journal.

3.3 Dissemination

Dissemination is identified as a principal feature of a Concerted Action and this has been duly recognised in the activities of ESSFiN. Success in the dissemination of the results from the project can be attributed to three features:

(a) The very size of the network and the established system of communication through *Finesse* has meant that notice of ESSFiN activities and summaries of the various tasks reached an already wide audience. Copies of the two reports from the Socio-Economic Data Base task group (see 3.2.2. above) were distributed free of charge to all members of the network and copies of the Bibliography were also offered free on request. We have also been able to accede to the occasional request for copies of workshop reports intended primarily for the Commission.

(b) At a very early stage in the development of ESSFiN, agreement was reached with Blackwell Science of Oxford to publish, through Fishing News Books, the results of the open workshops in book form with concessionary prices available to ESSFiN members. As a consequence the main findings from the CA programme have been able to reach the widest possible audience - although comments from the publishers (and the considerable hike in prices of the publications) suggest that the general audience for the social science of fisheries is not particularly large nor commercially attractive. To date four volumes have been published, one is 'in press' and a sixth is under consideration

(c) Because it was unclear that the results of ESSFiN's deliberations were in fact reaching their target audience of those directly involved in the development and administration of fisheries policy, it was decided in the summer of 1998 to distribute copies of all reports and publications directly to a list of 45 key individuals in Member State fisheries departments, EU institutions including the Commission, Committee for the Regions, certain advisory committees, the European Parliament and a selection of international organisations including ICES, OECD and FAO (see Annexe 1).

The only setback to the dissemination of ESSFiN work occurred in the case of the Bibliography (see 3.2.3. above) where the original intentions for wider publication were frustrated by uncertainties over copyright issues.

Widespread dissemination has certainly created considerable awareness of ESSFiN and its work throughout the social science communities in Europe and North America and, more importantly, helped to increase understanding of the actual contribution and potential role of the social sciences in the analysis and development of fisheries management, as the following section will hopefully make clear.

4.0 RESULTS*

4.1 Introduction

In fulfilment of the aims and objectives of the Concerted Action (described in detail in Section 2 above), the final report is expected to provide an overall review of the present and future contributions of the social sciences to an understanding of the issues confronting fisheries and their management in European waters and outline a strategy for the development of research in the social sciences through the identification of priority areas and appropriate organisational frameworks. These tasks have been successfully completed through the work programme outlined in Section 3.2 above and the detailed results have been presented to the Commission in a series of reports, copies of which are annexed.

The present section therefore presents a synthesis of the findings through a more closely integrated analysis and reassessment of the main conclusions from the various tasks. It takes the form of a 'state of the art' review, indicating both the strengths and weaknesses of recent social science research and emphasising the particular contributions made by the ESSFiN programme. Certain key themes in social science research are accorded more detailed analysis: these include property rights and regulatory systems, the institutional frameworks for fisheries management and the problems facing fisheries dependent regions - each of which formed the basis for a thematic workshop. Particular attention is also paid to the very different perspectives on key issues presented through the two regional workshops. Finally, the analysis seeks to define an agenda for future research involving the social sciences working either within their own disciplinary traditions or, more appropriately, within a multi-disciplinary framework involving both the natural and human sciences.

4.2 The Nature of the Social Sciences

The CA was predicated, at least in part, on the assumption that - in marked contrast to the pre-eminent biological and economic sciences - the social science contribution to policy related research was, thus far, struggling for recognition, lacking a coherent organisation and without any dedicated channels for publication. Indeed, one of the functions of ESSFiN was to provide an albeit temporary structure for fisheries social science in Europe through which to assess its actual and potential contributions and to explore the opportunities for more coherent development.

Fisheries social science is a relatively recent but rapidly expanding and gradually maturing field of research activity. However, it remains fragmented

* Section 4 attempts to project a common understanding among fisheries social scientists of the problems of fisheries management in both theory and practice. It is recognised, however, that the views expressed here may not be shared by all fisheries social scientists or by other fisheries scientists. The following section should therefore be seen as reflecting the conclusions of those who participated in the ESSFiN task groups and workshops.

among several cognate disciplines, including social anthropology, sociology, human geography, political economy and management sciences. Despite their distinctive traditions, they share a number of theoretical constructs, research methodologies and a common language. Together they may be described as representing a broad church, unmarked by narrow sectarian schisms based on methodology or philosophy. As a corollary, however, fisheries social scientists tend to be dispersed among a relatively large number of academic institutions; only rarely do these institutions contain more than a very small nucleus of social scientists with a shared interest in fisheries - an impression well supported by the configuration of membership of ESSFiN (Fig. 3.1). As if to emphasise the point, two of the three largest corporate groupings of ESSFiN members are from economics, rather than social science, institutes. To date fisheries social scientists are neither prominent in professional organisations nor common in fisheries administration. With no coherent structures capable of integrating their research activities within or between the academic institutes, the majority of social scientists engaged in research on fisheries are working as individuals and in relative isolation. Moreover, their research findings are dispersed across a wide range of journals, so weakening the effectiveness of dissemination and reducing their impact on policy debate. The unequal status accorded to the social sciences - and their uneven level of development within Europe - is clearly discernible in fisheries research. As a general rule, fisheries social science is more strongly developed in Northern and Western Europe as compared to Southern and Eastern Europe, in terms of numbers, theoretical refinement and methodological sophistication.

The overview of recent literature *(Selected Bibliography)* tends to confirm these impressions. The growing volume of literature remains for the most part dispersed in a range of scientific journals dedicated to particular disciplines rather than concentrated in titles focusing on fisheries or marine affairs. Of the 257 items cited in the *Bibliography*, slightly more than half were articles distributed among no fewer than 45 journals. Only one journal - *Marine Policy* - emerged as a regular outlet for fisheries social science with 26 citations or 20% of all journal articles.

Only three other journals - *Maritime Anthropological Studies* or MAST, *Human Organization* and *Ocean and Coastal Management* - recorded more than ten citations and with the demise of MAST there is no longer any other European journal catering in large measure for the social science of fisheries.

4.3 Review of Recent Literature in the Social Sciences

The social sciences are a relatively late entrant into a field of scientific enquiry still largely dominated by fisheries biologists and economists. Although sooner or later, the unique conditions of fisheries as an example of common pool resources and perhaps more particularly the crisis in fisheries management were bound to attract the interests of a number of social sciences concerned with the management of natural resources, the initial development was slow. The diversity of disciplines involved has not assisted the evolution

of a unified tradition and, as a result, claims to present fisheries social science as a distinctive and coherent sub-disciplinary specialisation are perhaps insubstantial. Instead, the pursuit of different issues by different groups of disciplines has led to an essentially pragmatic and, at times, a seemingly *ad hoc* approach. Underlying this however, has been an ambition among virtually all the social sciences to present a more balanced and holistic treatment of fisheries and their management, restoring to the equation those factors which the fundamentally reductionist sciences of fish stock assessment and economics have largely excluded.

The holistic perspective owes much to the traditions of social anthropology and ethnography and the influence of 'relativity', the emphasis on social relations and cultural meaning and the insistence in analysing phenomena in their particular contexts. The tendency of reductionist scientific analysis to neglect such contextual relations, and therefore for most modern management systems to ignore the particular social and cultural environments within which fishing takes place, is considered by many social scientists to explain the relative failure of most modern systems of management. At the same time, however, the influence of social anthropology and the importance of contextuality may be held at least partly responsible for the undue emphasis in social science research on artisanal fisheries in local settings and the corresponding neglect of the more mobile, large scale industrial fisheries which today hold a dominant share of production in most European fisheries in the North Atlantic.

4.3.1 Social Organisation and Social Relations

As an extension of the social anthropological tradition, one of the principal themes in social science research has been the analysis of social relations. Fisheries management is less concerned with the control of fish stocks than with the regulation of human activity. The study of fisheries must therefore involve various aspects of social relations both within the fishing community and in its dealings with the wider society. Although initially it was possible to identify two broadly separate orientations - the first concerned with meaning, values and attitudes and the second with socio-economic and socio-political relations - the two are seen to be increasingly convergent.

The main vehicles for such analyses were the community monographs, particularly associated with the development of rural sociology in the 1950s, 60s and 70s. In Europe surprisingly few dealt with coastal communities and, as a result, we came to rely mainly on studies from the North West Atlantic and, in particular, from Newfoundland where the Institute of Social and Economic Research established at the Memorial University of Newfoundland in 1961 embarked on an extensive programme of ethnographic and sociological studies of development and dependency of fishing communities in marginal regions. The scope, content and methodology was only occasionally replicated in Europe, most notably by Nordic social scientists. Analysis focused on the social organisation of small scale fisheries both in terms of the fishing unit and the community of residence, stressing the primary importance

of kin relations in patterns of boat ownership, crew recruitment and shore based activities.

One consistent feature of more recent studies has been the emphasis on the impacts of 'modernisation' - in the form of structural, technological and institutional change - on the established patterns of social organisation and social relations, especially within the artisanal sector. Attention has been drawn to the appropriation of the local resource base, the restrictions on the artisanal sector's customary flexibility of response in the face of uncertainty and the overall marginalisation of the small boat industry. Increasing emphasis has been laid on the development of professional organisations and representations of user groups' interests at the interface between centralised management and the fishing industry at local and national levels. Social anthropological studies have also pointed to the changing patterns of knowledge and values within the fishing industry, with a growing importance attached to scientific information and the marginalisation of local, experiential, folk knowledge as a result of the growth of science led management systems.

4.3.2 Property Rights

The interest of other social science disciplines - and especially sociology, political economy and political science - has been stimulated very largely by the emerging 'crisis scenario' enveloping fisheries and their management, the increasing involvement of the state and the growing tensions between economic and social theory in addressing the crisis. These issues came together mainly in the 1980s and 1990s - and nowhere is it more clearly demonstrated than in the question of property rights, which became a particular area of contention between the economic and social sciences. The 'tragedy of the commons' paradigm initiated by Hardin in 1968 has become an established part of the rationale behind modern fisheries management and the basis of the argument for the privatisation of property rights, advocated by economists with increasing vigour over the last decade or so, as a prerequisite for the rational management of fisheries.

The tragedy of the commons presents, in fact, a theory of social behaviour in which the interests of the community are rendered unsafe by the unregulated and self-interested actions of individuals to maximise the private utility of common pool resources. Free fishing threatens the fish stocks with inevitable over-exploitation which can only be adequately countered by the regulation of fishing activity through state control or by the simulation of private property rights through the introduction of individual transferable quotas (ITQs). The latter is preferred by most economists for theoretical reasons and increasingly supported by administrators for reasons of administrative convenience largely on the presumption of self-regulatory mechanisms (the quota market) and the internalisation of transaction costs. However, the privatisation project has been challenged by some economists and by most social scientists on the following grounds: (i) the unconvincing relationship between privatisation theory and the empirical realities - the argument in favour of privatisation is based on *a priori* reasoning rather than empirical generalisation; (ii) the

erroneous inference that common pool resources necessarily imply the absence of effective management; and (iii) the discounting of significant economic and social consequences of privatisation for the viability of the artisanal fishing sector and the dependent fishing communities. The social science case stresses the considerable success achieved by well established local management systems in regulating fishing effort and suggests that the assumption of state control has largely contributed to the degradation of local management systems and the over-exploitation of fish stocks, rather than *vice versa*.

[See 4.5.3. below for the development of the property rights discourse within ESSFiN]

4.3.3 Management Systems

Critical analysis of management systems has in recent years become a primary focus of interest for the social sciences (including somewhat belatedly the political sciences). It offers ample scope for critical discourse among the whole range of social science disciplines from social anthropology and sociology, with their particular perceptions of social relations and property rights which inevitably condition the system of management, to political science and theories of governance.

Resource management as a subject for national and international policy is a relatively recent development. In fisheries, it was linked specifically to the state's assumption of management responsibilities in the aftermath of 'enclosure of the commons' in the mid-1970s with the implementation of Exclusive Economic Zones (EEZs) extending the coastal state's sovereignty over fishing rights from 6 or 12 nautical miles (nm) to 200 nm. Political management of natural resources is also closely bound up with the concept of 'sustainable development'. The sustainable development of fisheries was originally conceived in the relatively narrow sense of resource sustainability, i.e. the renewability of fish stocks and thus the more or less exclusive scientific domain of fisheries biologists. More recently - and especially since the publication of *Our Common Future* in 1968 - it has come to have a much broader meaning, incorporating the notions of intra- as well as inter-generational equity and the inclusion of social, cultural and ecological as well as resource sustainability.

Somewhat surprisingly, this more comprehensive view of sustainable development has not been extensively explored in relation to fisheries *per se*. Herein is seen to lie one of the key problems of current modes of fisheries management in that they address almost exclusively the sustainability of fish stocks within a broader context of the economic viability of the fishing industry, while neglecting the social and cultural aspects of sustainable development. Resource sustainability is being purchased at the cost of the unsustainability of the artisanal sector and the dependent fishing communities. At present, the worst case scenario where neither the fishing community, the

fishing industry nor the resource base is sustainable is in danger of being realised.

With the assumption of responsibility for fisheries management by the coastal states in the 1970s, following largely unsuccessful attempts at regulation through international commissions covering the North East and North West Atlantic, the burden was thrust upon largely unprepared and in some cases unwilling state administrations. In the case of seven Atlantic coastal states responsibility for the 'common pond' was assumed by the European Community, with little or no previous experience in fisheries management. What emerged over the years was a brave but inevitably flawed experiment in fisheries management at the macro-regional scale.

The leading theoretical constructs in fisheries management had been established some decades previously with the development of the Gordon-Schaefer bio-economic model in the 1950s. In simple terms the model describes how fish stocks should develop under different harvesting intensities, thus identifying a maximum sustainable yield (MSY); with the addition of a single cost curve, the model also defines the point on the yield curve which represents a maximum economic yield (MEY). Thus the two basic criteria for fisheries management - renewable fish stocks and maximum rent from the fishing - are established and identified. Growing welfarist concerns in the 1960s led social economists in the 1960s and 1970s to attempt to establish a third target point - maximum social yield - reflecting the importance of fisheries as a source of employment and income and later to conflate the three criteria into a single 'optimum sustainable yield' (OSY). Unlike the two original reference points, MSY and MEY, the latter notions of MSocY and OSY proved virtually impossible to operationalise and have been largely discounted, except within the political process.

While recognising that the bio-economic model is little more than a shorthand representation of how the biologists' and economists' objectives may be combined in theory and that the model has little or no practical application in the detailed formulation of management policy, social scientists continue to criticise the underlying assumptions of stable fish stocks, rational but simple minded fishermen and omnipotent managers and the reduction of what is a complex problem to simplistic representations of nature and society. In particular, the well established Newtonian interpretation of natural systems as in 'periodic order', used to validate the basic conditions of the bio-economic paradigm, has recently been confronted by 'chaos theory' which holds Nature to be non-random but unpredictable. Chaos theory eats at the heart of fish stock management predicated on the assumption of linear relationships and predictability and thus questions management strategies based on total allowable catches and quotas. Thus far, it has been unable to offer alternative approaches other than the concept of adaptive management and support for the precautionary principle.

Having criticised but failed to improve the bio-economic paradigm, critical attention within the social sciences has turned to the analysis of modern

systems of fisheries management as institutional frameworks and, in particular, to the development of highly centralised, bureaucratic 'command and control' systems based almost exclusively on scientific advice and the intention to rationalise production structures, thus undermining traditional values, local knowledge and the collective ethic in a systematic dehumanisation of the small boat fishery. In particular, social science research has outlined alternatives to the extension of the free market philosophy in relation to property rights, advocating community quotas in place of ITQs, and it has stressed the importance of decentralisation, delegation and co-responsibility in the framing and implementation of regulatory systems. Possibly one of the most important concepts to emerge from within the social sciences in relation to management systems is that of 'co-management' as a response to what is increasingly seen as ineffective, over-centralised 'command and control' approaches. Among several other advantages, co-management - in the sense of sharing responsibility for both the formulation and implementation of management policy - should create a sense of 'ownership' of, and therefore stronger commitment to, the agreed strategies. It would, moreover, help to reinvest what has become a technocratic management system with the wisdom derived from practical, experiential knowledge to be set alongside the dominant scientific information. But, rather like the privatisation of property rights, the promise of success rests very largely on *a priori* reasoning rather that empirical evidence.

Although reaching some measure of agreement in explaining the failure of current management systems in terms of 'disembedding' and in advocating the need to restructure management around the greater involvement of responsible user group organisations in policy formulation and implementation, there is no clear consensus discernible in the social science literature as to precisely what direction the reform of fisheries management should take and just how radical the reform process needs to be. In this sense, the social science contribution may be judged to be critical rather than constructive.

[See 4.5.2. below for the further development of the institutional reform of fisheries management.]

4.3.4 Overview of the Social Science Contribution

The review of the social science literature undertaken by the Bibliography task group pointed to an increasing volume of publications especially in the 1990s, the persistence of a strong north-south gradient reflecting to a large extent the relative strength of the social science disciplines across Europe, and a shift in the key paradigms from the bio-economic model to questions relating to property rights, management systems and their institutional requirements. These developments were seen to mark the arrival of the social sciences as a key player in policy related research in fisheries management. However, certain weaknesses are also apparent both in the lack of theoretical integration binding the social sciences together into a unified approach to certain key issues and in the context of social science research. The latter shows a continuing bias towards the analysis - and, indeed, the advocacy - of small

scale artisanal fisheries in traditional settings and a dearth of studies relating to the social structures, organisation and strategic behaviour of the 'industrialised' offshore fisheries. Comparatively little work has been undertaken on the behavioural responses of fishermen to risk and uncertainty from whatever source, on the changing interface between the harvesting sector and the downstream components of the food industry - in a situation analogous to the state of agricultural sociology in the 1970s and 1980s - and perhaps more surprisingly, to the burgeoning aquaculture industry which now challenges the capture fisheries in a number of regions.

4.4 Social Data

One of the constraints facing social scientists, administrators and policy makers alike in most European countries is the lack of readily accessible statistical data with which to describe, compare and analyse the social and economic conditions within the fishing industry as a whole and within fishing dependent regions (FDRs) and communities. The need for such information is likely to increase as the social consequences of the continuing restructuring of the fishing industry become increasingly pronounced. The deficiency - particularly in terms of social data - was highlighted by the very narrow definition of the socio-economic parameters in the *Regional Socio-Economic Studies* undertaken for the Commission in 1991, which relied almost exclusively on employment ratios. In fact, we know relatively little about the basic social conditions within FDRs. Although we can infer certain aspects from their peripheral and often isolated locations, the dispersed settlement patterns and from the particularities of employment within the fishing industry, when it comes to understanding the demographic trends and structures (population growth rates, migration balance, age sex structures etc.), housing conditions, occupational structures (unemployment rates, work combinations, female activity rates), incomes, health and education standards within these potentially problem regions, we are at a serious disadvantage. Extrapolation from the limited evidence provided by occasional community monographs is dangerous. Admittedly, the situation is probably no worse than for other problem sectors like agriculture or mining. But for the present we are unable to define or describe FDRs with any precision. Ideally we need both to refine the existing employment data and to complement these - and data already available on catches and landings - with a broader range of social data.

The problem concerns not so much the actual availability of social data but rather the lack of standardisation and therefore comparability at EU level in terms of time, geographical scale and content. It is a source of embarrassment for social scientists that, in so many European countries, basic social data lags behind employment information and fisheries statistics, both in time and level of disaggregation. The variation in national statistical cultures across the EU remains a powerful obstacle to developing a meaningful social data base for FDRs. Data which may be readily available at large geographical scales (NUTS 1, 2 and 3) are far less suitable for use in relation to the smaller and more spatially fragmented FDRs, where the preference would be for NUTS 4 -

the municipality - as the basic geographical unit. Non-standardised data compounds the problems of developing appropriate indices by which to define FDRs and describe their principal characteristics.

The task of creating an appropriate data base for FDRs is a formidable one. The information could serve several useful purposes in defining FDRs more precisely, in monitoring the impacts of fisheries - and other - policies, in highlighting those districts most vulnerable to structural change and in aiding the design of more appropriate socio-economic measures to assist fishing communities during the period of structural transition. But such utilities may be outweighed by the high costs incurred in establishing and updating the data base. The costs are likely to be beyond the resources of all but a few organisations - and the number of organisations making regular use of the data base will probably be quite small. Significantly, a recent FAIR Concerted Action (CT98-4399) is currently exploring the potential value of a data base for identifying FDRs and diagnosing the macro-processes (fisheries policy, technological development and environmental change) expected to influence these areas in the medium-term future, through the analysis of indicator communities. At the same time, the workshop on FDRs raised some misgivings over the development of sophisticated typologies for classifying FDRs (see 4.5.3.b. below).

4.5 Key Themes

4.5.1 Introduction

The ESSFiN programme originally identified three 'key themes' for further exploration through workshop discussions, with two regional meetings creating the opportunity for the development of counterpoint and the introduction of new themes, while the additional inshore fisheries management task group enabled the examination of all three themes to take place in a particular and relevant context. The three selected themes - property rights and regulatory systems; alternative management systems; and fisheries dependent regions - are all closely interrelated and discussions within the different fora continually overlapped. When reviewing these discourses, it is somewhat difficult to resolve the 'horse and cart' dilemma. Resolution of the property rights question is seen by many as a pre-requisite for effective management; but equally the questions concerning property rights can only be properly answered once the aims and objectives of management have been fully identified. In the following analysis of the key themes and regional variations, based on the findings of the five open workshops, the decision has been taken to start with the discussion on the *institutional framework for management,* to follow with a review of *property rights and regulatory systems* and a separate subsection on *inshore fisheries management* as a particular context for management, property rights and systems of regulation, before concluding with an examination of *fisheries dependent regions* as a specific focus for policy analysis.

4.5.2 Institutional Framework for Fisheries Management

(a) Introduction. In almost any field, state intervention today confronts a deeply ingrained culture of scepticism and criticism. Fisheries management is no exception; indeed, the universality, persistence and vigour of the criticisms directed against fisheries management suggest that the systems themselves are deeply flawed. Among most social scientists there is little doubt as to where the underlying causes of management failure lie: it is the inadequacies of the management institutions and the incompatibility between management scope and management structure. Two fundamental institutional pathologies give rise to predictable and unwelcome outcomes: instead of a clear long term vision of where fisheries are heading, there is confusion and instability forcing the management system into a reactive mode. At the same time management structures are characterised by rigidity and reliant upon formal, largely reiterative procedures. Thus management scope and management structure are commonly the opposite of what is required: the scope is variable and unstable rather than consistent and robust, making it vulnerable to manipulation by short term political objectives. Structures are rigid rather than adaptable, contributing to policy inertia in an environment that demands flexibility in response to the increasing pace of internal and external change.

(b) Correcting the deficiencies of management scope. Part of the instability in the scope of management is due to a lack of precise specification of the management objectives. In the case of the Common Fisheries Policy, for example, Article 2 (3760/92) makes all the right noises but provides little precision and no clear prioritisation to its aims and objections. Not surprisingly, therefore, the objectives tend to be specified and prioritised through the more influential streams of policy advice from the biological sciences. The situation concerning the *social objectives* is of particular relevance to the social sciences: they are, to all intents and purposes, invisible - imprecisely defined and unrecognisable within the policy process. At present, the social objectives, however they might be defined, tend to be externalised rather than internalised in the formulation of fisheries policy. Is this in fact the best solution?

Overall, the social aim is to maximise the social utility of the natural resource in terms of jobs, incomes and quality products while maintaining a sustainable marine ecosystem. More specifically the objectives can be expressed as (i) ensuring social equity in access to the resources; (ii) securing the conditions for maintaining professional fishermen through inter-generational continuity and the promotion of professional competencies and technical and entrepreneurial skills (implying a rejection of the thesis of fisheries as an employment of last resort); (iii) guaranteeing the social sustainability of fishing communities; and (iv) the social recognition of fishermen as the subjects rather than the objects of policy through their incorporation within the policy process. These objectives also imply a concern for the retention of the cultural norms and values associated with artisanal fisheries; this can only be achieved within the context of sustainable fishing communities.

It is one thing to attempt to define the social objectives; it is quite another to integrate them within a policy process alongside other equally legitimate objectives. It is in practice impossible to give equal weight to biological, economic, ecological and socio-cultural objectives within the same management system. Trade offs are inevitable. Given the priority that must be attached to the sustainability of the marine ecosystem and the stocks of commercially exploitable fish - a *sine qua non* for the realisation of economic and socio-cultural objectives - it is clear that any trade off is a straight fight between economic efficiency and social equity. To date concern for the implementation of social objectives had been largely left to the end stages of the political process and dealt with in an *ad hoc* way rather than considered formally within the advisory process and subject to 'negotiation'. It may in fact be in the fishermen's best interests to leave things in the hands of the politicians who may have a better instinct for dealing with social objectives.

Conventional fisheries management also faces a particular challenge from the growing scientific and political emphasis on the need to maintain the overall diversity, health and vigour of marine ecosystems. The new emphasis on an ecosystem approach - or the concept of *integrated fisheries management* - marks another stage in the process of weaning fisheries management away from the simplifying, reductionist approach by which fish stock management is abstracted from the reality of the marine ecosystem and replacing it by a more holistic approach. It involves the management of areas like the North Sea as a single ecosystem with long term objectives embracing both the sustainability of the ecosystems and the commercial fisheries, in which fishing activity may be regulated according to safety limits set for the ecosystem as a whole. The ecosystem approach implies the introduction of new management practices including, most importantly, the adoption of the precautionary principle, the establishment of more sophisticated reference points for stock sustainability and possibly the creation of 'no take zones'.

But the concept of integrated management goes much further: it overlaps into the idea of integrated coastal zone management and it can also imply closer co-ordination with programmes for integrated regional development in coastal regions. To date fisheries management has dealt with commercial capture fisheries in isolation; it has largely ignored the problems posed by recreational fishing and aquaculture. In like manner, the fishing industry remains relatively isolated within the business environments of the coastal regions.

Integrated fisheries management is likely to prove problematic. It raises questions over collaboration between departments with strikingly different internal agendas and the conduct of policy discourse in several scientific languages simultaneously - problems well illustrated in the Netherlands, the only EU Member State so far to have attempted to grasp the nettle of a broader ecosystem approach to the management of marine resources.

(c) Correcting deficiencies in management structures. Three related issues received special attention during ESSFiN discussions: the appropriate scale for management institutions; devolution of management responsibilities; and

linkages with other aspects of marine space management through the concept of integrated management.

It is clear that institutional reforms can be approached from a number of alternative directions. The reform of the CFP, as a specific example, invites a range of options. At one extreme is the proposal for the further *centralisation* of authority in Brussels involving a significant reduction in the discretionary powers of the Member State in the implementation of central policy decisions. Its protagonists see this as a complement to the concept of the Single Market, the means of realising in full the principle of non-discrimination and the culmination of a truly common fisheries policy. The present situation, with its uneasy compromise between the authority of the EU in matters of policy formulation and the discretionary role of the Member State in policy implementation, represents simply a transitional stage in the progress towards fully centralised management.

Approaching the problem from a wholly different direction are proposals for the 'repatriation' of management responsibility and authority from Brussels to the coastal state. Within such a system, the coastal state would be empowered to design and implement an appropriate conservation regime to protect stocks within its own sovereign waters extending out to 200 miles or to a median line. This populist, Eurosceptic political agenda - with little or no academic support from any quarter - fatally ignores the question of joint management of shared stocks in areas like the North Sea.

A third approach, gaining increasing support in academic, industrial and political circles, explores the opportunities for a decentralisation and regionalisation of the CFP, based on the principles of subsidiarity and the concept of 'regional seas'. It starts from the premise that the relevance, legitimacy and effectiveness of the CFP is undermined by the sheer geographical extent of the 'common pond' which implies a crucial loss of sensitivity to ecological and socio-cultural conditions. Regionalisation seeks to disaggregate the single monolithic common policy into a series of common policies for each of the regional seas to be overseen by separate Regional Fisheries Councils responsible for all details aspects of management but subject to general principles formulated at EU level.

Each of these three distinctive approaches is concerned initially with the redefinition and relocation of authority for fisheries management within the context of the EU. Each thus seeks to tackle the fundamental political issues of the balance of power between central, regional and national institutions - not necessarily on doctrinaire grounds but rather concerned to find the best way of adapting management structures to the particularities of fisheries. Several critical questions are invoked: would decision making be improved or, in other words, would the right solutions be found to the right questions? Would compliance be enhanced? How would the delicate balance between the principle of non-discrimination (equal access) and the expediency of 'relative stability', which may have been largely responsible for the political survival of

the CFP over the years, be altered? How would the ambition to secure a stable, long term vision for the future of fisheries be affected?

Much of the discussion within ESSFiN and elsewhere has focused on the regionalisation project. Once again the argument must rest on *a priori* thinking rather than empirical observation: it remains an 'act of faith' resting on untested assumptions that the parts can be managed more efficiently than the whole and that subsidiarity, the closer relationship between regulations and the regulated, and the greater ecological sensitivity can bring significant benefits to fisheries management. It further assumes that untried regional commissions will have the capacity to avoid - or more effectively resolve - the tensions and conflicts between nations and between interest groups that disrupt and ultimately frustrate effective management at the EU level.

(d) The internal architecture of management institutions. One of the most persistent criticisms of fisheries management - and one particularly addressed to the CFP - is that it is overcentralised and reliant upon a very narrowly constructed policy community and an essential technocratic management process. It listens only to scientific advice and fails to enlist the active involvement of user groups within the industry. According to some social scientists, technocratic solutions have in fact undermined the norms and values of many sectors of the fishing industry and to a large extent destroyed the customary basis for responsible fishing.

In its apparent insistence on centralised management, the fisheries sector stands apart somewhat from most other sectors of the economy where the state has been looking to minimise its managerial role through devolution, deregulation and privatisation. In fisheries the 'hollowing out of the state' has not yet occurred. Nor have the essential relationships between Kooiman's three orders of governance - solving concrete problems (first order), developing institutional settings (second order) and formulating the principles on which decisions are predicated (third order) - been adequately resolved. As a result the top-down delivery of policy decisions becomes disjointed, inarticulate and ineffective.

The opportunity to address the problems incurred by increasing distance between regulators and the regulated is, in large degree, a function of the scale of management. It is much easier to engage the participation of user groups in the management process at the local level rather than at the macro-regional or international scale. It follows, therefore, that further centralisation of decision making will increase the distance between the regulators and the regulated whereas decentralisation will tend to increase the opportunities to devolve management and to incorporate responsible user group organisations within the policy process.

Co-management has earlier been described as one of the more important concepts to emerge from the social science of fisheries. It remains, however, a somewhat slippery concept lacking in standardised usage. Essentially it has two main functions: firstly, the involvement of user groups in a process of

meaningful consultation prior to the formulation of policy; and secondly the delegation of some responsibility for implementation of policy to the user groups. The second function is perhaps more commonly practised than the first, though neither is sufficient on its own to fulfil the essential conditions of co-management and to generate a sense of shared ownership and co-responsibility for the management policy.

Co-management faces a number of practical problems. In the first place, the institutional design for co-management must be tailored very closely to the nature of the fishery and to the wider socio-political culture. Thus, the Dutch Biesheuvel system combining the principles of co-management, group management and ITQs is not an ideal model but the product of a historically determined situation and born of a particular crisis of confidence in the Dutch system of fisheries governance at the start of the 1990s. It would not necessarily work across the North Sea in the UK where many of the basic conditions are missing and where there are some doubts about the willingness and competence of fishermen's organisations to take on enhanced management responsibilities. Moreover the incorporation of fishermen's organisation within the management process implies some risk to their legitimacy as independent lobby groups acting on behalf of their membership. There are also some fundamental questions concerning the definition, composition and balance of legitimate stakeholders within the enlarged policy community - a problem made very much more acute by the broadening of the management scope to include, for example, ecological and marine conservation objectives in an 'integrated management' approach.

At present, both parties - the state and the fishermen's organisations - are wary of the co-management agenda, uncertain of the implications and sceptical of the outcomes. There is no attempt to subvert the state's authority: in fact, the state is assured of its role as the principal partner through its democratic accountability, its legislative and revenue raising powers and its exclusive status in negotiating with third parties. There is, however, some concern for the legitimacy of the more radical Marine Stewardship Council approach which appears to bypass the democratic and legislative processes and to vest multi-national corporations with a political role.

The greater danger probably lies in placing too much confidence in the co-management project in terms of securing the basis for the effective implementation of policy through overemphasising the potential links between co-responsibility, increased legitimacy for the agreed policy and enhanced compliance by the fishing industry. Compliance probably has as much to do with the clarity of the regulations, the transparency of their implementation and effective enforcement. Although the potential benefits of co-management may be overstated, formal consultation and devolved systems of implementation clearly do serve to bridge the crucial gap between the regulated and the regulators. They also help to dilute the influence of science based advice streams and to narrow the distance between technocratic and experiential approaches to management.

(e) Regional variations: the Southern European perspective. Whereas in the Atlantic Sector of the EU the discourse on the institutional frameworks for fisheries management is coming to be increasingly dominated by issues of decentralisation and devolution, as indicated above, in Europe's southern waters the discussion takes an altogether different slant. Unlike the Atlantic regions, the Mediterranean basin is a highly diversified area with diverging patterns of economic and social development but sharing broadly similar patterns of social organisation and confronting similar challenges for economic and social change. The basis for fisheries management is also very different with a narrow coastal shelf, no 200 nm EEZs, the fish biomass comprising very many species mostly in very small volumes. Quota management systems are extremely rare. Fisheries management is highly fragmented and its future development faces political obstacles. Current attempts to develop a common strategy are weak and largely contradictory.

'Contextual sensitivity', that is a recognition within the development strategies for fisheries of the very diverse ecological, economic, social and cultural conditions within the Mediterranean region, serves as a principal theme. There is little will to pursue the Atlantic model for a common fisheries policy in the sense of developing common institutions and harmonising regulations within a single overarching system. The problem is how to combine the generality required by legal systems and practical administration, which would allow for some level of agreement over how the Mediterranean fisheries can be jointly managed, with the particularities of the diverse economic and socio-cultural conditions - and how to combine modernisation with historical continuity. Co-management systems incorporating well established and highly respected local management institutions are likely to be instrumental in solving the problem. At the same time, the concept of integrated management takes on a particular significance: not only must the sensitive ecosystems of the Mediterranean be protected but an opportunity must be found for optimising the potentials of the fishing and tourism industries in a complementary relationship.

Whereas the Atlantic fisheries may have to live with the consequences of a management system modelled on twentieth century science and ideology, the hope is that the Mediterranean region can achieve the kinds of systems which accommodate both the contemporary notions of resource development, ecosystem conservation and traditional local cultures. Much will depend on how the General Fisheries Commission for the Mediterranean and the EU face up to the issue of 'contextual sensitivity'.

(f) Radical reform or adaptation of management systems. Criticism of the CFP as a system which has failed to adapt to changing circumstances tends to ignore the many small scale adjustments made during the first two decades of its existence. More changes might have been achieved but for the inevitable political tensions among Member States which have tended towards maintaining the *status quo*. In facing up to the challenges of the future, including the development of a more consistent long term strategy for sustainable development and a broadening of the scope of fisheries

management, the structures will have to become more flexible. Change is inevitable, but reform does not have to be radical or seek to destroy existing institutions. Indeed, established institutions usually hold an advantage over newly created ones in that they are embedded in the broader social and cultural conditions, with the stability that this affords. Established less than twenty years ago the CFP is gradually bedding in; it has evolved rather like a biological organism that modifies its own environment as part of its survival strategy. Regionalisation and devolution are not seen as radical agendas but as pathways for the more progressive adaptations of the CFP by which to achieve a more sensitive, flexible and responsive mode of management. They would also lead to a situation in which fisheries management approaches more closely the prevailing trends for governance.

4.5.3 Property Rights and Regulatory Measures

(a) Introduction. Property rights have become a key issue in the debates about fisheries management and a topic which divides both the fishing industry and academic disciplines. It is almost axiomatic that a precondition for the effective management of sustainable fisheries is the resolution of problems allegedly created by the common property nature of fisheries and the derived characteristics of open and equal access and a common use rights system of exploitation which underlie the so-called 'tragedy of the commons'. For social scientists interest in property rights was originally linked to the understanding of the social ecology of fishing; their involvement in the current discussion on the privatisation of property rights is concerned primarily with analysing the ethical and legal basis for the privatisation of common property and, more especially, with the distributional effects in economic, social and political terms.

The current debate has been prematurely narrowed to a simple choice between a common use rights system of exploitation and the privatisation of use rights through a system of ITQs. It has also been distorted by the misuse of terminology, a disregard for the legal interpretation and a decontextualisation of use rights from the social and cultural environment of traditional fishing systems.

The arguments for and against ITQs are well known and need only be briefly summarised. The case for ITQs rests on essentially economic grounds *viz.*

- the progressive rationalisation of structures within the harvesting sector, through the transferability of quotas, resulting in a reduction of the number of fishing vessels and a better balance between harvesting capacity and the resources - politically this is a telling argument as overcapacity is recognised as a major problem and one which is expensive to solve through decommissioning schemes;

- the improved efficiency of the individual fishing enterprise as the economically marginal units are removed through the operation of the

quota market; the surviving enterprises are also in a far better position to plan for the optimal utilisation of their quotas;

- a reduction in transaction costs through the internalisation of information costs and a reduction in monitoring and enforcement costs;

- unproven claims relating to a reduction in discards; a greater concern among privatised quota holders for the long term sustainability of fish stocks and the marine environment; and the simplification of the regulatory system with less need for complementary measures.

It is important to recognise that ITQs are primarily an instrument for promoting economic efficiency rather than for resource conservation in either the short or long term. Basically they serve to protect the value of the capital invested in the industry.

The social scientists' critique of ITQs is primarily concerned with the distributional effects and with the erosion of the principle of social equity in access to common pool resources. Their arguments are based on:

- concern over the nature of structural change engendered by ITQs, involving increasing capitalisation and industrialisation of the fishing fleet and the concentration of ownership in the hands of fewer but more powerful owners, not necessarily actively engaged in fishing;

- the implied threats to the survival of the small boat sector, the unique socio-cultural characteristics of the artisanal fishermen and the implications for the sustainability of geographically marginal fishing communities;

- the development of capitalistic relations within the fishing industry affecting ownership of vessels and remuneration of those working on the boats and the uneven distribution of the windfall profits from the sale or lease of quotas, which favour the boat owner but leave crew members without compensation and without employment.

Both advocates and opponents of ITQs have been vigorous in presenting the case and at times partial in the presentation of the argument, which has become somewhat repetitive and rather arid. In reality there are probably very few social scientists who would argue that the privatisation of use rights has no place in modern fisheries management though none who would advocate privatisation as a universal panacea.

The time has probably come to abandon the ideological debate and to seek instead the answers to more pragmatic questions *viz.*

- under what particular conditions do ITQs, or indeed any other property rights system, serve the goal of more effective and enduring resource

management without causing serious threats to the viability of artisanal fisheries and the communities they support?

- what safeguards may be introduced into a system of privatised property rights which offer adequate protection against the dispossession of the fishing communities' means of livelihood without enfeebling the economic incentives to exploit resources in a rational manner?

- what kinds of property rights systems are best able to cope with the conditions of risk and uncertainty engendered by fluctuations in stock abundance, markets or political circumstances?

- how do different property rights systems measure up to the needs to replace short term perspectives on the future of the fishing industry with a more coherent and consistent vision for achieving the long term sustainability of the resource base?

The tragedy of the commons argument that common property regimes encourage a very short term, selfish and rapacious view of fish stocks as assets may be true in theory. But equally the communally organised, territorial use rights systems in the Pacific were managed as a form of enduring communal patrimony. Evidence that privatised use rights are viewed as long term assets to be conserved in the same way as a freehold farmer regards his land is at best uncertain.

The scope for finding alternative use rights systems which suit the particular conditions of European waters is limited: territorial use rights systems (Japan, Pacific islands), for example, would be inappropriate except perhaps in certain inshore waters. But the essence of the social scientists' argument is that - as with management systems in general - property rights systems must measure up to the empirical realities of the fisheries themselves. These realities vary markedly from one region to another and from one group of species to another - and, therefore, no one solution is likely to prevail.

At present ITQs are being offered as a general solution to the failure to manage fisheries efficiently. To date, however, formal systems of ITQs have been introduced in only a handful of countries and within the EU they are confined to the Dutch fisheries, where they are subject to a particular form of group management (the Biesheuvel system). Here there are varying interpretations as to how far they do satisfy the demands for both efficiency and flexibility - the latter condition, in particular, is frustrated by the need for additional forms of regulation which reduces the flexibility of operation for the individual enterprise.

Although formal systems of ITQs are still quite rare, developments in the transferability of vessel licenses and in quota management have led to situations analogous to the privatisation of fishing rights in a number of European countries or privatisation by stealth. For example, in Norway the introduction of what was said to be a temporary system of individual vessel

quotas (IVQs), in order to regulate the cod fisheries during the resource crisis in the late 1980s and early 1990s, led to the establishment of a new community of vested interests - mainly in the large scale trawler sector - dependent on the new regime and determined not to relinquish their new assets. The rights holders' principal goal is to protect the value of their quota entitlements either as fixed or *de facto* tradable assets. New rigidities are built into the system of management and the situation becomes more or less irreversible.

(b) Regulatory systems and behavioural responses. Much less attention has been paid by the social sciences to the related topic of regulatory measures. In terms of fisheries management the significance of property rights is that they help to define the appropriate range of regulatory measures. In the case of privatised use rights, for example, it is clear that ITQs will be the principal, but certainly not the only, device for regulating fishing activity. Where some form of territorial or communal use rights system prevails - as for example in the inshore waters of the French and Spanish Mediterranean - quota management is likely to be substituted by a combination of vessel licensing, gear regulations, seasonal closures etc. Local access and effort controls may be directed more at ensuring equality of treatment between individual fishermen than the conservation of fish stocks through limiting overall fishing effort.

Much more information is needed on how different types of fishermen react to and cope with different forms of regulation. Surprisingly little is known about the critical evaluation of different regulatory measures and the strategic response of fishermen to their introduction, other than the handful of studies on the confrontation between traditional and 'modern' forms of regulation in Mediterranean waters, and even these studies deal primarily with the institutional impacts rather than the coping strategies of the fishermen. *A priori* we can hypothesise that most fishermen do recognise the need for regulation even though they may resist its introduction and that their preference will be for measures that do not undermine their professional competence by placing limits on their basic skills in catching fish. In general, therefore, they will prefer technical regulations and tolerate access restrictions, where applied even handedly, as a means of qualification for entry to a free fishery. As a rule they are likely to oppose attempts to curb their ability to fish by the introduction of what are seen as crude and heavy handed catch and/or effort quotas based on largely untrusted scientific advice.

In its deliberations ESSFiN was not concerned with the classical interpretation of behavioural studies; instead it has attempted to extend the analysis of behaviour by paying particular attention to actors and their institutions and to the sets of relationships and mechanisms that develop between actors, organisations, institutions and markets - in other words, to understanding collective behaviour within economic, social and political contexts. Further work is needed to establish the role of norms and values, the relationship between participation, legitimacy and compliance alluded to very briefly at 4.5.2. above and the relevance of changing relationships between individuals and organisations as a consequence of institutional change. Such issues could

well prove important in explaining the pragmatic as well as the political behaviour of fishermen in a changing society.

(c) Differential management. Despite the fact that we have yet to find full and satisfactory answers to the four 'pragmatic questions' posed above in relation to property rights and that there are serious gaps in our knowledge and understanding to the attitudes and behavioural responses of fishermen to different regulatory systems, it is still possible to offer some tentative suggestions as to how the property rights dilemmas might be resolved to the broad satisfaction of the various fishing interests. The suggestions are predicated on the axiom that no one, universal management regime can be successfully applied to the complex fisheries of the EU. They rest upon simple typologies relating to biological, economic and social differentials, together with different categories of use rights, regulation and management systems. In a sense, therefore, they attempt to follow a logical relationship between the particularities of the fisheries, the resolution of the property rights question and the need to improve management scope and structure, within a basic framework which differentiates between inshore and offshore fisheries. In effect, it provides the basis for zonal and sectional management. The main differentials and categories are summarised below (Table 4.1) and an outline of how these might best fit together is outlined in Table 4.2.

In trying to link the three sets of parameters into coherent systems, there is a broad consensus that ITQs and centralised forms of regulation are best suited to *industrial forms of offshore fishing* and would apply especially to distant water fishing, fishing for highly migratory species - including pelagic species - and to industrial fishing for non-food species. The relatively small number of vessels involved would ease the burden of monitoring and control of the ITQ system. In some of the fishing activities listed the system of regulation would be defined, in part, by the regional international commissions (NEAFC and NAFO) and a case could be made for ITQ allocations to be determined centrally by the Commission rather than by the individual Member State.

At the opposite end of the spectrum, *inshore fisheries* require a combination of community based fishing rights, restrictive licensing and what may be broadly described as parametric management measures (gear regulations, closed areas and closed seasons). These may be supplemented in some instances by individual use rights, as for example, in the granting of 'several orders' to define specific territories for the harvesting of shellfish. Regulation should be undertaken by a responsible local organisation using formal (e.g. bylaws) or informal means to achieve compliance with the management strategy. Transaction costs involved in monitoring and enforcement would be largely internalised within the local organisation.

The area of greatest uncertainty as to the most appropriate means of defining use rights and developing regulatory systems is that which lies between the 12 nm territorial limits and the outer boundary of the 200 nm EEZ. This is an area of 'mixed fisheries', both in the biological sense of species composition and in the socio-economic sense of an area occupied by both artisanal and

industrial forms of fishing. Except where fishing is directed at pelagic or non-food species, the preference would be for a combination of group based transferable quota allocations (or community quotas) and individual vessel quotas, depending on the status of the species involved. While the broad range of regulatory responsibilities would remain vested with the central/regional

Table 4.1 Key parameters for differential management

A. Biological, spatial and socio-economic categories	
(i) biological:	sessile; migratory; highly migratory species.
(ii) spatial:	inshore; offshore; high seas.
(iii) socio-economic:	artisanal; industrial forms of fishing enterprise.
B. Use rights categories	
(i) licence based:	transferable/non-transferable with limitations on the aggregation of licences.
(ii) quota based:	(a) common use rights with open access; (b) communal i.e. group or community based quotas, with limitations on trading of quotas outside the group or community; (c) individual transferable quotas.
C. Regulatory systems	
(i) centralised:	in which the central administration retains responsibility for all aspects of fisheries regulation (viz. licensing, quotas, gear restrictions, ground closures, markets etc.) In consultation with responsible user group organisations.
(ii) devolved:	via producer groups, where the remit for regulation is restricted to quota administration and market planning (e.g. the Biesheuvel system in the Netherlands; sectoral quota management in the UK).
(iii) local:	where a statutory or non-statutory self-regulating organisation oversees a full range of management functions within quasi-territorial limits.

Table 4.2 An outline schema for differential management

	Inshore	Offshore	
Biological categories	*Sessile and migratory species* (in some instances highly migratory species - e.g. salmon, may encroach into inshore waters)	*Migratory species* Mixed fisheries	*Highly migratory species* • distant water fishing • industrial fishing for non-food species • pelagic fishing
Socio-economic categories	*Artisanal*	*Artisanal / industrial*	*Industrial*
Use rights	*Community based* • licensing • community quotas *Individual based* • several rights	*Community based / open access* • licensing • group quotas	*Individual based* • ITQs
Regulatory systems	*Local regulation* • preferential licensing • access restrictions • gear regulations • ground closures	*Centralised regulation* • quota setting • gear regulations • ground closures with *devolved management* • quota administration • market planning	*Centralised regulation* • quota management • gear regulations • ground closures
Comments	Possible integration with marine ecosystem management and/or ICZM		Dependent, in part, on regional commissions (e.g. NEAFC)

administrations, quota management and market planning could be devolved to statutory use group organisations (e.g. producers' organisations).

(d) Inshore fisheries management. It may be thought symptomatic of the social sciences that ESSFiN should opt to extend its analysis of management systems and issues in the area of inshore fisheries - principally recognised as the domain of the artisanal sector of the industry. The reasons for wishing to explore the nature of inshore fisheries management further are partly related to this association but also to the facts that inshore fisheries are at present in a somewhat ambivalent situation *vis-à-vis* EU or coastal state responsibility awaiting the outcome of the 2002 review and that they are currently subject to a variety of management styles, but most of all because they appear to reflect practically all the dilemmas - economic, social, ecological and political - present in contemporary fisheries management. In short, inshore fisheries present a microcosm of fisheries management issues. Beyond the 12 nm limits, the EU's fisheries - at least within the Atlantic sector - are subject to a more or less harmonised system of management; those within the 12 nm are subject to very diverse management systems elaborated by the Member States acting independently and sometimes reflecting quite marked regional variations within a single Member State. Moreover, the importance of inshore fisheries to total employment in the fishing sector- and more especially to local employment in the peripheral regions - is undeniable.

Any attempt at a comparative analysis of inshore fisheries and their management in Europe faces a major problem of definition. The conventions used in the different Member States draw upon a range of structural, behavioural and spatial characteristics relating to particular features of the inshore sector and the specific legislative, management and institutional traditions. Only the 12 nm territorial limit serves as a universal definition. In many ways it is unsatisfactory as vessels which would be classed as inshore by other criteria will be found operating both inside and outside the limits. The lack of a common structural definition makes comparative analysis difficult but the studies do confirm the intrinsic importance of inshore fisheries in providing a significant share of supplies of fresh fish and especially shellfish and in generating considerable employment and income opportunities for the adjacent coastal regions.

Inshore fisheries are structurally distinctive, with predominantly family based, usually small scale enterprises and a social organisation based on close kin and community ties. They do, however, encompass a wide range of culture and capture fisheries which may be undertaken on a full time, part time, seasonal or casual basis and fishing activities in inshore waters involve both commercial and recreational fishermen. This very diversity makes for certain difficulties in management. At the same time, the intrinsic strengths of adaptive response to uncertainty, built on a flexible system of social and work organisation, has traditionally made a vital contribution to the economic and social stability and the sustainability of peripheral communities and pluriactive local economies. This is now threatened by the increasing encroachment of large scale fishing interests, by occupational specialisation and certain forms

of development - notably tourism - and by the conventions of centralised management.

Inshore fisheries face a number of internal problems including the limited mobility of the small boat fleet, distance from major markets, weak infrastructure, poor recruitment and inadequate professional organisation. These disadvantages render inshore fisheries vulnerable to external factors and especially to the globalisation of markets for fish, challenging the logic of local production systems, traditional forms of adaptive response and customary processes of social reproduction. Many of the pressures are reflected in the changing social structures of the coastal communities (see 4.5.3.c. below) with depopulation and an ageing of the population as a consequence of the outmigration of young people and, in certain instances, the infiltration of urban migrants and a shift in aspirations, living standards and lifestyles. Moreover, the multiple use of inshore waters brings risks of resource degradation through pollution, competition for space and resources (e.g. from marine tourism and recreational fishing) and the intervention of conservationists seeking the protection of sensitive ecosystems and endangered marine wildlife from damage by fishing. In many parts of Europe, inshore fisheries are under siege.

Significantly different styles of inshore fisheries management can be recognised within Europe ranging from a state led centralised management approach which regulates the inshore sector on the basis of fleet segments and gear groups to decentralised and delegated powers allowing for the considerable involvement of local user groups and the development of preferential local management. Two broad types of locally devolved management are discernible. Most local systems, based on self-regulation, are concerned with the organisation of fishing activity through control of access to the fishing by means of local licensing arrangements and/or the implementation of schedules for fishing boats entering and leaving the fishing grounds. The *cofradia* in Spain and the *prud'homie* in Mediterranean France provide a framework for 'managing the fishermen' in order to ensure equitable distribution of fishing opportunities among their members. They do not engage directly in stock management, though the outcomes may well prevent undue pressure on the resource base. Most local institutions lack the resources and expertise to undertake the scientific tasks associated with stock assessment. Such traditional systems only work effectively which fishing effort - in terms of the number of participants and the levels of technology - remain low. Central bureaucracies experience considerable difficulty in handling these local fiefdoms, whose ability to adapt to both internal and external pressures for change are in doubt. If the long established local organisations prove incapable of adaptation from within, it seems clear that their roles will be progressively redefined from without so as to allow other agencies to assume their management functions.

By contrast, the Sea Fisheries Committee in England and Wales are part of a decentralised statutory management structure. Financed through local tax revenues and democratically accountable as a result of equal representation of

local authority representatives and professional fishing and other inshore interests, the SFCs implement their management strategies through legal instruments (bylaws; regulating and several orders) rather than rely on informal customary practice. The Committees also have their own seagoing vessels and thus a capacity for independent surveillance of fishing activities within the 6 nm limits. In many ways, therefore, SFCs come closer to replicating the range of management functions undertaken by the state with regard to national fisheries. Moreover their statutory nature makes them more responsive to external change; recent amendments to the remits of the Committees and changes to the membership indicate a broadening of their management functions to reflect the growing concern to ensure that inshore fishing is compatible with the sustainability of local marine ecosystems and the conservation of marine wildlife.

Comprehensive local management systems are absent from certain parts of Europe (Ireland, Denmark, Italy and Greece *inter alia).* Here it is felt there is a need to develop appropriate systems of management which can integrate the interests of the state, the local community and the resource user groups rather than rely upon the top-down delivery of centralised decisions - no matter how benign or benevolent those decisions may be.

In general, it is acknowledged that the coastal state - rather than the EU - is the natural and most appropriate custodian for the inshore waters with regard to the sustainable development of inshore fisheries and the protection of the marine environment: the two responsibilities have to be developed hand in hand. The duty of the EU is to redefine the scope and the responsibilities of the Member States in respect to integrated fisheries management, the implementation of the precautionary approach and the development of integrated coastal zone management, together with a clarification of the objectives for the sustainable development of inshore fisheries. On this last issue, it is important to emphasise that the objectives set for the inshore sector may be quite different to those established for fisheries management as a whole, at least in terms of their prioritisation. A viable inshore fishing industry defined in social terms will be very different to that dictated by economic considerations alone.

4.5.4 Fisheries Dependent Regions

(a) Introduction. Fisheries dependent regions (FDRs) and fishing communities provide a natural focus for a number of pure and applied social sciences: they have served as laboratories for analysing the complex economic, social and political relationships that characterise the fishing industry and its integration with the broader regional economy. But, more importantly in the context of the CA, they provide a useful barometer of the economic and social changes resulting from the convergence of several strands of fisheries policy, *viz.* conservation, structures, markets and even external relations. The overall impacts will be most clearly visible in the changes occurring at the levels of the FDRs and the fishing communities. Analysis of FDRs should also help to illuminate the extent of convergence - or divergence

- between fisheries policy, which in the case of the CFP is a sectoral policy largely unconcerned with and insensitive to its social impacts, and other policy areas that cater more explicitly for the welfare of the regions. It is of relevance, therefore, to examine the relationships between fisheries policy and the other policy areas in order to identify the policy needs of FDRs in terms of their broader economic and social development. The present analysis, reflecting the views of workshop participants, begins by outlining some of the problems associated with the definition and typology of FDRs and goes on to analyse the nature of the social impacts and the choice of development strategies before finally exploring the need for closer integration of the different policy streams affecting FDRs.

(b) The definition and classification of FDRs. The problems of FDRs begin with their definition. The primary aim is to identify those regions at risk from both natural and policy induced decline in the level of fishing related activities and least well placed to absorb the impacts of a reduction in employment and income arising from fishing. Attention has already been drawn (see 4.4 above) to the difficulties created for social scientists and policy administrators by the lack of sufficiently detailed, reliable and comparable data available at an appropriate geographical scale. The absence of such data makes it impossible to define FDRs precisely and to describe their conditions accurately. As a consequence, FDRs are crudely defined on the basis of simple employment data alone, using some arbitrary threshold value to determine inclusion/exclusion in the list of FDRs. At almost any scale, the concept of 'fisheries dependence' will be seen as a contradiction in terms; attempts to measure the significance of fishing related activities through employment ratios alone will yield low and potentially unconvincing results in all but a very few areas, and their interpretation will be complicated by the fact that fishing may be a strongly seasonal activity embedded in a largely pluriactive local economy. Moreover, relative numbers will tend to favour the stereotypical, remoter, sparsely populated rural FDRs and ignore the concentrations of fishing activity in more populous urbanised regions.

Definition is simply a prelude to the classification and analysis of FDRs. Considerable discussions took place over the purpose and utility of classification and whether or not it is merely a form of intellectual self-indulgence or a useful policy tool. For the social scientist classification is an analytical tool to assist the better understanding of the complex economic and social processes occurring within FDRs and fishing communities - but one which tends towards oversimplification. For policy makers and policy analysts classification is intended to provide a basis for a detailed and sensitive analysis of policy impacts and for a more sophisticated application of policy measures to assist the development of FDRs. In both cases, therefore, classification is a means to an end rather than an end in itself. Moreover, classification should be kept fairly simple. Rather more attention should be paid to the elaboration of dynamic and stochastic models for different types of FDR and fishing community than to the development of static classification systems. Such models should be based on a combination of quantitative and

qualitative data and used to predict the response of FDRs and communities to particular policy measures and to free - i.e. unregulated - market trends.

(c) The social impacts of modernisation. Analysis of the social impacts of fisheries policy on FDRs and their component fishing communities is far from straightforward. Disaggregation of the impacts of policy from the closely woven set of internal and external factors in highly complex economic, social, cultural and political settings is all but impossible. Probably very few of the conditions found in FDRs today can be laid directly at the door of fisheries policy alone. It may be more sensible to consider the modernisation project as a whole, re-embedding fisheries policy within the general processes of modernisation in the fishing industry, *viz.* tendencies towards specialisation, economies of scale, centralisation and globalisation of the market, and the broader concepts of regional economic development. In the modernisation project, fisheries policy tends to act as an accelerant or a catalyst for releasing latent development processes. But even with this broader focus of analysis, it will be necessary to separate out those influences which derive from the basic circumstances of the regions' fisheries (species composition, natural variations in stock abundance, seasonality of fishing activity, *inter alia*) and from the inherent geographical conditions of the regions (location, peripherality, physical fragmentation, population dispersion etc.).

Also of relevance to the analysis of economic and social change is the theoretical model through which the modernisation process is interpreted. There are two contrasting perspectives: the *traditional view*, to which many social scientists have subscribed, emphasising the social and cultural values of the artisanal fisheries and bemoaning the negative impacts of modern regulative policies, and a *modernist view* focusing on the cumulative advantages of economic efficiency, industrial concentration and the greater resilience of more mobile, large scale enterprises in a relatively unstable global market. The two perspectives converge in the case of fisheries: modernisation processes in a market economy will tend to discriminate between the inshore and offshore sectors, leading to the marginalisation of the artisanal, small boat sector often operated on a seasonal basis and setting in train a cycle of the outmigration of labour and capital, poor internal recruitment to both fishing crews and processing plants, the substitution in some regions of both Northern and Southern Europe of 'guestworkers' for indigenous labour and an increasing instability of the fishing community and the coastal settlement.

In a free market economy, the ascendant tendencies favour economies of scale, the growth of technology, the free movement of goods, labour and capital and the centralisation of economic activities. These processes are being underwritten by government policies which emphasise efficiency, competition, specialisation and professionalisation in the fishing industry, especially where quota management systems appear to privilege the full time, professional, large boat fishermen at the expense of the small scale, artisanal fishermen. Flexibility is being removed: several traditional adaptive strategies characteristic of small boat fisheries in remoter marginal regions are being closed off by formal systems of fisheries regulation elaborated by central

administrations. In Norway, for example, fishery resources are increasingly managed as a national rather than local asset, with fishing activity conducted by a national fishing fleet, delivering their catches wherever landing prices can be optimised for processing plants no longer owned by local interests nor run with local labour.

One feature of the modernisation project found widely in Northern Europe has been the tendency within the locally based processing industries to focus on specialised forms of mass production of simple, low value commodities - principally block frozen fillets. The further processing of these semi-fabricates into finished products takes place much closer to the consumer markets. The implications for local labour markets in the peripheral coastal regions have been quite profound: the local labour market is now divided between a small core of skilled persons, usually with formal education beyond the minimum school leaving age and often brought in from outside, and a much larger 'periphery' of relatively low paid, unskilled workers many of whom work part-time and among whom turnover is high.

At the level of the individual household, development - or, more accurately - survival strategies show a reduced dependence on the fishing industry. Where once the economic relations within the household were completely bound up with the local fishing industry and with the family enterprise, these are now frequently divided between fishing, public sector employment and forms of welfare payment. As employment in fishing decreases, women are being squeezed out of the industry; they are now looking to educational attainment to enhance their employment prospects in the service sector and their opportunities for social mobility through outmigration. The fishing household's vulnerability is being exposed in new ways, including a shift in dependency on the political will to maintain welfare payments and subsidies to the public sector services. Moreover, the distinctive coastal culture is being undermined by the socialisation of the younger generation both at home and through educational experience towards employment outside the fishing industry and beyond the local community, and the consequent disruption of the tradition of inter-generational continuity within the fishing industry.

Because FDRs embrace a very diverse range of conditions, reflecting contrasting tendencies of centralisation and peripheralisation, concentration and dispersal, industrial and artisanal forms of organisation *inter alia*, it is obviously not possible to build up a universal profile of the social conditions within FDRs and fishing communities. Nonetheless, in the least favoured locations a fairly consistent picture emerges of outmigration, depopulation, ageing population structures, insecure employment, low incomes, poor recruitment, low levels of aspiration, organisation and innovation. Only in a very few instances will this pattern be altered by the presence of a dynamic and innovative individual or company capable of breaking the mould.

(d) Development strategies. The future development of FDRs depends upon a combination of policies for fisheries, social welfare and economic development, with perhaps more importance attached to welfare and

development policies than to fisheries. Existing fisheries policy can only accelerate the processes of structural rationalisation already endemic in a capitalist economy and so aggravate their economic and social impacts. Virtually all aspects of fisheries policy - resource conservation, structural reform and liberalisation of markets - inevitably conspire to reduce the level of fishing activity. It is impossible to square the circle of securing the long term future of fish stocks and protecting full employment in the industry in the short term. The best that can be hoped for, as a result of introducing regional and zonal management systems outlined at 4.5.2.c. and 4.5.3.c. above which can hopefully reflect local circumstances and recreate some of the lost flexibility of response, is simply to slow down the present rates of decline in fishing opportunities in some of the remoter parts of the peripheral regions.

Otherwise, sustainable development of these marginal regions must rely upon a diversification of their employment base. In a sense, FDRs are no different to other disadvantaged rural regions, though diversification strategies in FDRs may face rather sterner challenges. Opportunities for diversification within the fishing industry - except for aquaculture - are strictly limited: there are few alternative species or hitherto unexploited stocks available. Redeployment of resources, currently tied up in fisheries, to other enterprises is constrained by the immobility of both capital and human skills. Unlike agriculture, where land and other fixed assets have considerable potential for reuse in housing, holiday accommodation, sports and leisure activities etc., in fishing the principal capital assets are tied up in vessels and gear with limited opportunities for conversion to other productive uses. Fishermen may be highly skilled professionals but their skills are often locally specific and unrecognised outside the informal association of other fishermen. Few artisanal fishermen hold formal qualifications. Moreover, the possibility of redeploying fishermen into the tourism and recreation sectors as operators of vessels for cruising, diving or sea angling has only limited application and very little appeal; for many it would represent a debasement of their skills.

Restructuring FDRs would therefore seem to rely more on the processes of reconversion than the spontaneous redeployment of assets held within the fishing industry. Reconversion involves deliberate action to modify existing economic structures and employment opportunities within FDRs. 'Deliberate action' usually implies government action in some form or other. However, coastal regions - along with other problem regions - have witnessed major changes in fashion in relation to development planning. In the 1960s and 70s it was fashionable for governments to intervene in planning the regional economy and redesigning key sectors. But such centrally inspired strategies proved incapable of coping with the dynamic tendencies stimulated by external factors (globalisation) or the changes occurring within the national and regional economies. The anticipated 'trickle down' effects from the creation of regional growth centres obstinately refused to materialise, especially in the highly fragmented coastal regions.

The ascendancy of New Right politics in the 1980s and early 90s, and the growing confidence in the benefits of a market economy, forced governments

to reassess their position with regard to regional development and abandon their interventionist role. The function of the state is now mainly reduced to helping to co-ordinate a sound rationale for integrated development and to ensuring adequate infrastructural provision and financial support for community based or private development initiatives. These changes in the central role of state institutions is rather less apparent in Southern Europe where plan led approaches are still clearly visible.

Partly as a consequence of the shift in the role of government, there has been a definite move away from 'conspicuous development' in the form of large scale projects and towards an emphasis on small and medium enterprises (SMEs) and new models of 'flexible specialisation' and 'industrial districts' in which SMEs can co-operate in an information rich environment to compete with much larger processing and retailing organisations. The efficacy of such concepts in geographically peripheral and fragmented FDRs has still to be tested. Here the emphasis tends towards small scale, low cost, community projects more in keeping with local conditions and scale of the coastal communities. The problem lies in identifying the type of project which can employ locally available physical and human resources in a sustainable way through the creation of enduring forms of employment.

Although such development relies essentially on local involvement as the catalyst for success, it is still dependent on external sources of start up funding. Changes to the structural funds under *Agenda 2000* - and in particular the scrapping of PESCA funding - is therefore a particular cause for concern, although the impacts may not be discernible for some time because of the bridging arrangements for assistance to regions which are losing their original Objective 1, 2 or 5b status. In its short lifetime, the PESCA initiative has been subject to considerable criticism; but where implemented with vision, enthusiasm and proper organisation, it has proved a valuable stimulus to small scale development most notably in aquaculture.

(e) Policy integration in FDRs. Several different strands of policy are woven into the fabric of FDRs - fisheries management, social welfare, economic development and environmental conservation *inter alia*. While it is vital that these strands are carefully integrated to avoid any discontinuities in the patterns of development, it is equally important to differentiate between the different strands. Although their overall goals of achieving sustainable development may be convergent, each strand has its own particular set of objectives - and these should not be confused. Fisheries policy, for example, is concerned primarily with achieving sustainability of the resource base; it is not an extension of either social welfare policy or economic development, though this does not preclude a secondary objective of social equity in access to resources nor greater economic efficiency in the structuring of the fishing industry. There are, however, grounds for arguing that fisheries policy and marine environmental management should share a set of common objectives (see 4.5.2.b. above).

The primary objectives for fisheries and environmental management are likely to be quite different to those of social welfare and economic development policies which have as their main focus the well being of the fishing communities that make up the FDRs. But even with the fishing communities as the focus for policy, there may well be significantly different and potentially conflicting objectives and forms of intervention. In general, centres of fishing activity need to benefit from policies which can improve their efficiency (infrastructural investments; fleet modernisation; organisational structures) and help them to compete more effectively in the national and international markets. At the same time, particular groups within the fishing community (small boat sector; part time fishermen *inter alia*) will need some protection from the fall out from the very policies designed to promote greater efficiency. And policies are also required to broaden the range of job opportunities available to those living in the fishing communities (development of small businesses; retraining schemes etc.) so as to reduce the risks associated with dependence on a single industry. Careful co-ordination of such diverse programmes for development is needed to ensure their harmonisation at the level of individual FDRs and committees. That co-ordination is best achieved at regional level.

The implementation of development strategies for FDRs will require a balancing of top:down and bottom:up approaches, as exemplified in the PESCA and LEADER initiatives, and an increased sense of 'community ownership' of specific development projects aimed at the sustainable use of local resources, knowledge and skills. Reform of the structural funds - and especially the demise of PESCA - could mean that there is less opportunity to focus attention on the particular problems of fisheries dependency. It will be important to ensure that small scale, locally based projects appropriate to the revitalisation of peripheral and often remote coastal settlements are not eclipsed by the restructuring of regional development aid at national and EU levels.

5.0 DISSEMINATION

A detailed description and analysis of the dissemination of results from the CA has been provided above (4.3.3) as an integral part of the work programme. Rather than repeat that statement here, it should be sufficient to summarise the main conclusions as follows:

- reports from all task groups have been submitted to the Commission (DG XIV) within 3 months of the completion of the task; in some instances these reports have been made more widely available both within the Network and beyond;

- the edited proceedings of all five open workshops will have been published through Blackwell Science by early 2000, thus enabling the main findings from the CA to reach a potentially very wide general readership;

- in order to target the findings from the CA more precisely on those organisations with direct responsibilities for the formulation of fisheries policy, copies of all reports and publications have been distributed to a list of 45 key persons;

- details of all reports and publications can be found in section 3.3 of the report.

6.0 RECOMMENDATIONS FOR FUTURE RESEARCH

6.1 Introduction

Although there can be little doubt that the contribution of the social sciences to the understanding of the fisheries and their management has grown considerably in recent years, it is equally clear that there are some significant gaps in the 'social science of fisheries' and also some deficiencies in the approach of the social sciences to questions concerning fisheries management. These shortcomings can be explained at least in part by the relatively recent entry of the social sciences into the field of applied research in fisheries management. As a result many social scientists still approach the issues from an intrinsically academic point of view and some also from a 'traditionalist' perspective which portrays modernisation and policy intervention as negative influences. Very often the frame of reference for social science research is local rather than national or international. Nonetheless it is difficult to deny the importance of the social sciences' contribution in their persistent criticism of the recent reductionist approach to fisheries management, their insistence on relocating the analysis of fisheries in the context of economic, social, cultural and political structures and relationships as well as in the more conventional biological setting, and in their analysis of global-local interactions.

Major advances still need to be made in almost all areas of research. Gaps in our knowledge and understanding are an endemic condition in a field which focuses on a rapidly evolving activity located within highly unstable local, national and global environments. In some areas the need is for a greater refinement of our knowledge and understanding through more detailed analysis. In others, the nature of the questions which structure the basic hypotheses need to be revised; for example, in the increasingly long drawn out discourse on the fundamental issue of property rights, ideological arguments need to be replaced by more practical questions based on the recognition that ITQs are a legitimate form of property rights in certain circumstances (see 4.5.3.). Broad projects for the reform of institutional systems (e.g. co-management, regionalisation) need to be progressed through closer attention to detail, possibly drawing inspiration from the analysis of comparable institutional structures elsewhere in the developed world.

A review of the current state of the art for the social science of fisheries is bound to expose particular lacunae which inhibit a sufficient understanding of the economic and social processes within the fishing industry, or fail to prepare those responsible for the formulation and implementation of management policies for some of the urgent challenges that lie ahead. An example of the former is our poorly developed understanding of the changing relationships between the harvesting sector and the increasingly powerful interests represented in the downstream sectors of the food chain (marketing, processing, retailing and the consumers). As an example of the second kind of gap in research one can cite the need for greater understanding of the interactions of fisheries and the marine ecosystem and for much closer co-

ordination of fisheries and marine ecosystem management and marine wildlife conservation. At first glance the role of the social scientist in this latter issue may appear to be quite marginal but the knowledge of how institutions work and how they adapt to changing external conditions is one of the particular strengths of the social sciences.

Integrated fisheries management is just one among a growing number of themes which suggest that existing forms of research rooted mainly in mono-disciplinary traditions are beginning to reach the limits of their utility for the management process. New paradigms capable of modelling both the fisheries system and the management process in a more holistic, multi-disciplinary form are urgently needed. To develop and ultimately to service the new approaches to management, research projects will need to be formulated in a multi-disciplinary framework rather than divided in rather arbitrary fashion between the disciplines. To achieve this goal may require greater institutional flexibility.

This section begins from a traditional perspective by looking at the future research agenda within the social sciences before attempting to define the broader multi-disciplinary issues and to identify the most appropriate organisational approach. Finally, the analysis returns to the question of how, within the social sciences, collaborative research might be more effectively organised, building on the successes - and learning from the weaknesses - of ESSFiN. The analysis and the recommendations are distilled from several sources, including the initial reports from the CA work programme, the replies to a questionnaire survey of ESSFiN members in 1998, discussions during the final ESSFiN board meeting and, most importantly, the multi-disciplinary workshop held in April 1999 as the final activity in the work programme.

6.2 Research Within the Social Sciences

The main themes for continuing and future research in the social sciences can be recognised from the work already undertaken by ESSFiN. The list contains no real surprises for together the themes reflect the main areas of research interest for the social sciences in Europe over the past decade or so. However, the ten themes are outlined in a way which indicates the main directions for developing research so as to serve the interests of policy making and management. It is also important to note that the themes are not to be seen as discrete topics - several of the themes will intersect with other themes; nor is it intended that each or all of the ten themes are considered as the exclusive domain of the social sciences - though they are held to be central to social science interests.

(i) Links between property rights and the efficacy of management systems. This has been a key area of research in both the economic and social sciences, though the balance has been disturbed in recent years by an overemphasis on the economic advantages of privatisation (ITQs). As indicated above (4.5.3.) future research should be developed so as to (a) determine those situations in

which ITQs are generally agreed to be an appropriate solution and (b) decide the ways in which the ITQ system should be regulated for the general benefit of both local and national society. There is an underlying need for more assessment of the distributional effects and the social impacts of privatisation, including the issue of international quota transfers (quota hopping), and for further analysis of other forms of allocating use rights (e.g. community and group quotas) and their implications for management.

(ii) Discordant rationalities. One reason for the relative failure of modern fisheries management is the conflicting 'world views' and discordant rationalities of the different social actors involved in the formulation and implementation of policy. As a result, the outcomes of the policy process often appear to contradict the basic perceptions of the resource users. Analysis is therefore required of the differing interpretations of problems and solutions in fisheries management which emerge (a) among different subsectors of the fishing industry; (b) between fishermen and other interest groups with a stake in coastal and offshore waters; and (c) between user groups, scientists, administrators and politicians. In particular, it will be important to establish the meaning and value of the fisheries to society, the ways in which modern systems of management can be re-embedded within the social and cultural contexts of fishing and how compatibility between different forms of knowledge and advice (e.g. scientific information and reasoning *v* empirical, experiential 'folk' knowledge) might be improved.

(iii) The governance of fisheries. Decentralisation, devolution and co-management have been important themes in recent social science research. The tasks now are: to define more closely in which fisheries and under what conditions co-management may provide a solution to management problems; to establish the ways of improving the mechanisms for the mobilisation and representation of user group interests within the policy communities; to identify the most pertinent spatial scales for fisheries management; and to explore in more detail the 'boundary problems' relating to the delimitation of responsibility at different spatial scales and between different actors.

(iv) The distributional effects of fisheries policy. There is a widespread belief among social scientists that modern systems of fisheries management - and especially those which rely heavily on individual catch quotas - impact unequally on different segments of the fishing industry and thereby on different coastal regions. Although not necessarily a specific objective of policy, fisheries management can be seen as a way of distributing welfare which can have unintended consequences; in general, modern systems are perceived as privileging the large scale, more mobile and industrially organised segments of the industry, at the expense of the artisanal sector. To date, however, we have very little empirical evidence of the alleged distributional effects in terms of employment, incomes, grant aid etc. arising from different forms of regulations. The question of distributional effects can be extended to the repercussions of EU access agreements with third countries on Third World artisanal fisheries.

(v) Flexibility and adaptive response in fisheries. We are currently witnessing a profound change in the styles of fisheries management from resource optimisation to risk minimisation strategies at all levels from the formulation of basic principles through the adoption and implementation of policy measures to the actions of individual fishing enterprises. In the past most fishing activities were characterised by flexibility (in terms of species, gears, seasons, grounds, and participation in non-fishing activities) as a basic response mechanism to risk and uncertainty affecting the natural and economic environments. This flexibility has been eroded as a result of increasing segmentation and specialisation of the fishing fleets and the introduction of restrictive regulation. Work is needed to explore opportunities for restoring some of this operational flexibility through alternative systems of management, especially in relation to inshore waters.

(vi) Integration of fishing related activities within local and regional economies. Fisheries have tended to be treated as a distinct and somewhat isolated sector of the regional economy and undue emphasis has been placed on the harvesting sector. More information is needed on the patterns of change within fisheries related employment (gains and losses; skills, technical training and job status; relocation of jobs from peripheral to central locations etc.). There is a need to deepen understanding of the role of fishing activities local and regional economies and to identify the factors which encourage or constrain their integration within the regional economy as a whole. Further work is needed on the co-ordination of sectoral and spatial policies for the sustainable development of FDRs and fishing communities.

(vii) Global - local interactions. Globalisation is identified as a prevailing factor in shaping recent trends within the fishing industry. Further analysis is needed on the impacts of globalisation tendencies in the production and distribution of fish and fish products on local strategies for development and on local institutions which regulate social change in the fishing industry and which thus mediate the response to globalisation at the local level. The analysis can be extended to include all forms of externally induced change, especially technological innovations on fisheries organisation at the local level.

(viii) Social reproduction of fishing communities and fishing households. There is considerable evidence of significant changes occurring in the demographic and social structures of fishing communities, especially in remoter rural areas, as a consequence of the decline in employment opportunities and instability of incomes within the local fishing industry. These changes also reflect the re-orientation of household strategies and a re-evaluation of women's roles in relation to the fishing industry and the local community. Cumulatively these changes may have important consequences for the social reproduction of fishing, especially in the artisanal sector. However, there are very few recent studies of the fishing household across Europe; such studies could provide a vital source of information on the social processes taking place within the fishing community and on the changing social ecology of fishing.

(ix) An integrated analysis of the fish chain. The social science of fisheries has concentrated almost exclusively on the harvesting sector. But as with the food industry in general, primary production is increasingly influenced by developments in the downstream activities of marketing, processing and retailing. With increased penetration of multi-national food corporations and multiple retailers, the balance of power has shifted dramatically downstream. New forms of consumer power (ecolabelling) could impact significantly on the fishing industry in the near future. These changes mean the development of new relationships at each interface in the fish chain and require adaptive strategies on the part of primary producers and processors. By comparison with the agricultural food chain, the situation in fisheries is poorly understood. Social science research therefore needs to redirect some of its energies to analysing the structures, processes, attitudes and relationships within the fish chain.

(x) Inshore fisheries. This is not so much a separate theme as a special case for treatment. Occupying an important economic, social and cultural niche in the fisheries sector and in the coastal regions, the inshore or small boat sector has been portrayed as a particular victim of the impacts of the market economy and the regulatory systems. The economic behaviour of the artisanal inshore sector is also thought to be governed by a different set of economic rules from that observed in the offshore, capitalist sector. Moreover, in a number of regions participation in the inshore fisheries has been combined with other gainful activities within a basically pluriactive local economy, thus providing a traditional form of insurance against the risks and uncertainties associated with fishing. Such strategies have been largely discredited by neo-liberal approaches to economic development. The value of pluriactive strategies and the role of inshore fisheries needs reassessing. Almost all the other themes listed above have a special relevance for inshore fisheries but particular attention should be paid to evaluating the costs and benefits of part-time, seasonal, casual and recreational fishing in the contexts of the inshore fisheries themselves and the broader local and regional economies. At the same time, inshore fisheries would also provide an appropriate context for a comparative analysis of the economic and social structures and processes associated with *aquaculture* which has largely been ignored by the social sciences thus far.

6.3 A Multi-disciplinary Approach to Fisheries Management

6.3.1 The Quest for a New Management Paradigm

It is becoming increasingly clear that mono-disciplinary research - heavily influenced by the demands of modern management systems - is beginning to approach its limits both in terms of cost effectiveness and its utility for fisheries management. An incremental shift is already occurring from a narrow preoccupation with fish stock assessment to a much broader concern for ecosystem management. In one dimension, this assumes the appearance of a paradigm shift from a utilitarian decision making, commodity oriented mode of management to the incorporation of respect for nature, the multiple use of

marine space and the value of non-commercial environmental goods. It implies a switch from discrete, short term, reactive management to longer term strategic management of fisheries in a wider ecosystem context. And it is no mere coincidence that these fundamental changes to the approach to fisheries management are being articulated at the same time as arguments for decentralised and devolved governance.

Although social scientists have been highly critical of the limitations imposed by the existing management model and unwilling to accept the scientific assumptions on which it is based, current demands for a new, broader and less rigid paradigm are being initiated, at least in part, from within the biological sciences conscious of the restrictions implicit in the cognitive demands of modern fisheries management. Fisheries biology has developed in line with the evolution of a management system concerned almost exclusively with resource conservation and based on control of fishing activity primarily through the imposition of output limitations (TACs and catch quotas). Fisheries biology has provided the cognitive basis for this system of management through stock assessments.

Recently, there have been significant changes to the scientific basis of fish stock advice from deterministic modelling (maximising the yield by adjusting fishing mortality) to risk management through the application of the precautionary approach (maintaining Fm below levels associated with the risk of spawning stocks falling below a critical level). And, in line with an ecosystem approach, the notion of using 'health indicators' to adjust overall levels of exploitation commensurate with a sustainable marine ecosystem is being canvassed. But such refinements are still contained within a management paradigm which requires quantitative models to generate quantifiable targets to be met through quantifiable regulatory measures (i.e. TACs and quotas). Shifts from resource optimisation to risk minimisation, involving more complex stochastic models, do not represent a durable solution. They merely bring science into an immediate confrontation with two crucial limiting factors: *cost*, where the marginal costs of improving the basic models in terms of data needs becomes prohibitive; and *chaos theory* i.e. the limits to the predictability of natural systems beyond which it is impossible to provide reliable modelling. Moreover, the increasing sophistication of the modelling exercises does little to improve the validity and legitimacy of the science in the eyes of the stakeholders.

Within the human sciences, there are similar concerns over the limitations of the existing management paradigm and an emerging shift from reductionism and formalism towards a more comprehensive or holistic mode of analysis of fisheries issues. Both the economic and social sciences are coming to recognise the need to develop closer links between the state of the marine ecosystem, economic performance, patterns of human behaviour and systems of regulation - and, therefore, the need for a new management paradigm constructed around a less mathematically rigorous rationality. A key problem, however, is how to combine within the same paradigm the requirements of a more stable, long term vision for the evolution of the fishery with the recurring

need for reiterative assessment exercises on which to make short term adjustments to the fishery.

6.3.2 Integrated Fisheries Management: the Genesis of a New Paradigm?

Although the flaws in the current management model can be quite easily exposed, the far more difficult task is to define the detailed parameters of a more appropriate model which would meet in full the criticisms of the biologists, ecologists, economists and social scientists and, at the same time, satisfy both user groups and administrators. Indeed, that is likely to prove an impossible task. Opening up the style of management to a more comprehensive, holistic approach is likely to evolve gradually rather than occur as a dramatic and disruptive event. Nonetheless, these change will require a catalyst to initiate the process. The concept of integrated fisheries management, incorporating an ecosystem approach to fisheries management, could provide the catalyst. In a very real sense, the complexity of the marine ecosystem defies rational management. Although we are made increasingly aware of the direct and indirect effects of fishing cascading through the marine ecosystem, in detail those effects are largely unknown and probably unquantifiable. Equally the effects of management measures in relation to ecosystem objectives cannot be predicted with any degree of certainty. The criticisms levelled at fisheries biology would apply with far greater force to a quantitative approach to ecosystem management.

But what an ecosystem approach to fisheries management - which seeks to achieve sustainable fisheries within diverse, productive and well integrated marine ecosystems - can do is adopt a more precautionary approach based on the 'soft predictability' afforded by ecosystem health indicators, and an adaptive management regime inclined more towards 'parametric' conservation measures than the present numerical approach embodied in TACs and catch quotas. As the scope of fisheries management is broadened, so the dependence on single species mathematical modelling would decline.

Clearly the principal scientific contributions to the development of integrated fisheries management will come from fisheries biology and marine ecology in advancing the understanding of the patterns and processes within the marine ecosystem and in elaborating the precautionary approach as applied to both fish stocks and the ecosystems. The outline of a research agenda for integrated fisheries management is given in Table 6.1. In no sense does this new agenda invalidate or displace the earlier social science agenda outlined above (6.2). For the social sciences there will certainly be a continuing role in (a) helping to redefine the policy community and the most appropriate organisational frameworks; (b) analysing how the different actors with their potentially conflicting 'world views' will interact in the revised policy process; and (c) in assessing the efficacy and distributional effects of alternative management tools, *inter alia*. What the emergence of integrated fisheries management does is to define a new context for the social sciences in relation to fisheries research and to emphasise the need for a multi-disciplinary approach.

Table 6.1: Integrated fisheries management (IFM): basic issues for research

- *redefining the objectives for IFM*
- *defining the limits to IFM*
  - limits of science in a 'chaotic' world
  - transaction costs
  - efficacy of management
- *implications of an ecosystem approach*
  - understanding patterns and processes in marine ecosystems (incl. fishing effects)
  - operationalisation of the precautionary principle
- *designing new tools for IFM*
  - adaptive management
  - parametric v numerical measures
  - effort v catch quotas
  - NTZs
  - financial incentives
- *distributional effects of IFM*
- *discordant rationalities*
  - reconciling conflicting 'world views'
  - identifying meaning and value of marine ecosystems and fisheries for society
  - compatibilities of scientific and local knowledge re fisheries and ecosystems
- *new management institutions for IFM*
  - defining the stakeholders and the policy community
  - decentralised and devolved management
  - regionalisation (regions and ecosystems)
  - zonal management (integrating fisheries, habitat and marine wildlife conservation in inshore waters)

Note: all other social science research themes identified in Section 6.2, including property rights, flexibility and adaptive response, FDRs, social reproduction of fishing communities and the analysis of the fish chain continue to have relevance for IFM.

6.3.3 Multi-disciplinary v Inter-disciplinary Research

In all disciplines there are opportunities to fine tune the research methodologies, identify new topics for investigation and improve the dissemination of research findings. But such intrinsic developments can only bring a marginal benefit to the management process. Possibly the greatest

weakness of the current research system is that it remains fragmented, introspective and lacking in creative connectivity between the participating disciplines. As a result, the value of the research contribution to fisheries management faces self-imposed constraints.

Multi-disciplinary research is more than simply a reflection of current intellectual fashion. It is a logical outcome of the complexity of fisheries management and the limitations of research and advice arising from discrete, mono-disciplinary research environments. Not only would the emergence of multi-disciplinarity be an inevitable consequence of the development of a new, more holistic management paradigm, it would also serve to enrich the research experience, create a better understanding of the highly complex fisheries system and provide greater utility for those responsible for fisheries management. Such benefits are equally appropriate to 'old' and 'new' management paradigms.

At this stage, a multi-disciplinary approach is preferred to the more ambitious attempts to frame inter-disciplinary projects. This distinction is more than simply semantic. Multi-disciplinary research involves co-operation between disciplines in addressing a common problem, where each discipline contributes directly through the application of its own epistemology, methodology and theoretical constructs. A multi-disciplinary approach implies working in parallel rather than in closely integrated programmes. Inter-disciplinary research involves much closer collaboration with different disciplines represented in the research team working on a specific project and requiring a very detailed understanding of each other's roles and responsibilities. Inter-disciplinary research is much less common and certainly more difficult to organise; it can flourish either through research institutes with a tradition of cross-disciplinary collaboration or as the result of the particular chemistry of interaction between individuals from different disciplines working together.

Within a multi-disciplinary approach, research will still be undertaken mainly through established disciplinary frameworks but there will need to be a commitment to develop a more informed awareness and understanding of the other disciplines, to pool results and to discuss the findings openly and critically but without prejudice, with a view to providing complementary and coherent advice to policy makers. Creative tension arising from different perceptions of the same problem will be an important aspect of a multi-disciplinary approach. Whether it would be possible, at this stage, to go beyond this level of co-operation between disciplines and develop a more integrated approach, a unifying theory and a common language is doubtful. Even though a multi-disciplinary approach seems a logical and not very radical progression, it is still likely to confront a number of institutional barriers within both the research and policy communities, which it will take time to break down. To progress beyond multi-disciplinarity may have to await more fundamental changes to systems for the training of research workers and alterations to the funding strategies of national research councils.

Clearly there is an important role for those who commission policy related research to act as a catalyst for change. The Commission's Fifth Framework Programme appears to provide such a catalyst, firstly by targeting funding on 'key actions', secondly by emphasising a multi-disciplinary approach involving academic researchers, industry and users, and thirdly by insisting that research projects should, where appropriate, take fully into consideration the social and economic implications of their findings.

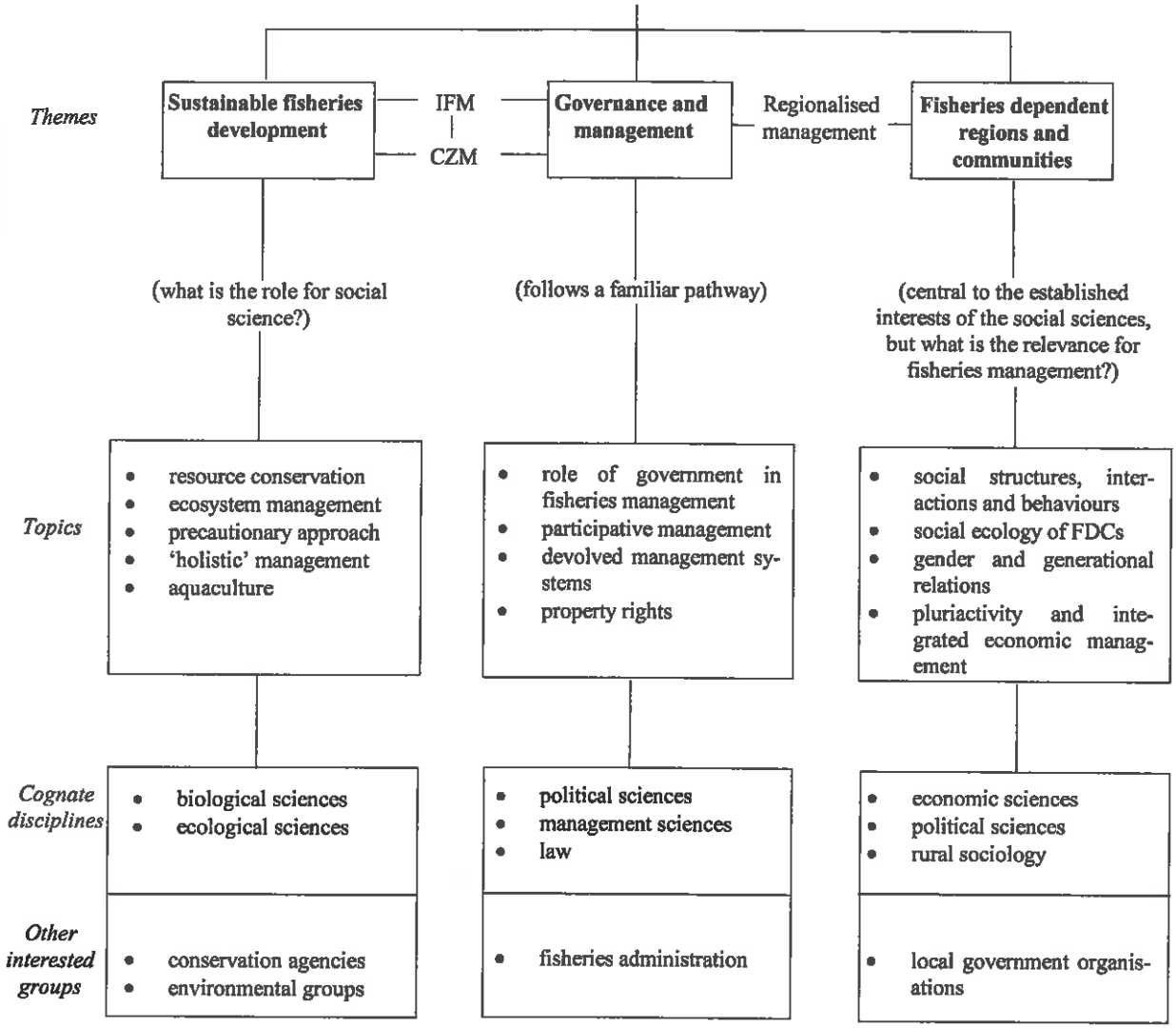
6.4 The Organisation of the Social Sciences

The future contribution of the social sciences to multi-disciplinary research may well be conditioned by the way in which the social sciences are organised. One of the tasks of the CA was to investigate the present and future organisation of the social sciences in the context of policy relevant research on fisheries and their management. The report has already confirmed the fragmented nature of fisheries social science in terms of institutional structures. This situation seems unlikely to change very dramatically over the short and medium terms. Social scientists with an interest in fisheries management will remain relatively few in number, dispersed among a relatively large number of institutes which lack a mainstream involvement in fisheries research, and working to rather different agendas within their own disciplines.

The experience of ESSFiN has demonstrated that social scientists, drawn from different disciplines and different cultures, can work together on an informal agenda. The 'experiment' has been successful. There were few signs of unbridgable cleavages between the various disciplines represented or irreconcilable differences in epistemology. The relatively 'soft' or blurred edges to many disciplines within the social sciences precluded adversarial discourse. ESSFiN was, in essence, an outstanding example of 'endogenous multi-disciplinarity'.

The future development of the social sciences in an organisational sense is rather more problematic. The membership was more or less evenly divided between a strategy based on creating smaller, more narrowly defined networks (usually within the social sciences) and one based on broader multi-disciplinary networks intersecting with the natural and/or economic sciences. One possible way forward that might satisfy both parties is indicated in Table 6.2. But there is no overarching, co-ordinating framework. Despite many expressions of interest and concern to see ESSFiN survive beyond the end of the CA, there have been no concrete proposals for its continuation so far. As a result, fisheries social sciences remain without a roof over their heads or a journal to their name; in short, a return to the *status quo ante*.

Table 6.2: The social science of fisheries and their management



Source:
FiNESSE, Issue 10, 1999

7.0 CONCLUSIONS

The CA has met all of the objectives set out in Section 2 above to a greater or lesser extent, although objective (v) 'to facilitate rapid response to requests for information and advice from policy makers' was not in fact tested during the duration of the CA. Moreover, all the tasks identified in the work programme (3.2) were carried out fully, satisfactorily and on schedule.

Through the work programme the CA has created an opportunity for active collaboration among social scientists from different disciplinary and national backgrounds which has been enthusiastically and purposefully taken up by a relatively small but nonetheless significant number of ESSFiN members. The CA has provided a critical review of the status and contribution of the social sciences to policy related research on fisheries and their management and, through the workshop programme, developed a robust social science perspective on some of the key issues confronting fisheries management in Europe (Section 4). It has also established an effective means for the dissemination of results (Section 5).

Finally, in looking forward to the future, the CA has outlined a broad rather than narrowly specific agenda for continuing social science research, emphasising the importance of multi-disciplinary collaboration especially in the context of a more holistic approach to fisheries management (Section 6). However, the conclusions of the CA concerning a more structured and focused organisation for fisheries social science in Europe are rather less sanguine.

Overall, therefore, it is considered that the CA has helped to define an important complementary status and role for the social sciences, alongside - but not necessarily on a par with - the more established biological and economic sciences.

ANNEXES

ANNEXE 1

Addresses for dissemination of reports and publications

Adam, Dr. G.	MEP, Brussels
Ambrosio, M.	Director-General for Fisheries, Rome
Aurand, J.M.	Director of Marine Fisheries and Aquaculture, Paris
Benoish, M.	President, CCMCM, Paris
Bol, R.P.J.	Director of Fisheries, Gravenhage
Carmeliet, J.	Director-General for Fisheries, Brussels
Day, Sir S.	Committee of the Regions, Brussels
de Feudardent, J-L.	Secretary-General, CCMCM, Paris
Deas, B.	Chief Executive, NFFO, Grimsby
Dobosz, E.	President, Europêche, Rome
Doyle, F.	Secretary-General, Irish Fishermen's Organisation Ltd, Dublin
Ewing, Dr. W.	MEP, Brussels
Fischer, L.	Director, Deutscher Fischerei-Verband E.V., Hamburg
Flatten, O.	Head of Fisheries Division, OECD, Paris
Fraga Esteves, C.	MEP, Brussels
Fuertes Gamundi, Dr. J.R.	Director-General, Cooperative de Armadores de Pesca del Puerto de Vigo, Vigo
Geranidis, M.	Secretary of State for Fisheries, Athens
González Gil de Bernabé, D.J.M.	Federación Nacional de Confradias de Pescadores, Madrid
Havu, S.	Director-General for Fisheries, Helsinki
Hayashi, M.	Assistant Director-General, FAO, Rome
Hopkins, Prof. C.C.E.	General Secretary, ICES, Copenhagen
James, R.H.	Chief Executive, The Northern Ireland Fish Producers' Organisation, Portavogie
Johansson, R.	Director, Sveriges Fiskares Riksförbund, Göteborg
Juarez Casado, S.	Secretary-General for Marine Fisheries, Madrid
Keogh, P.J.	Deputy Chief Executive, Irish Sea Fisheries Board, Dublin
Langenhagen, B.	MEP, Brussels
Langstraat, D.-J.	Visserij Centrum, Rijswijk
Lautrup-Larsen, M.	Director of Fisheries, Copenhagen
Levieil, D.	DG XIV C-2, Brussels
Lochrin, M.	Chief Executive, Irish Fish Producers' Organisation, Dublin
Monteiro, E.	Director-General for Fisheries, Lisbon
Morley, E.	Parliamentary Secretary to the Ministry of Agriculture, Fisheries and Food, London
Nooitgedagt, J.K.	Nederlandse Vissersbond, Emmeloord
Olesen, C.	Director, Danske Notfiskeres Producent Org., Hirtsthals
Öster, M.	Director General for Fisheries, Fiskeriverket, Göteborg
Parres, A.	Comité National des Pêche Maritime, Nanterre
San Emeterio, Dr. P.	Secretary-General, Federación Españiola de Armadores, de Buques de Pesca, Madrid
Schiltz, B.	Voorzitter, Rederscentrale S.V., Ostend
Sewel, Lord	Parliamentary Under-Secretary, Scottish Office, Edinburgh
Silva Arbantes, J.S.	Fenacoopescas, Peniche
Urruticoecha Aduna, Dr. J.A.	Secretary-General, Confederación Española de Asociaciones Pesqueras, Madrid
Vernaeve, G.	Secretary-General, Europeche, Brussels
Wendisch, Dr. J.	Director-General for Fisheries, Bonn
Wichmann, N.	Director, Danmarks Havsfiskeriførening, Esbjerg
Wittevrongel, A.	Secretary-General, Association Europeenne des Organisations de Producteurs dans le Secteur de la Pêche, Ostend
Woods, Dr. M.	Minister for the Marine and Natural Resources, Dublin