WORLD TRADE ORGANIZATION

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UPDATE OF FAO ACTIVITIES RELATED TO FISHERIES

Report of the Expert Consultation on Economic Incentives and Responsible Fisheries

28 November – 1 December 2000

Communication from the FAO

1. For ease of reference for the Members of the Committee on Trade and Environment, the Report of the FAO Expert Consultation on Economic Incentives and Responsible Fisheries is reproduced in the Annex to this document.

2. The Report of the Expert Consultation was examined by FAO Members during the 24th Session of the Committee on Fisheries (COFI) in Rome, 26 February – 2 March 2001. The conclusions of this examination were recorded in the COFI Report as agreements and recommendations for future FAO work on fisheries subsidies. The relevant paragraphs of the COFI Report under Item 8 of the Agenda are the following:[1]

> 82. The Secretariat introduced the Agenda item on the basis of document COFI/2001/9. Attention was drawn to the conclusions and recommendations of the Report of the Expert Consultation on Economic Incentives and Responsible Fisheries (document FIPP/R638) that was held in Rome (28 November – 1 December 2000) and to the papers presented (document FIPP/R638 Suppl.). Guidance was sought from the Committee on how the work of assessing the impacts of subsidies should be continued and what partnerships might be appropriate in the process.
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> 83. The Committee appreciated the work undertaken by the Secretariat and noted the Report of the Expert Consultation as well as the conclusions and recommendations contained therein. Some Members felt that the Expert Consultation had raised more questions than answers. It noted, however, that further work remained to be done on this subject, particularly on matters relating to technical information regarding the nature of subsidies and their effects.
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> 84. Some Members expressed concern over the use of subsidies in fisheries and that further work on the effects of such subsidies is an important issue that should be given priority by FAO.
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> 85. The Committee agreed that future work on subsidies should build on past efforts and work towards determining the quantitative and qualitative effects of subsidies on trade in fish and fishery products and sustainability of fishery resources where the study of the trade aspect

[1] CL120/7, Report of the 24th Session of the FAO Committee for Fisheries, Rome, 26 February–2 March 2001. Available at: http://www.fao.org/docrep/meeting/003/y0220e/y0220e00.htm.

should be of a technical nature and be closely coordinated with the World Trade Organization (WTO) as the competent body for trade discipline. It was further agreed that work on this topic be closely coordinated with, and complementary to, the work being carried out by other relevant intergovernmental organizations and recommended that FAO, as a global multi-disciplinary organization, should take a lead role in the promotion of such cooperation and in the coordination of work on fisheries subsidies and the relationship with responsible fisheries.

86. The Committee agreed that a second Expert Consultation be organized by FAO but that substantial preparatory work, including an inventory of currently available and ongoing efforts, should first be carried out by the Secretariat. The Committee urged that the Consultation be comprised of a wider range of experts, having relevant practical and multidisciplinary experience in fisheries management and trade issues. In addition it should reflect a regional and topical balance of the issues to be considered. It was agreed that governments should be consulted in the selection of the experts.

87. Some Members emphasized the necessity to take into account the needs and conditions of developing countries and, in particular, the issues relating to differences between large- and small-scale or artisanal fisheries. Some Members also emphasized that, with respect to the matter of subsidies and trade, the Consultation should focus on the technical aspects of the policy debate.

88. The Secretariat informed the Committee that the resources required for holding the second Expert Consultation were not available in the current budget. Resources might be available in the 2002-2003 budget but the Secretariat would not know until November 2001, hence the Secretariat suggested that extra-budgetary funds might be needed for the purpose of a second Expert Consultation.

89. It was agreed that the Expert Consultation be followed by a Government Technical Consultation on the issue, in part as a means of quickly disseminating information on the matter both to Members and to other intergovernmental organizations.

90. As a complementary activity to address the fishery subsidy issue, one Member suggested that it would be useful to initiate meetings to study all factors affecting sustainability. While many Members agreed in principle with the proposal and it was also supported by some Members, it was generally felt that such efforts would duplicate much of the work already under way.

ANNEX

REPORT OF THE EXPERT CONSULTATION ON ECONOMIC INCENTIVES AND RESPONSIBLE FISHERIES

Rome, 28 November – 1 December 2000[2]

INTRODUCTION

1. The Expert Consultation on Economic Incentives and Responsible Fisheries met in the FAO Headquarters, Rome, Italy from 28 November to 1 December 2000.

2. The Expert Consultation was attended by 12 experts. They are listed in Appendix A.

OPENING OF THE EXPERT CONSULTATION

3. The Expert Consultation was opened by Mr. Ichiro Nomura, the Assistant Director General of Fisheries. In welcoming the participants, Mr. Nomura described the origins of the Consultation emphasizing that the world fishery community at large is concerned about the appropriateness of the economic incentives facing world fisheries. Therefore there is a widespread concern about subsidies. He then drew the attention of the experts to the fact that while there seems to be no universal agreement about what is and what is not a subsidy, there is agreement that we have little empirical knowledge of the effects of subsidies - however understood - on trade and resource sustainability. He asked the experts first to try and reach an agreement on an operational definition of subsidies, and then to identify activities that would make it possible for the world's fisheries community to learn more about the effects of subsidies in a practical and affordable manner. Mr. Nomura's opening statement is attached as Appendix B.

ELECTION OF CHAIRMAN

4. The Expert Consultation elected Dr. J. Sutinen as its Chairman and Dr. M. Aguero as its vice-Chairman.

ADOPTION OF THE AGENDA AND TIMETABLE

5. The Expert Consultation adopted the agenda and timetable as contained in Appendix C.

BACKGROUND AND PREPARATIONS

6. In the late 1990s, the FAO was called upon by its Members to compile information on fishery subsidies at the global level. The FAO Sub-Committee on Fish Trade[3] did so in 1998 and the FAO Council in 1999 when it adopted the International Plan of Action for the Management of Fishing Capacity[4] (IPOA-Capacity). The stated purpose for the information dissemination about subsidies was to provide a basis for further analysis aimed at understanding the role of subsidies in relation to trade in fish and fish products and to fishery resources sustainability.

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[2] The following contains the Report of the Expert Consultation (FIPP/R638), and selected Appendices to that Report. The full text can be found in FAO Fisheries Report No. 638, Rome, 2000, at: www.fao.org/FI.

[3] Report of the Sixth Session of the COFI Sub-Committee on Fish Trade (paragraph 17). FAO Fisheries Report No. 589, Rome. 1998. 75pp.

[4] See Paragraph 25 of the IPOA-Capacity: FAO. International Plan of Action for reducing incidental catch of seabirds in longline fisheries. International Plan of Action for the conservation and management of sharks. International Plan of Action for the management of fishing capacity. Rome, FAO. 1999. 26pp.

7. In preparation for the Expert Consultation, the FAO assembled information on subsidies and their effects. Four desk studies were commissioned. The experts received these desk studies[5] for review prior to arriving in Rome. FAO also wrote to Members soliciting copies of documents relevant to the meeting. The documents[6] received in reply to this request were made available to the participants upon arrival in Rome. In Rome they also received copies of five recent, major reports on subsidies and fisheries.

SEARCH FOR AN OPERATIONAL DEFINITION OF SUBSIDIES

Introduction

8. The Secretariat asked the Expert Consultation to define what is and what is not a fisheries subsidy. The Secretariat further requested the Consultation to find a definition that (i) is applicable to all interventions by the public sector that are susceptible to being labelled subsidies; (ii) has a high likelihood of acceptance by those involved in the political debate on fishery subsidies; and (iii) enables the effects of subsidies on trade and fishery resources to be measured.

9. The review paper by Professor W. Schrank, as well as the discussion amongst the group of experts, revealed a large number of different definitions and understandings of what is meant by a subsidy. The Consultation spent a major portion of its time debating the merits of alternative definitions of the term subsidy. Highlights of the group's discussion are summarised below, followed by a set of conclusions and recommendations.

10. It should be emphasized that subsidies, however defined, represent some, but not all, of the instruments that effect the incentive structure of the fishing and aquaculture sector. The economic behaviour of firms supplying fish will be sensitive to taxes and other charges, to regulations and to the creation and enforcement of property rights. Responsible fisheries management needs to consider all of these elements.

Discussion

11. Many different definitions of a subsidy have been used in economic analyses of trade and natural resource use. Our review of these definitions and analyses leads us to conclude that none of the commonly used definitions is adequate for a comprehensive analysis of subsidies' effects on trade and sustainability in fisheries and aquaculture. Unfortunately, there is no one definition that the Consultation recommends for the measurement, analysis and political debate of subsidies in fisheries.

12. Experts tend to place different emphasis on the following four attributes of subsidies in fisheries and aquaculture:

(i) Government interventions that only involve financial transfers to producers;[7]

(ii) government interventions that confer benefits to producers without involving financial transfers from the government to producers;

[5] FAO Fisheries Report No. 638, Supplement, papers presented at the Expert Consultation. Available at: www.fao.org/FI.

[6] *Ibid.*

[7] The term "producers" is taken to include primary producers (fishing firms), processors of fish, distributors, wholesalers and retailers of fish and fish products. In other words, "producers" includes all firms involved in supplying fish to the final users of fish and fish products.

(iii) lack of government interventions to correct for distortions that confer benefits on producers; and

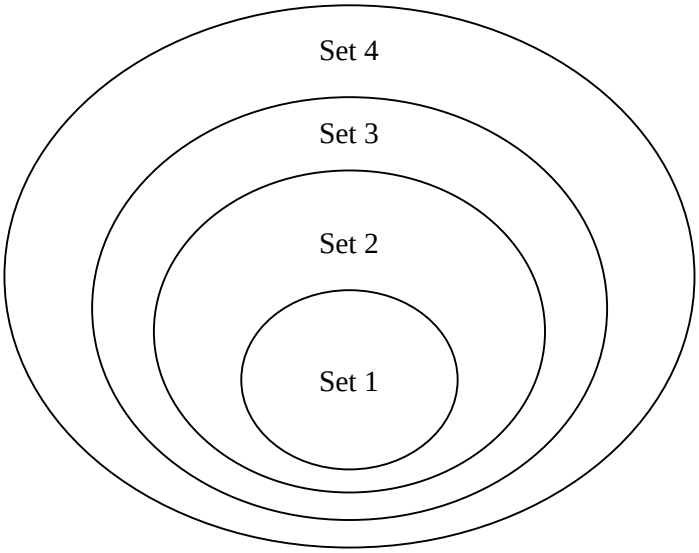
(iv) the long-term as well as the short-term effects of government interventions on firms' benefits and costs.

13. In order to advance the measurement, analysis and discussion of subsidies in fisheries and aquaculture, the experts in the Consultation propose definitions for four sets of subsidies. The Consultation recommends that any analysis and discussion of this issue state explicitly which of the four sets of subsidies is being considered.

14. The numbering of "sets" 1, 2, 3 and 4 is not meant to imply any ranking of subsidies. Instead, the numbering indicates that higher numbered sets include more elements in the definition of subsidies. In other words, Set 2 includes elements included in Set 1, Set 3 includes elements included in Set 2, and so on. This is illustrated graphically in Figure 1.

15. Set 1 Subsidies: ***Government financial transfers that reduce costs and/or increase revenues of producers in the short-term***.

Figure 1. Depiction of Sets of Subsidies



16. Set 1 Subsidies include direct payments by government to or on behalf of producers, e.g., grants to purchase vessels or to modernize vessels, income support payments, and others.

17. All experts in the Consultation believed definitions of subsidies that include only government financial transfers to producers are too narrow for present purposes. Such definitions exclude government interventions that affect trade and the use of fisheries resources and that involve no financial transfers. Therefore, the definition of Set 2 Subsidies includes all interventions by government – regardless of whether they involve financial transfers – that can potentially reduce costs and/or increase revenues of producers in the short-term.

18. Set 2 Subsidies: ***Set 2 Subsidies are any government interventions, regardless of whether they involve financial transfers, that reduce costs and/or increase revenues of producers in the short-term.***

19. Set 2 Subsidies include tax waivers and deferrals, and insurance, loans and loan guarantees provided by government. Set 2 Subsidies also include government provision of goods and services at a cost below market prices.[8]

[8] Note that this applies only to goods and services for which a market exists. This does not apply to goods and services provided by the government and for which there is no market. See the discussion below on management costs.

20. Set 2 Subsidies correspond closely to many of the definitions used in practice, for example, by the World Trade Organization. Many experts in the Consultation believe that the definition of Set 2 Subsidies satisfy conditions (i), (ii), and (iii) established by the Secretariat (see paragraph 12).

21. Most experts in the Consultation view definitions of subsidies that require active and explicit government intervention, such as Set 2 Subsidies, as too narrow for present purposes. Lack of government action to correct distortions (imperfections) in the production of and markets for fish and fish products confers an implicit benefit to producers that can affect trade and the use of fishery resources as well. Therefore, the experts in the Consultation define Set 3 Subsidies to include lack of correcting interventions by government to remove distortions (imperfections) in production and markets that can potentially affect fisheries resources and trade.

22. Set 3 Subsidies***: Set 3 Subsidies are Set 2 Subsidies plus the short-term benefits to producers that result from the absence or lack of interventions by government to correct distortions (imperfections) in production and markets that can potentially affect fisheries resources and trade***.

23. Set 3 Subsidies include the implicit benefits to producers associated with the lack of government regulations that would require producers to bear the costs that they impose on other parties, including costs on the environment and natural resources. By not having to pay for costs imposed on others the cost of production is lower, which in turn influences the amounts of fish produced and traded, and the health of resource stocks. Such implicit benefits are present where government does not require measures to reduce the catch of, for example, sea turtles, sea birds or marine mammals. In this case, producers impose costs on others, in the form of damage to the environment that they do not pay for and do not take into account in their production decisions. Another example is where government does not do enough to prevent the overexploitation of a fishery resource. In this case, producers avoid paying for the costs of harvesting the fishery resource in the short-term while imposing costs on others, and themselves, in the long-term. In these cases, both the sustainability of the resources and trade in fish are affected.

24. All experts in the Consultation agree that these types of implicit benefits (unpaid costs) can have significant impacts on fisheries resource sustainability and trade. However, not all agree that these implicit benefits should be included as subsidies for present purposes. The dissenters believe that the definition of Set 3 Subsidies may not satisfy all of the conditions (i) – (iii) established by the Secretariat. In particular, some of the experts believe that this definition encompasses measures not readily susceptible of classification as subsidies, and that their inclusion moves the discussion of fisheries subsidies into areas that are distinct from, and should be addressed in different contexts from, the fisheries subsidies debate.

25. The experts in the Consultation were unable to decide whether the failure to charge for the costs of fisheries management services constitute a subsidy to producers. There is a lack of research on this issue, and economic reasoning leads to ambiguous conclusions.

26. Clearly, when government provides a factor input at a price below the market price, that constitutes a subsidy under all four definitions above. However, there is no market for management services in most fisheries.[9] Some experts argue that producers have no demand for management services and that, instead, management is forced upon them. In addition, in managing fisheries, government is attempting to ensure the sustainability of the resource for the use of future generations and the enjoyment of non-producers who value the existence of healthy fishery resources.

[9] An exception is the case of sole ownership where the owners of the fishery resource would be willing to pay for a set of services that include research, management administration and enforcement.

27. The professional literature on recovering the costs of fisheries management essentially concludes that requiring producers to pay user fees improves the overall efficiency of management - in other words, user fees enhance the value gained from the use of scarce management resources. This literature, however, does not address the issue of whether not charging user fees (or some other form of cost-recovery) should be considered a subsidy. Clearly, charging for user fees reduces revenues (or increases costs), but whether and how such fees affect supply, trade and sustainability is not clear at this time. More research on this important issue is required.

28. Some of the experts in the Consultation argue that definitions of subsidies that include only government interventions (or absence of correcting interventions) that confer short-term benefits on producers are limited because they do not account for the effects over time of such interventions. In other words, an intervention that confers an immediate benefit can ultimately confer harm or losses on producers, especially in fisheries. Some of the experts recommend extending the definition of a subsidy to include interventions (and absence of correcting interventions) that affect costs and revenues in any direction and over time, i.e., in the short-, medium-, and long-term.

29. Set 4 Subsidies***: Set 4 Subsidies are government interventions, or the absence of correcting interventions, that affect the costs and/or revenues of producing and marketing fish and fish products in the short-, medium-, or long-term.***

30. Set 4 Subsidies include all Set 3 Subsidies plus interventions such as management measures that may decrease (increase) the short-term benefits to producers but that result in an increase (decrease) in long-term benefits to producers. An example is where a closure of the fishery (or an area of the fishery) that imposes short-term losses on producers ultimately results in a rebuilt resource stock and higher long-term benefits to producers. Set 4 Subsidies explicitly account for the effects over time of government interventions and absence of correcting interventions. The effects on benefits to producers in the short term may be the opposite of the effects in the long term.

Conclusions

31. The conclusions are:

- None of the commonly used definitions of subsidies is adequate for a comprehensive analysis of subsidies' effects on trade and sustainability in fisheries and aquaculture.
- There is no definition of subsidies that the Consultation recommends as the only definition for the measurement, analysis and political debate of subsidies in fisheries.
- Definitions for four sets of subsidies are needed in order to advance the measurement, analysis and discussion of subsidies in fisheries and aquaculture.

Recommendations

32. It is recommended that:

- Any analysis and discussion of subsidies in fisheries and aquaculture make explicit which of the four sets of subsidies is being considered.
- Further economic research be pursued on the issue of whether and how to include management costs in any definition of subsidies.

CATEGORIES OF SUBSIDIES

33. Subsidies are defined above for four different sets of governmental assistance. The next two sections of the report make use of "categories" of subsidies when discussing the impacts of subsidies on trade and resource sustainability. The purpose of this section is to explain the relationship between the concepts of "sets" and "categories".

34. "Sets" and "categories" of subsidies represent two different ways of dividing the universe of subsidies. Why is it useful to define both "sets" and "categories"?

35. "Sets" responds to the need to link the definition of subsidies to the manner in which the term is usually understood, and therefore frequently used in the policy/political debate. "Sets" build on the types, or "modalities" of subsidies.

36. "Categories" responds to the needs of those who study the effects/impacts of subsidies. The criteria for defining categories, as will be seen below, makes use of the primary impact of the subsidy, that is, the impact on the producer.

37. The categories of subsidies are divided into two broad categories: cost-reducing and revenue-enhancing subsidies. In other words, various government interventions (or lack of interventions) are categorized according to whether they primarily tend to either reduce the cost of producing and marketing fish or increase the revenue of producing and marketing fish. However, the effects on costs and revenues of some interventions are either ambiguous or they depend on the other conditions. These are grouped into a broad category named Miscellaneous/Unspecified. Each of these broad categories is then broken down further into subcategories that relate to the form and function in influencing fish production, trade and resource sustainability.

38. Readers should note that some of the subcategories may appear in all four sets of subsidies, and other subcategories may appear on only one or few of the sets. For example, subcategories that include direct government payments to, or on the behalf of, producers would appear in all four sets of subsidies as defined above. Subcategories that include tax exemptions for fuel would appear in Sets 2, 3 and 4 subsidies. Subcategories that include lack of government intervention to prevent environmental damage by producers would appear only in Sets 3 and 4 subsidies. Subcategories that include fishery management measures (such as output and input controls on production) would appear only in Set 4 subsidies.

39. In addition, the subcategories identified for resource sustainability differ from those identified for trade issues. The experts chose to divide the two broad categories into different subcategories and assigned different names to their categories. The experts attempted to identify subcategories that would best facilitate analyses of the impacts of subsidies. Table 1 lists some (not all) of the subcategories used by the experts in the examination of the impacts of subsidies on trade and resource sustainability.

Table 1. Categories of Subsidies related to Impacts on Trade and Resource Sustainability

Trade	Sustainability
Cost Reducing	Cost Reducing
Investment cost reductions	Capital expansion
Input price reductions	Labour cost reduction
	Misc. cost reductions
	Tax waivers & deferrals
	Loans & insurance cost reductions
Market interventions	Market interventions
	Fisheries science and management
Revenue Enhancing	Revenue Enhancing
Output price increases	Output price supports
	Compensation programmes
Sales promotions	Sales promotions
	Equity infusions
Trade measures	Trade measures
Miscellaneous/Unspecified	Miscellaneous/Unspecified
Actions to reduce fishing effort	Fishing capacity reduction programmes
Management and regulatory actions	Fisheries science & management

40. The experts did not assign their respective subcategories to any of the sets of subsidies. However, most of the subcategories fall loosely into Sets 1 and 2.

IMPACT OF SUBSIDIES ON SUSTAINABILITY OF RESOURCES

Present knowledge of the nature and magnitude of the impact of subsidies on resources

41. A review of the literature reveals several attempts to categorise the wide diversity of subsidies currently in existence. Amongst these, the OECD study of government financial transfers lists numerous subsidies by country and the expenditure involved. Similarly, Price Waterhouse Coopers performed a subsidy study for APEC which also listed subsidies by country together with expenditures. However, few studies have attempted to link the value of subsidies quantitatively to the effect on fish stocks. This shortcoming remains a matter of concern that would need to be addressed in future research.

42. In its deliberations, the experts agreed that subsidies do not inevitably contribute to resource depletion. Neither are they inherently good or bad. The effects of subsidies on the sustainability of resources are created by induced changes in costs or revenues. Costs may include the costs of variable inputs, the costs of investment in new technology or in additional productive capacity.

43. The effects of subsidies will depend on the extent to which fishing effort is controlled. One would expect no increase in effort and therefore in catch in the case of a fishery managed in such a way that effort or output is perfectly constrained. In the case of output constraint, for example, there will be implications for the economics of the fishery, but not, by definition, for the resource. If there were perfect control of effort, then the effect of a subsidy on sustainability through increases in capital and labour or efficiency would be matched by a compensatory reduction in effort.

44. Various categories of subsidies were analysed. Each subsidy category was considered only for situations of fully developed or overexploited fisheries under imperfect controls of effort and not for underutilized fish stocks or for cases where effort is perfectly constrained.

45. There was a consensus that under many, if not most, real-world fishery management regimes, fishery subsidies tend to lead to increased fishing effort. Although economic theory, and modelling studies, predict this quite firmly, direct empirical evidence is hard to find. While we can therefore anticipate the direction of any impact can be anticipated with some confidence, one cannot, with the existing state of knowledge, estimate the relative magnitude of the effects in any given situation.

46. Nevertheless, the direction of impact of some subsidies on sustainability is impossible, in the abstract, to determine. As an example, vessel decommissioning programmes will generally have a positive effect on sustainability. However, if the buy back programme has no restrictions on the use to which the buy backs funds can be put, then the money may be reinvested in the fishery. Fishing capacity may therefore be increased and the purpose of the decommissioning exercise defeated. Without detailed description of such programmes, the direction of impact is impossible to determine.

47. The experts suggest that, subject to available data, there are three approaches for estimating the impact of a subsidy on the sustainability of a fish stock.

- Dynamic mathematical modelling using real fishery data;
- econometric estimation of relationships based on time series, cross section or pooled data; and
- simple qualitative models.

48. The first two approaches have similar data requirements. Estimating corresponding parameters and functional relationships requires extensive time series, cross section or pooled data. The third approach aiming at providing basic guidance and preliminary qualitative assessments of subsidy impacts, in turn, require only information for understanding the functioning and structure of the determining variables.

49. In terms of required resources for the approaches/methods referred above, they vary according to both the specific needs and practical use of the resulting analysis. The first two categories provide quantitative results and more information than qualitative models which could be focused on simple but fundamental categories explaining global trends and cause-effect relationships of subsidies on sustainability.

50. In addition, although three different economic approaches to the measurement and estimation of impacts were discussed, the experts felt that further study would be necessary to more closely reflect real world situations. In particular, this would entail comparison of the differential impacts obtained with the dynamic bioeconomic models, (1) under a combination of different fisheries management measures, (input, output, and technical measures), and (2) under different institutional management regimes (at local, national and international levels).

51. The modelling and analysis of subsidy impacts on resources should, of course, incorporate the uncertainties inherent in the study of marine fisheries.

52. Crucial to the analysis of subsidies is the ability to trace their effects first, to changes in costs and revenues and therefore in profits. Second, to trace the effects of changes in profits to changes in effort, and third, to trace the effects of changes in effort on the state of the stock, as measured by changes in biomass.

53. Methods for measuring the impact of subsidies on sustainability may differ among regions or types of fisheries (e.g. artisanal, inshore and offshore fisheries) and may depend on the fisheries context and the availability of data.

54. To derive a suitable measure or set of measures with which to assess the value of various subsidies would require some further research. The experts nevertheless considered that a feasible method might involve estimating the effective percentage reduction in investment or input costs or the effective increase in output prices that the subsidy achieved. In some cases such a measure might be relatively easy to estimate, for example in the case of capital grants, while in other cases it might be more difficult, in the case of government R&D programmes for example. Such a *relative* measure would facilitate the comparison of different subsidies and of subsidies in different fisheries and countries.

55. The experts compiled a list of subsidies with dual categories. The major breakdowns relate to the effects of the subsidies on costs and revenues. These classifications show whether the subsidy is cost reducing, cost increasing, revenue enhancing or has an undetermined effect. Within these classifications are functional sub-categories organized according to the logical role played by the subsidy in the fisheries economy. These sub-classifications are generally homogeneous, in that the specific subsidies in a subclass usually have similar economic effects, including their effects on fish populations.

56. Those subsidies which are expected to have a negative effect on fish stock sustainability were ranked according to their anticipated potential negative effect. Priority 1 indicates that the group believes that these subsidies have the greatest negative effect on sustainability and should be subject to further analysis and consideration by decision-makers (see Table 2).

57. Each of the subsidy classifications assigned priority 1 are included in Set 2 subsidies.

58. Future studies should also explore the potential effect of subsidies on:

- Technological development and adoption of size and species selective gear,
- designing and adopting habitat protecting gear,
- fostering recruitment enhancement technologies; and
- fostering friendly use of critical coastal ecosystems (e.g. wetlands, mangroves, estuaries, coastal lagoons, wetlands and sea grass beds) which are relevant to fisheries.

59. Such studies should, where possible, compare differential impacts obtained with dynamic bioeconomic models under combinations of different fisheries management measures and under different institutional management regimes.

IMPACT OF SUBSIDIES ON TRADE IN FISH AND FISH PRODUCTS

60. The experts considered that, as a threshhold question, it would be useful to consider what was meant by the reference to "the effects on trade" of subsidies. In the broad sense, it could be concluded that subsidies have an effect on trade whenever they have an impact on the volume of fisheries products moving across international frontiers, on the prices at which those products were traded, or some combination of the two. In more practical terms, however, the experts assumed that the FAO Committee on Fisheries was interested primarily in the state of knowledge regarding the extent to which producers in a particular country were able to improve their position relative to competing industries in other countries as a result of subsidies, whether through increased exports or the displacement of imports.

61. The experts noted that, as expressed in layman’s terms, fisheries subsidies could be expected to effect trade primarily where they reduce the costs or increase the revenues of producers, thereby

allowing them to increase their market share in the export or domestic market or to offer their product at a lower price, relative to their situation absent the government intervention. Thus, the experts considered that, when seeking to assess the potential effects upon trade of various of the types of subsidies upon trade, it would be useful to consider the extent to which the subsidies had such revenue enhancing or cost reducing effects.

62. The experts considered, however, that the extent to which such cost or revenue effects actually impacted on trade would of course depend upon any conditionalities associated with the subsidies. For example, subsidies could be conditional upon the voluntary acceptance of environmentally appropriate fishing practices and merely offset the costs associated with such techniques. In addition, a variety of factors could impact the extent to which decreased costs or increased revenues impacted fishers' behaviour. For example, where producers were subject to effective and fully utilized catch limitations, subsidies that reduced costs or increased revenues might simply increase producers' income without impacting volume of production or prices charged. Finally, and importantly, the experts recalled that, to the extent that subsidies resulted in unsustainable fishing practices, they might in the longer term result in stock depletion and consequent declines in production and export.

63. The experts observed that certain subsidies are designed specifically to impact trade. For example, a grant or income tax exemption conditioned upon export performance could reduce costs or increase revenues exclusively in relation to exported goods, with the likely effect of increasing export sales and/or decreasing export prices. On the basis of the limited empirical evidence before the experts - and in particular the APEC study - it did not appear that these types of subsidies were highly prevalent in the fisheries sector. The experts were however highly conscious of the limitations of the information available.

64. Of course, the extent of the impact of subsidies on trade will depend not only on the nature of the subsidies but also on their prevalence in terms of how common the subsidies are and their magnitude. For example, certain types of subsidy might have a potentially important impact but not be widely used. At the same time, a subsidy could be widely used but which have a low value relative to the overall value of the catch concerned. When considering the types of subsidies on which further analysis might be warranted, both the potential impact of difference types of subsidies and their prevalence/relative value may be useful considerations.

Present knowledge of the nature and magnitude of impact of subsidies on trade

65. For the purposes of this section, subsidies may:

1. *Reduce the cost of investment*: such as grants to purchase vessels, favourable loans to invest in new technology.
2. *Reduce the relative price of inputs*: such as reducing the tax on fuel, the price of access, payments for employment moving.
3. *Increase output prices*: such as import quotas, price support systems.
4. *Reduce fishing effort*: such as vessel decommissioning, retraining fishers.
5. *Involve management and regulatory measures*: such as catch limits and environmental regulation.

66. While the above categories do not exactly correspond with the available quantitative estimates of subsidies, it is, nevertheless, possible to identify the more significant categories. The recent OECD (2000) study estimates that 77 per cent of transfers (noting that the OECD study did not include market price support, tax concessions, support to the building industry and regional/local government expenditures) was spent on general service such as fisheries research, enforcement, management, enhancement and infrastructure. Subsidies to infrastructure and management are the

most significant categories in the APEC economies (APEC, 2000). The proportion of infrastructure and management subsidies are roughly equal to unbudgeted subsidies in the Milazzo's (1998) study. In summary, category 5 would appear to account for the greater share of subsidies.

67. With these categories in mind, it is possible to derive some conclusions as to current ability to analyse and derive qualitative conclusions about the effects of subsidies on trade. Models of fisheries management and policy are considered to be sufficiently well-developed to provide a solid foundation for:

- Understanding the mechanisms by which subsidies work;
- providing a basis for deriving qualitative conclusions about the impacts of subsidies; and
- providing hypotheses for empirical research.

68. Although the appropriate analytical tools exist, the current knowledge of the magnitude of the effects of subsidies on fisheries trade is quite limited. Not only have there been limited applications of the appropriate analytical tools to existing data but there are serious shortcomings in the qualitative and quantitative data on subsidies.

Conclusions

69. The conclusions follow:

- A good range of international trade models is available to study the above categories of subsidies and derive, at the very least, qualitative conclusions. The utility of these models has been demonstrated in many studies.
- The methods used to quantify subsidies vary across studies. A consistent transparent method for measuring subsidies is required.
- The empirical knowledge of the magnitude of effects of subsidies on trade remains limited.

Recommendations

70. It was recommended that:

- More accurate information on the number and value of subsidies, according to the above categories, is necessary before quantitative work can proceed.
- There is a need to collect empirical knowledge about the impacts of subsidies on trade in fish and fishery products.

Strategy for acquiring a better understanding of impact

71. Table 3 below shows an assessment for further research. Clearly the priority for study are those types of subsidies that result in a reduction in costs or increase in revenues and therefore have the potential for impacting the production, volume and price with consequential effects on trade. In some cases, particular programmes will fall into the categories of subsidies that reduce costs or increase revenues, such as fuel tax exemptions or the provision of bait services but the studies do not suggest that these subsidies are quantitatively important. Equally likely to impact costs are a variety of programmes that lower investment costs, such as grants or loans to purchase vessels and equipment.

72. The studies suggest that a very substantial share of government resources goes towards the provision of management services and infrastructure. Supply of these services at less than their

opportunity cost could have significant trade effects and is thus worthy of further study. Large expenditures are directed at reducing fishing effort; however little is known of their actual impact on effort and trade.

Table 3: Assessment of priorities

Category	Priority
Reduce the cost of investment	Medium
Reduce the relative price of inputs	High
Increase output prices	Medium
Actions to reduce fishing effort	High
Management and regulatory actions	High

Methodologies

73. With regard to methodologies:

- Empirical work should begin by establishing a logical pathway that links, in a functional sense, the subsidy with costs/revenues and trade flows.
- The general theory of international trade should be applied to the special problems of fisheries trade.
- The magnitude of effects of subsidies on trade should be analysed within the context of both partial and applied general equilibrium models. The analysis should examine both regional and global trade effects. These models will provide an indication of the relative importance of subsidies and their impacts on trade and trade patterns.
- Provided adequate data are available, econometric model building should be used to establish a causal relationship between a subsidy category and observable trade effects.

Conclusions

74. The conclusion was that:

- The existing state of knowledge about the magnitude of subsidies and their impact on trade is limited.

Recommendations

75. It was recommended that:

- Research should proceed in a cost-effective and coherent manner.
- The theoretical platform should be provided by conventional fisheries economics models adapted specifically for examining the issues of fishery trade.
- The research strategy - involving applied dynamic fisheries and trade models and econometric model building - should be targeted at actions that have potentially a relatively large "trade effect–to-expenditure effect ratio".

ADOPTION OF THE REPORT

76. The Report was adopted on 1 December 2000.

Table 2. Subsidies and their effect on sustainability of fishery resources

Classification of Subsidies	Category of Subsidy	Effect on Sustainability	Priority for Analysis
COST REDUCTION			
Capital Expansion	Grants to purchase new or old vessels, or to modernise vessels. Grants to establish international joint ventures. Matching contributions for private sector investment. Non-fishing specific infrastructure programmes	Negative	1
Labour Cost Reduction	Income support, unemployment insurance and income guarantee payments. Government funded health programmes specific to fisheries. Disaster relief payments to fishermen. Grants to small fisheries and direct aid to participants in specific fisheries. Vacation support programmes	Negative	2
Miscellaneous Cost Reductions	Payments to foreign governments to secure access to fishing grounds. Fishing-specific infrastructure. Payment to reduce accounting costs. Transport subsidies. Provision of bait services. Grants for safety equipment. Gear development.	Negative	2
Tax Waivers and Deferrals	Fuel tax exemptions for vessel fuel. Sales tax exemptions. Special income tax deductions for fishermen. Tax exemptions for deep-sea fisheries. Deferred tax programmes. Investment tax credits	Negative	1
Loans and Insurance	Loans made on favourable terms (interest rate and amortization periods. Government guarantees of bank loans. Fishermen's insurance programmes or subsidised insurance. Small business loans.	Negative	2
Market Interventions	Reduced charges by government agencies. Sales of commodities to fishermen at less than market price	Negative	2
Science and Fisheries Management	Hatchery and fish habitat programmes. Free or below market price resource access. Unrecovered costs of fisheries management. Technology transfer. Government funded research and development. Information collection, analysis and dissemination. Exploratory fishing and gear development. Fisheries enhancement including support for artificial reefs. Research on deep-sea fisheries. Enhancement of the fisheries community environment	Positive	

REVENUE ENHANCEMENT			
Price Support	Price support payments to fishermen	Negative	1
Compensation Programmes	Compensation for closed or reduced season. Compensation for damage to fish stocks. Gear conflict compensation programmes. General disaster and relief	Negative	2
Equity Infusions by Governments		Negative	2
Sales Promotion	Market promotion programmes. Promotion and development of fisheries	Negative	3
Foreign Affairs	Tariff and tariff quotas. Import quotas. Landing bans. Prohibitions on foreign direct investment	Negative	3
COST INCREASING			
Regulations	Input and output regulations. Gear, technology and vessel limitations. Environmental regulations. Protection of marine areas. Labour legislation	Positive	
UNSPECIFIED			
Factor Reductions	Vessel decommissioning payments. License, permit and quota buy-outs and retirement grants. Grants for temporarily withdrawing fishing vessels	Positive	
Science and Fisheries Management International Fisheries Cooperation	Support for community-based management. Support for regional development bodies. Support for producers organizations		
Adjustment Programmes	Retraining fishermen for other industries. Regional development programmes	Positive	
General Programmes that affect fisheries	Subsidy programmes for other industries which affect fisheries. Social programmes (national health systems, public education)		
Market Intervention	Exchange rate regimes		

APPENDIX A

Prospectus

BACKGROUND

1. In a context of growing international debate, FAO members are examining the role of subsidies or economic incentives in relation to international trade, environment and sustainable development issues. The role of fishery subsidies is receiving increasing attention both in governments and by civil society due to likely negative impacts of some subsidies on trade of fish and fish products and on the sustainability of living aquatic resources. Subsidies in fisheries could be one of the contributing factors to overinvestment in fisheries as well as a cause for distortion in international fish trade. There is a strong interest among member countries to better understand whether and how subsidies affect fisheries sustainability and fish trade.

2. FAO has been called upon both by the *FAO Sub-Committee on Fish Trade*[10] and by the *International Plan of Action for the Management of Fishing Capacity (IPOA)*[11] to compile and disseminate information on fishery subsidies at the global level, as a basis for further analysis aimed at understanding their role in relation to trade of fish and fish products and fishery resource sustainability.

3. In order that the debate on subsidies in fisheries progresses it is important to assess with some accuracy the real impacts of fishery subsidies. However, before that can be done it would be useful if a consensus could be developed about the concept of fishery subsidies and about which economic tools, methods, policies should be classified as such. Therefore, prior to assessing the economical and social implications of fishery subsidies, there is a need to conduct a technical review of subsidy concepts and modalities in fisheries.

4. In order to fulfil the mandate given by FAO member countries the Fisheries Department developed a workplan that takes full advantage of the available inter-disciplinary technical resources

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[10] "In the discussion of agenda item 5 on the basis of document COFI:FT/VI/98/4, the Sub-Committee noted that the issue of subsidies is discussed in various fora, and that FAO has a role to play in compiling and disseminating information on subsidies at a global level. Many delegations stressed that the use of subsidies could aggravate over-exploitation of resources and distort trade, while other delegations underlined that in some cases subsidies may be necessary, for example, to secure employment and food security. One delegation stressed that there was no direct link between the question of overcapacity and distortion of trade in the fisheries sector."(para. 17, Report of the Sixth Session of the COFI Sub-Committee on Fish Trade).

"Some delegations stated that FAO should carry out further work on collecting information on subsidies. Other delegations suggested that FAO should undertake further work on this issue beyond the compilation of information. The Committee was informed that the OECD Committee on Fisheries is also undertaking work on financial transfers to fisheries" (para.49, Report of the 23rd Session of COFI.)

"When developing their national plans for the management of fishing capacity, States should assess the possible impact of all factors, including subsidies, contributing to overcapacity on the sustainable management of their fisheries, distinguishing between factors, including subsidies, which contribute to overcapacity and unsustainability and those which produce a positive effect or are neutral". (para. 25, International Plan of Action for the Management of Fishing Capacity).

"States should reduce and progressively eliminate all factors, including subsidies and economic incentives and other factors which contribute, directly or indirectly, to the build-up of excessive fishing capacity thereby undermining the sustainability of marine living resources, giving due regard to the needs of artisanal fisheries". (para. 26, International Plan of Action for the Management of Fishing Capacity).

"FAO will, as and to the extent directed by its Conference, collect all relevant information and data which might serve as a basis for further analysis aimed at identifying factors contributing to overcapacity such as, *inter alia*, lack of input and output control, unsustainable fishery management methods and subsidies which contribute to overcapacity". (para. 45, International Plan of Action for the Management of Fishing Capacity).

inside the Fisheries Department and includes cooperation with other relevant International Governmental Organizations (IGOs).

5. A review of fishery subsidies is being undertaken. It includes:

i. A thorough and exhaustive review of the concepts that have been used to define fishery subsidies. The review will provide a conceptual platform for a global discussion among public policy makers aimed at achieving a shared understanding of the various public economic tools/methods/policies known as fishery subsidies.
ii. A review of the published assessments of public sector subsidies to the fishery sector and of their impact on sustainability of fishery resources.
iii. A review of the published assessments of public sector subsidies to the fishery sector and of their impact on trade of fish and fish products.

6. An FAO Expert Consultation on Economic Incentives and Responsible Fisheries will be held in Rome (at FAO Headquarters) from 28 November to 1 December 2000. The experts will examine the reviews identified above and all other relevant information.

OBJECTIVE

7. The principal objective of the expert consultation is to assess the state of knowledge of fishery subsidies and their likely impact on trade and resource sustainability.

SCOPE

8. The Expert Consultation will aim to enable the participants:

- To arrive at a common understanding of which economic tools, methods and policies to include in the concept of fishery subsidies;
- to assess the need and modalities for further investigations into the effects on trade of subsidies to fisheries; and
- to assess the need and modalities for further investigations into the effects on fishery resources sustainability of subsidies to fisheries.

DOCUMENTATION

9. A series of papers reflecting the scope of the consultations has been commissioned by the FAO and will be provided to participants of the Experts Consultation. They will be available to any interested reader on the Internet.

OUTPUT

10. The principal output expected from the expert consultation is a report containing findings, conclusions and recommendations for consideration by to the 24th Session of the FAO Committee on Fisheries (COFI) to be held in Rome on 26 February to 1 March 2000.

PARTICIPANTS AND VENUE

11. Participants in the Expert Consultation (approx. 12) will attend in their personal capacities. The invitations will be extended to individuals recognized as competent in the related disciplines. The organiser will strive to ensure an appropriate inter-disciplinary balance. Representation will be sought

from the different regions of the world in order to make available different trends of thought, approaches and practical experience, of subsidies to the fishery sector.

12. The venue will be the FAO Headquarters, Rome Italy.

TECHNICAL SECRETARIAT

13. The Technical Secretary of the expert consultation is Mr. Ulf Wijkstrom, Chief, Fishery Development Planning Service. He may be contacted in Rome, as follows:

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APPENDIX B

Opening Statement by Mr. Ichiro Nomura, Assistant Director-General Fisheries Department

Welcome to Rome, it is a pleasure to see you here. Thank you for accepting our invitation to join the FAO Expert Consultation on Economic Incentives and Responsible Fisheries.

I should like, first of all, to explain why FAO is concerned about Economic Incentives and Responsible Fisheries. The concept and implementation of responsible fishing is a challenge which the international community unanimously and unequivocally urges all concerned with fishing, including FAO, to tackle. Responsible fishing has been addressed, as you know, from several perspectives. Most of the discussions have, however, been done from an institutionalizational point of view, such as the need for strengthened national and international management and enforcement of fishing activities.

But, since fishing is inherently an economic activity, we all know that without addressing an economic feature of fisheries, the goal of responsible fisheries could not be attained in a real world. Putting this theme into a policy-related discussion will make it necessary for us to analyse, in a coherent and systematic way, economic incentives for fishing and their impacts on environment, in this case, the sustainability of fishery resources, and on other economic activities including trade. While the analysis of this subject has been done in the past by individual specialists and other international bodies, it has not been done systematically and collectively by FAO, which is best suited to addressing global fisheries issues. This is exactly why FAO is concerned about the issue and why FAO was requested to address it.

Why have you been called to Rome?

The political debate about economic incentives – or subsidies – is close to stalling. Many of those observing fisheries think that the economic incentive structure is not correct or optimal and is sometimes modified by the direct intervention of the State. They believe that these interventions contribute to excess fishing capacity, thereby threatening fishery resources; it is also felt that such interventions have the effect of distorting trade.

Others argue that Government intervention, in this case fishery subsidies, constitutes only a part of the many factors which would contribute to unsustainability of the fishery and trade distortion. While some subsidies should be reduced or eliminated, there are many subsidies which are indispensable for the economic and social integrity of fishing communities. What is more important, they argue, is responsible management for fishery operations.

Also, there is no consensus on what is a subsidy and what is not a subsidy. And there is little empirical knowledge about the exact effects of the different kinds of subsidies provided to the sector. But there seems to be consensus that more needs to be known for the political debate to move forward.

To progress, the political debate needs to draw on the knowledge and skills of the academic community.

Fishery policymakers want to know from you:

- What is a useful and workable definition of subsidies?

- What do we, in effect, know about the trade distorting impact, if any, of various categories of subsidies and how to learn more in a manner that is practical and affordable?

- What do we know, in effect, about the impact, if any, of subsidies on living aquatic resources and how to learn more in a manner that is practical and affordable?

These questions need answers of practical significance and use. It is our hope that you will provide them.

To arrive at pragmatic answers you have to adopt a spirit of compromise. Feasible, acceptable and realistic answers of practical use will not permit us to employ the best scientific procedure in all instances. But your compensation for not sticking only to scientific rigour will be your contribution to the solution of an issue that is of great importance to many people all over the world.

It is my firm hope that you will succeed, and that on Friday afternoon you will be united in your approval of the report of the Expert Consultation. A pragmatic report, unanimously endorsed by all 12 of you will be a very strong signal to the world fisheries community.

Your recommendations will be submitted to the FAO Committee on Fisheries (COFI) which will meet in February next year. COFI will be asked to suggest what will be the role of the FAO Fisheries Department in future work related to subsidies in fisheries.

Again thank you for taking time to share your expertise with us.

I wish you every success.

APPENDIX C

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