

OECD WORK ON DEFINING AND MEASURING SUBSIDIES IN FISHERIES

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1. Introduction

1. The OECD Committee for Fisheries produced inventories of financial support and economic assistance to the fishing sector in OECD countries in 1965, 1971, 1980 and 1993. More recently, the Committee undertook a more systematic effort to define and measure government financial transfers (GFTs) to the fisheries sectors in Member countries. As part of a three-year study, entitled *Transition to Responsible Fisheries*, the Committee examined GFTs and their impact on resource sustainability. A central feature of the study was the development of a classification system for GFTs and the collection of detailed information on GFTs for 1996 and 1997.

2. Following the publication of the *Transition to Responsible Fisheries* study (OECD 2000), the Committee decided to continue to collect GFT data on an annual basis as part of the regular statistical reporting undertaken by Member countries. GFT data for 1998 and 1999 were published in OECD (2001a) although the data set was incomplete for some countries. It is anticipated that the GFT data for 1999, 2000 and 2001 will be published in the biennial 2002 OECD Review of Fisheries Policies which is due for release early in 2003. It is also planned to provide detailed country data on GFTs in the annual statistical update of the *Review of Fisheries in OECD Countries* (OECD 2001b is an example of an earlier publication of this statistical update).

3. The purpose in this paper is to provide details of the OECD's work on GFTs, particularly in terms of definition, collection, use and dissemination. Some observations on ways in which the data could be potentially improved are also provided. Finally, the key insights from the OECD's work on fisheries transfers are outlined and a number of issues discussed in the context of defining and measuring environmentally harmful subsidies in the sector. At the outset in this paper, it should be noted that the Committee has used the term "government financial transfers" in preference to the more general term "subsidies". This is because, in general usage, subsidies encompass more than just the explicit transfer of money from the public purse to the sector. Since subsidies in general also include implicit transfers from consumers to the industry, GFTs are considered to be a subset of the whole range of subsidies.

1. This paper is based on earlier work done in the Committee for Fisheries, particularly OECD (2000). The views expressed in this paper do not necessarily represent the views of the OECD Committee for Fisheries or the Member countries of the OECD.

2. What do GFTs cover?

4. Government financial transfers are defined as the monetary value of interventions associated with fishery policies, whether they are from central, regional or local governments. GFTs include both on-budget and off-budget transfers to the fisheries sector. In the work undertaken to date in the OECD, data collection has largely been limited to budgetary items related to marine capture fisheries. Although Member countries are asked to also provide information on GFTs to the aquaculture and the processing and marketing sectors, coverage has been very uneven across countries to date. Data that has been provided to the OECD on these sectors has been reported in the relevant country chapters of the OECD Review of Fisheries Policies (OECD 2001a), but has not been reported on an aggregate OECD basis.

5. GFTs are primarily classified according to how a transfer is implemented because this will determine how a transfer affects the behaviour of fishers. For a given policy measure, implementation criteria are defined as the conditions under which the associated transfers are provided to fishers, or the conditions of eligibility for payment. Three categories of GFTs are identified: direct payments; cost-reducing transfers; and general services. A fourth category of transfer, market price support, is included in the classification scheme but was not addressed in the study on *Transition to Responsible Fisheries*. The extent of cost recovery undertaken by countries is also included in the classification.

- *Direct payments*

6. Direct payments are transfers that enhance the revenue of recipients and are paid from government budgets (that is, financed by taxpayers) directly to fishers. The objective of these direct payments is not to reduce the costs of fishers but they effectively increase the incomes of fishers. This includes payments to fishers based on the level of catches, the level of sales, vessel ownership, overall fishing income and/or fishers' historical interest in a fishery or fisheries. Examples of direct payments and other transfers are provided in Box 1.

- *Cost-reducing transfers*

7. Cost-reducing transfers are payments from the government to fishers that reduce the costs of fixed capital and variable inputs. In this regard, they are a revenue-enhancing transfer that will affect the operating decisions of fishers with respect to either output and/or the levels and types of inputs employed.

- *General services*

8. 'General services' is a catch-all category that covers transfers that are not received directly by fishers, but that reduce the costs faced by the sector as a whole. About half of this category includes expenditures on research, management and enforcement. General services also comprises expenditures by governments to support prices (for example, by withdrawing fish from markets) and expenditures on infrastructure that benefit the industry as a whole (in contrast with cost-reducing transfers that benefit individual fishers directly). Examples of the latter include stock enhancement schemes and investments in fishing ports.

9. There is some debate about the appropriate treatment of general services within the GFT classification. Some countries consider that, even though the level of transfers is not contingent on fishers' behaviour, expenditure on general services constitutes payment by governments for services for which fishers are the primary, but not necessarily sole, beneficiary. Other countries agree that these transfers are

not contingent on fishers' behaviour, but consider that society as a whole is the beneficiary of the transfers, rather than the fishing sector alone.

Box 1. Examples of different categories of transfers to the marine capture fisheries sector in OECD countries

Direct payments

Price support payments to fishers, grants for new vessels, grants for modernisation, vessel decommissioning payments, buyouts of licences and permits, buyouts of quota and catch history, income support, unemployment insurance, retirement grants for fisheries, compensation for closed or reduced seasons, compensation for damage from predators on fish stocks, disaster relief payments, grants to purchase second hand vessels, grants for temporary withdrawal of fishing vessels, grants to small fisheries, direct aid to participants in particular fisheries, income guarantee compensation, vacation support payments, grants to set up temporary joint ventures in other countries, payments to set up permanent joint ventures in other countries, temporary grants to fishers and vessel owners, price support payments direct to fishers.

Cost-reducing transfers

Fuel tax exemptions, subsidised loans for vessel construction, subsidised loans for vessel modernisation, payments to reduce accounting costs, provision of bait services, loan guarantees, underwriting of insurance costs, contributions to match private sector investments, low cost loans to young fishers, interest rebates, transport subsidies, low cost insurance, government payment of access to other countries' waters, low cost loans to specific fisheries, income tax deduction for fishers, government funded training of fish processing workers, government funding of the introduction of new gear and technology, support for crew insurance, tax exemptions for deep-sea vessels, support for development of deep-sea fisheries, interest subsidies for the purchase of machines and equipment for fishing vessels, interest subsidy for the purchase of second-hand vessels, support to improve economic efficiency, reduced charges by government agencies, support to build facilities for commercial fishers at ports.

General services

Research expenditure, management expenditure, enforcement expenditure, market intervention schemes, regional development grants, support to build port facilities for commercial fishers, protection of marine areas, grants to local authorities to for retraining of fishers into other activities, payments to producer organisations, expenditure on the protection of marine areas, payments to support community based management, fisheries enhancement expenditure, support to enhance the fisheries community environment, expenditure on research and development, expenditure on research of deep-sea fisheries, expenditure to promote international fisheries co-operation, support to improve the management of co-operatives, support to improve fishing villages, expenditure on fisheries policy advice, expenditure on prosecution of fisheries offences, support for artificial reefs, expenditure on exploratory fishing, support to establish producers' organisations, aid for restocking of fish resources, funding of information dissemination, funding for the promotion and development of fisheries, expenditure for information collection and analysis, expenditure on conservation and management.

Note: Reproduced from OECD (2000). The examples of transfers provided in this box are not intended to be a complete inventory of the transfer programs that are or have been used in OECD countries.

- *Market price support*

10. Market price support is also a revenue-enhancing transfer. It covers gross transfers from consumers and taxpayers to fishers arising from policy measures creating a gap between domestic market prices and border prices of specific commodities. This support to fishers is normally provided through trade restrictions when the domestic price of a product is made greater than the world price through the imposition of tariffs, quotas and so on. Market price support was not estimated for the Transition to Responsible Fisheries study as that exercise was carried out at the aggregate, national level whereas market price support estimates must be built up from estimates of price differentials for particular fish or their products. In the subsequent statistical collections for 1998 and 1999, the United States provided estimates of market price support as part of its submission on GFTs. Additional issues related to market price support are discussed later in this paper.

- *Cost recovery*

11. An additional component of the OECD classification framework is cost recovery. Under this item, countries are able to report on the extent to which the governmental costs of managing fisheries are recovered from the fishing sector. For some countries, cost recovery is a significant feature of their management regimes. New Zealand, Iceland and Australia, for example, recover around 50%, 37% and 24% of the public costs of fisheries research, management and enforcement from the industry.

2.1 Classification by program objective

12. In addition to the classification scheme detailed above, the Committee also classified transfers according to the broad objective of the program under which the transfer was made. The program objectives used were: fisheries infrastructure; management, research, enforcement and enhancement; access to other countries' waters; decommissioning of vessels and licence retirement; investment and modernisation; income support and unemployment insurance; taxation exemptions; and other objectives. This was only done for the *Transition to Responsible Fisheries* study as staff resources have been shifted to other priorities for the following years. The classification of GFTs by program objective for 1996 and 1997 is presented in Appendix B.

3. Trends in GFTs in OECD countries

13. The available data on GFTs in OECD countries for 1996 to 1999 are presented in Appendix A. It should be noted that there remain some data gaps for 1998 and 1999. For 1998, data are missing for Belgium, Netherlands, Mexico, Poland and for the EU component of the transfers in France, while for 1999, data are missing for Australia, Belgium, Netherlands, Mexico, Poland, Turkey and for the EU component of the transfers in France.

14. Given this caveat, GFTs in OECD countries have fluctuated over the period 1996 to 1999 (Table 1). From a level of around USD 6.8 billion in 1996, GFTs declined to around USD 5.5 billion in 1998 before increasing in 1999 to be close to USD 6 billion (all in nominal terms). Inclusion of the data for the omitted countries could be expected to add around USD120 million and USD150 million to the totals in 1998 and 1999, respectively. This would moderate, but not substantially alter, the overall trend. It was noted in OECD (2000) that the estimated total is probably too low as it does not include significant support items for some countries such as tax concessions, non-payment of fishing port berthing fees, support to builders of fishing vessels and regional and local government expenditures. Despite the data gaps, the

value of GFTs as a percentage of the gross value of production has increased from 18% to 20% over the period. This has been largely due to a decline in the nominal value of the value of production over the period.

15. The main uses of transfers in OECD countries are for providing fisheries infrastructure, ensuring the sustainable use of fish stocks, dealing with fishery adjustment pressures, modernising fleets and acquiring access to fisheries in other countries' waters. The largest component of GFTs is general services, which accounted for 76% of total GFTs in 1996 and 71% of the total in 1999 (Figure 1). It is important to note that general services comprises more than expenditures on research, management and enforcement. These expenditures account for less than half of the expenditure on general services and for approximately 30% of the total GFTs in each year. The bulk of the rest of general services expenditure is devoted to the provision of fisheries infrastructure (including support for construction of port facilities for commercial fishers).

16. Expenditures on direct payments and cost-reducing transfers account for between 4-6% of the gross value of fisheries production. These expenditures consist mostly of payments for vessel modernisation, vessel building, decommissioning of vessels, licence retirement, income support and unemployment insurance. Payments by the EU for access to other countries' waters is also a significant component of the direct payments category.

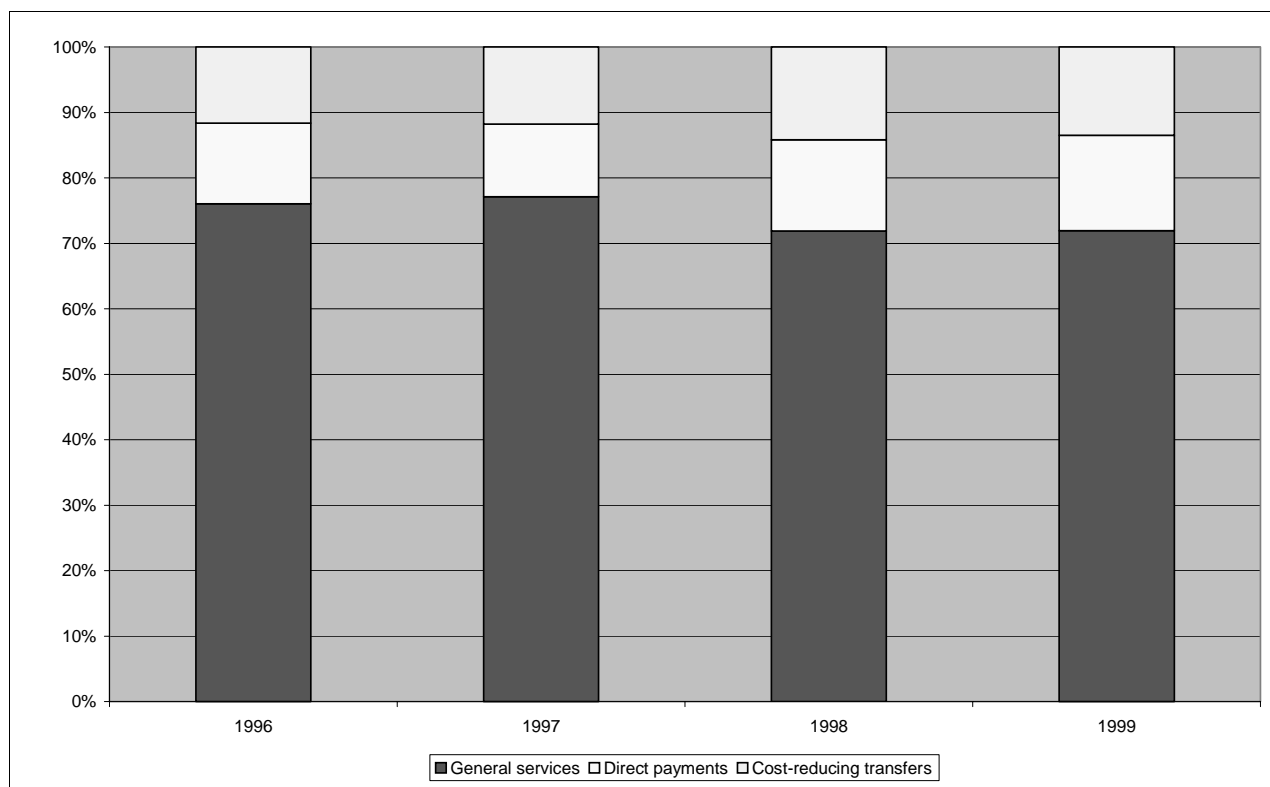
Table 1: Estimates of GFTs to marine capture fisheries in OECD countries, 1996-99
(USD million)

	1996	1997	1998 ¹	1999 ¹
Cost-reducing transfers	789	740	772	799
Direct payments	838	702	758	865
General services	5 171	4 856	3 914	4 263
Total GFTs	6 799	6 298	5 481	5 970
% of value of landings	18	17	19	20

1. Note that the data for 1998 and 1999 are underestimated due to the lack of data for some countries.

Source: Appendix A.

Figure 1: Government financial transfers in OECD countries, 1996-1999



4. Data collection and release

17. The initial collection of data on GFTs was undertaken in 1998 as part of the Committee's Programme of Work covering the Review of Fisheries and the *Transition to Responsible Fisheries* study. Much of the GFT data was collected by the Secretariat complemented by a detailed questionnaire that was completed by Member countries. Subsequent updates have been produced annually as part of the Committee's process for the collection of fisheries statistics. Currently, a standard template is sent to each OECD country requesting data for a range of fisheries statistics, including production, fleet capacity, employment, etc, as well as GFTs. The level of detail provided by countries varies considerably with some countries providing data under the broad category headings and others providing detailed program-by-program information. The data provided by countries is supplemented to some extent by information collected by the Secretariat, although the available staff resources currently limit the extent of Secretariat investigation.

5. Using and improving the data

18. Within the OECD, the GFT data has been analysed primarily in context of the *Transition to Responsible Fisheries* study. In that study, the scope of analysis was limited to the effect of GFTs on resource sustainability and, to some extent, on economic aspects of the sector. Other effects of transfers were not explored (for example, the effects of transfers on investment decisions, trade flows or changes in fishing capacity and activity on the high seas). The GFT data were also used in the Committee for Fisheries' study on the effects of fisheries market liberalisation on trade and resources. The key results from these studies are discussed in the next section.

19. The GFT data are used in the biennial *Review of Fisheries in OECD Countries*. Together with qualitative information provided by countries on recent policy developments in their sectors, the GFT data are used to provide an extensive review of changes in transfer policies in OECD countries. This is the only forum that regularly collects data and discusses the issue of transfers in the fisheries sector. The next OECD Review of Fisheries is due for release in early 2003. From 2002, the country-level data will also be included in the annual review of fisheries statistics published by the OECD.

20. The data are also extensively quoted outside the OECD by other international organisations (such as APEC and the FAO), by non-governmental organisations (see, for example WWF 2001) and by academics (see, for example, Munro and Sumaila 2001).

5.1 *Improving the data*

21. There are several issues in the data collected by the Secretariat that are of concern.² First, the voluntary nature of the reporting requirement has, on occasion, limited the amount of detail that some countries are willing to provide on transfers. As a result, there are some gaps in the information and in the level of detail necessary to undertake more extensive analysis of the data. In addition, there is a lack of independent monitoring of the information provided by countries. The success of the data collection process relies very heavily on peer pressure to ensure that information is forthcoming. However, at present there is very limited use of more formal peer review processes, whereby the transfer policies and data of particular countries can be examined in a more transparent manner.

22. Second, all items of budget and off-budget support to the fisheries sector in OECD countries have not been captured in the work done to date. In the case of off-budget support, this is clearly the case. For example, only a small number of countries have included the value of fuel-tax concessions (exemptions and rebates from diesel fuel) in their data returns. However, most OECD countries provide such tax concessions to their maritime industries in one form or another. Another area of potential interest with respect to off-budget items is the issue of the non-collection of fees for the provision of services such as harbours, navigation aids, firefighting services and so on where the services are provided primarily for the use of the commercial fishing industry. There is a divergence of views within OECD countries about the appropriate treatment of such implicit transfers and further work is required at both the theoretical and empirical level to assess their extent and potential impacts.

23. Third, the data is collected at the national level and usually does not contain information on transfers made at a sub-national (that is regional or local) level. Evidence available from other sources (such as the fisheries management costs study currently being undertaken by the Committee) suggests that such sub-national transfers may be significant for some countries. This is particularly likely to be the case for those countries operating under a federal system of government where there may be extensive state expenditures on fisheries related transfers that are not reported to the federal government. However, there are potential problems with attempting to collect such data due to the large number of sub-national entities that may provide transfers to the fishing industry in the OECD.

24. Fourth, as noted earlier in this paper, market price support provided to the fisheries sector is not currently assessed in the OECD's work on GFTs. Market price support could be significant for some fish commodities and countries, especially those that maintain high barriers to trade. However, measuring market price support has proved to be difficult, primarily because of the difficulty of determining a reference price for particular fish products that can be compared with a domestic price. This arises due to the fact that fishery products are generally highly perishable and heterogeneous, so that a world market

2. See also Steenblik and Wallis (2001).

price is difficult to observe. In addition, the harvesting and processing sectors are often highly vertically integrated so that the domestic price for raw fish may not always be readily observable.

25. Finally, it has been suggested by a number of commentators that untaxed resource rent could be regarded as an implicit transfer, in this case from society to fishers (see, for example, Campbell and Haynes 1990; Stone 1997; Milazzo 1998). While this is primarily an issue of how broadly subsidies should be defined, it also has implications for data improvements. Resource rent accrues to a fishery as the excess, over the long term, of revenues over the necessary costs of commercial operations in the fishery. The costs of operation include all normal cash expenditure plus depreciation, the opportunity cost of capital and labour and a margin for risks being faced. In open access fisheries and fisheries with no or inadequate management, resource rent is competed away as new entrants are attracted, or more effort is applied, to the fishery. The imposition of effective management regimes may result in the generation of resource rent, primarily as a result of restricting access to the fishery and creating incentives for participants to minimise costs. It can be argued that the fact that governments do not charge fishers for preferential access to the resource results in a transfer that could, in principle, be recouped by the government. There are examples of resource rent taxes and charges for access to publicly owned resources in place in other extractive industries (most notably in the petroleum sector). Actually calculating such implicit transfers in the fisheries sector could, however, be a difficult undertaking and would require further investigation.

6. Identifying environmentally harmful subsidies

26. The analysis undertaken in the *Transition to Responsible Fisheries* study focused on the resource impacts of GFTs in OECD countries. To a lesser extent, it also addressed some of the economic impacts of GFTs. However, no comprehensive or detailed assessment was undertaken of what constitutes an environmentally harmful subsidy. The analysis was undertaken at a fairly broad level and relied heavily on the use of case studies to illustrate key points rather than using an analytical framework to underpin the analysis. The key findings from this study are summarised below together with a number of issues that require further analysis in the context of the work on environmentally harmful subsidies or other work that may be pursued in the Committee for Fisheries' 2003-2005 Programme of Work.

- *General services dominate GFTs*

27. As noted earlier, expenditure on general services is the major outlay on GFTs in OECD countries. A component of these expenditures is on research, management and enforcement activities which can be regarded as being necessary to help ensure the sustainable use of fish stocks and the aquatic ecosystem. Research provides information about stock status, impacts of fishing on target and by-catch species, impacts of different gear types on stocks and fishing operations, etc. Most research activities are regarded as an investment that can contribute to improved yields from the resource, the benefits of which accrue to fishers, processors and consumers of seafood. The same rationale can be applied to management and enforcement expenditures, which are also important for ensuring sustainable use.

28. There are, however, a number of grey areas in the general services category that may require further analysis. First, in some countries, the bulk of the expenditure on general services is on fisheries infrastructure and fisheries enhancement programs. A proportion of these transfers can be said to benefit fishers directly rather than society as a whole. It would be fruitful to examine experiences in other sectors to gain insights as to how these transfers should be regarded.

29. Second, and in a similar vein, a number of countries (for example, New Zealand, Iceland and Australia) have introduced cost recovery programmes for some components of research, management and

enforcement expenditure. This is in recognition of the fact that some of these activities directly benefit fishers, rather than society as a whole, and that the beneficiaries should be required to contribute to the cost of that service provision (to the extent that the beneficiaries and the associated costs can be identified). The impact of such transfers (or more accurately, the non-collection of user charges) on resource sustainability depends very much on the management regime in place for particular fisheries. It also raises questions about the public good nature of many of the general services provided by governments and whether there is scope either for the shifting of some costs from the public purse to the beneficiaries of such services or for the private provision of some of the services.

- *Capacity-reducing transfers are generally targeted at improving profitability rather than at resource conservation*

30. Transfers aimed at reducing capacity have been widely used in OECD countries in response to over-fishing and over-capacity. Such transfers include vessel buyback programmes, licence retirement schemes and payments to fishers to leave the industry. Capacity-reducing transfers were documented in the study for the Member States of the European Union, Japan, Australia, Norway, Canada and New Zealand. In many cases, these transfers have had little relationship with changes in resource sustainability. Although efforts are usually taken to ensure that such transfers do not conflict with conservation objectives, capacity-reducing transfers are not usually targeted at improving resource sustainability. Rather, they are generally designed to improve the profitability of the sector, reduce dependency on the fishery or to meet obligations under international or bilateral arrangements.

31. In some cases, the reduction in capacity was associated with programmes to restore the productivity of fish stocks and to avoid the risk of over-exploitation. If transfers are used to bring about adjustment to achieve resource conservation objectives, then it is important to ensure that they are closely aligned with improvements in resource management policies. There is little evidence that revenue-enhancing or cost-reducing transfers improve the performance or stability of the sector in the long run in the absence of accompanying changes in management. Both the environmental and economic benefits of restructuring will only be short-term in the absence of longer-term solutions to the entry of additional effort and restraint of catch. Capacity-reducing transfer policies therefore need to be coherent with other resource management policies if they are not going to be potentially harmful to the environment.

32. The question of who pays for industry restructuring is also linked to the issue of environmentally harmful subsidies through changing the incentives facing the industry in its approach to management improvements. Capacity-reducing transfers can benefit both those that leave the fishery and those that stay. The latter have increased possibilities for rent generation due to reduced competition for the resource. Although these possibilities may be relatively short-term (as the increased value of the access rights are quickly capitalised), these have the potential to be used to fund the capacity-reducing transfer. Indeed, some countries (for example, Japan, Iceland, Australia and the United States) have used industry funds to support such programmes. This has the effect of encouraging a more rational approach from industry in its demands for management changes to improve profitability and for public assistance to undertake adjustment.³

- *Some transfers encourage the build-up of new capacity and the infusion of new technology*

33. Several cases were presented in the study illustrating the link between some direct payments and cost-reducing transfers and the growth of fishing capacity in certain situations. Some types of transfers

3. OECD (2000, p. 156).

have tended to encourage the build-up of new capacity and the infusion of new technology into fishing fleets. These cases were primarily from the 1980s and early 1990s when countries were heavily focused on the development of their fishing fleets and fishing sectors. The philosophy underlying transfers tended towards industry development rather than resource conservation.

34. In the 1990s, there was a marked shift away from explicit capacity-enhancing transfers in most OECD countries, with increasing emphasis being placed on capacity-reduction. However, there remain significant expenditures on vessel modernisation and renewal as well as on the development and diffusion of new technology. In 1997, USD 207 million was devoted to investment and modernisation alone, primarily in the EU, Japan, Norway and the United States. Transfers appearing under other headings (such as research expenditure) are also used to develop new technology to improve the efficiency of fishing fleets. While such programmes may not necessarily add to capacity — at least according to the way that capacity has traditionally been measured (such as the number of vessels or the gross tonnage of fleets) — they can add to capacity in terms of the effort that fishers can bring to bear on fish stocks. Indeed, the primary motivation behind vessel modernisation and renewal, irrespective of whether or not transfers are paid to assist such activities, is to improve both the efficiency of the fleet and the productivity of capacity. Without effective management controls over effort or catch (or both), such transfers may have a negative effect on stocks and can offset the impact of capacity-reducing transfers.

35. In some cases, direct payments and cost-reducing transfers may be associated with programmes aimed at developing or introducing new technology in response to specific environmental concerns (for example, in relation to reducing by-catch or minimising discards). The analysis of such transfers in terms of their overall economic and environmental impacts on the fishery can be problematic. On one hand, there may be positive environmental outcomes from the transfers, although care would need to be taken to ensure that there are no unintended environmental impacts from the subsidised introduction of new technology (for example, by making it less costly for fishing operations in a given fishery, leading to increasing overall fishing effort). On the other hand, it may be questioned whether it is appropriate that subsidies be used as the first-choice policy instrument to internalise the external costs of private activities. The rationale for the use of transfers in such cases relies on the existence of market failure, a precondition that is not often tested before the provision of transfers. In addition, transfers that have been or are being applied can inflate the costs of industry adjustment. Assistance provided for the application of new technology will inflate the value of a vessel, and will also increase the cost of removing that vessel from the fleet in any adjustment scheme.

- *Capacity-reducing transfers can lead to capacity and effort being shifted to other fisheries*

36. Policies aimed at reducing fishing capacity or effort in one fishery can lead to spillover effects into other fisheries, either within a particular country or to other countries. In many cases, this has been an unintended consequence of the capacity reduction programmes. In other cases, deliberate policies have been pursued to shift capacity into other fisheries. The export of capacity to third countries (outside the OECD) and to the high seas has also been of concern. The extent to which capacity-reduction programmes implemented by OECD countries have exacerbated these problems is unclear at this stage and requires further investigation.

37. Such capacity shifts can exacerbate problems in the fisheries to which the excess capacity relocates. If there are controls on inputs and outputs in the fisheries receiving the excess capacity, it can be expected that the participants will benefit from cheaper capital and the fishery will not generally be worse off in terms of resource sustainability (although economic problems such as race-to-fish may persist or intensify). If, however, the capacity shifts to a fishery where there is ineffective management then there can

be problems with respect to resource sustainability as well as economic profitability. Temporarily solving the capacity problem in one fishery may be at the expense of another fishery.

- *Management arrangements are the primary means of achieving resource conservation outcomes*

38. A consistent theme in the preceding discussion has been the importance of management in determining the environmental effects of GFTs in the fishing sector. At the heart of fisheries management problems lies the absence of well-defined access rights to the fishery. The negative impacts of transfers have been most evident in open access fisheries without adequate access rights regimes or appropriate input and output controls. Pure open access fisheries are now relatively rare in OECD countries as most fisheries are controlled with either input controls, output controls, technical measures or a combination of all three. In principle, if there is effective control over both the harvest from a fishery and the level of effort that is used in a fishery, then the effects of cost-reducing and revenue-enhancing transfers will be restricted to increasing the long-term profitability of the industry. There will be no effects on the targetted resource — although this is purely by definition as the catch is controlled.⁴

39. This perspective is significant and is worthy of further examination. In a paper prepared as part of the OECD Committee for Fisheries' study on fisheries market liberalisation, Hannesson (2001) analysed the effects of GFTs on the total catch under various stylised management regimes: open access; catch control; and effective management. Under an open access regime, the expected effects of GFTs are observed — overexploitation of stocks, longer-term decline in catches, higher intramarginal profits, increased capital and labour attracted to the industry, and resource rents competed away to zero. Under catch control regimes, the total amount caught from a stock of fish is controlled, either directly through a total allowable catch (TAC) or indirectly through input controls. There is still open access in the fishery in that there is no limit on entry and anyone can participate in the fishery (this is sometimes also known as regulated open access). In this case, GFTs have no effect on the catch of the targeted resource, but the intramarginal profits increase, additional labour and capital are attracted to the sector and resource rents are still competed away.⁵

40. Under the third stylised regime, effective management, the amount caught from a fish stock is set at an economically optimal level and the industry has incentives to minimise the cost of taking that catch. A management system based on individual transferable quotas or transferable boat licences, with the government setting the TAC, would provide such incentives. Under this regime, GFTs will have no effect on resource sustainability but will increase the profitability of the industry over the long term, which will be reflected in a higher market value of fish quotas or fishing licences. The transfers then merely represent a transfer of income from the taxpayers to the fishing industry.

41. There are two important caveats to the analysis that need to be further explored in order to elucidate the links between management regimes and environmentally harmful subsidies. First, most OECD countries fall between the catch control and effective management regimes (Hannesson 2001, p. 6). Over time there has clearly been a shift in many OECD countries from catch control towards effective management as more and more restrictions are placed on entering particular fisheries. However, most countries are probably closer to catch control regimes than effective management, although a few have come close to effective management. This observation may moderate the view that there are few impacts of GFTs on marine fish stocks in OECD countries.

4. Although there may well be effects on other aspects of the environment (for example, on non-target marine resources or through the excessive use of other resource inputs, such as fuel).

5. Note, however, that the broader environmental effects (for example, on by-catch or the benthos) may be negative even though there may be no effect on the target fish stock.

42. Second, the analysis necessarily abstracts from key political economy aspects of the real world of GFTs and fisheries. Under a catch control regime, the provision of transfers is likely to encourage lobbying for larger TACs, which are often decided in political fora (Hannesson 2001, p. 28). They may also make monitoring and compliance more difficult, partly because industry has less of a stake in the health of the fish stocks and partly because the increasing participation in the industry will make it more difficult to monitor the total catch and ensure compliance of individual vessels. While this may also happen under effective management, it is less likely to occur as the market value of quotas or fishing licenses depends on the long-term health of the stocks.

43. So the reality of subsidies is likely to be less clear cut than the stylised analysis suggests. The links between different types of management regimes in the real world and the provision of GFTs needs to be further analysed.⁶ The Hannesson analysis provides a solid basis from which to proceed, but may need to be extended to include the full range of impacts of GFTs on the economic, environmental and social dimensions of the fisheries sector.

- *Transfers can insulate fishers from economic signals in the fisheries*

44. Transfers are generally designed to alter the incentives faced by fishers in order for them to change their behaviour. At the same time, many transfers can insulate or disconnect fishers from the economic imperatives of the fisheries on which they depend. For example, the effects of catch declines on fishers can be masked by increased support from the government (income maintenance is a case in point). Adjustment decisions of fishers are influenced by transfer policies, expectations about the future state of the fishery, as well as by the availability of alternative opportunities. The use of transfers that distort economic signals will mean that factors of production have an incentive to remain in the fishery or to enter the fishery, particularly if there is insufficient (or inadequate) information about the future state of fish stocks. This may be exacerbated by the lack of alternative economic opportunities for factors of production and the low or zero opportunity cost is likely to increase pressure on fisheries managers and on fish stocks (even with effective catch control or management). Over the longer term, this can serve to increase the vulnerability of fishers to changes in the economic conditions faced by the sector, as pressures for adjustment are likely to build up regardless of the extent of government support.

- *Fishers' expectations about transfers can become embedded and can impede management reforms*

45. Pressures on fisheries managers (and consequently on fish stocks) can be exacerbated by fishers' expectations about the government provision of transfers. There is evidence that expectations become embedded in fishers' behaviour over time, especially the perception that governments will provide the funds to support the sector when adjustment is required or when profitability is low.⁷ Much of the analysis undertaken to date assumes that future conditions facing the sector are known: uncertainty is assumed away. When uncertainty is introduced, it is clear that decisions to leave or enter a fishery, or to how to operate within a fishery, will be based on the *expected* net returns that can be generated by using the available factors of production. Therefore, expectations about future prices, the future state of the fishery, as well as future government policy on transfers, will all be important determinants in fishers' operating behaviour. Government transfers can reduce the risk faced by fishers by transferring some of that risk to the government (or more correctly, to the taxpayer).

6. Hannesson (2002) provides some relevant discussion on the institutional aspects of fisheries.

7. See also Holland, Gudmundsson and Gates (1999).

46. Past experience with government transfer policies towards the sector will inform fishers' expectations about the course of future transfer policies and the conditions under which they are granted. This can have several effects. First, these expectations can become embedded and can lead to rent-seeking behaviour on the part of fishers, as well as to the familiar problems of moral hazard and adverse selection.⁸ Second, this can increase industry resistance to external adjustment pressures as participants in the industry undertake strategic behaviour to maximise the expected value of their interests in the fishery. Third, embedded expectations can be expensive to remove and can result in even higher expenditures on adjustment over the longer term. In some countries, for example, the past provision of transfers to expand fleet capacity has led to industry demands for adjustment assistance once problems of over-capacity emerged.⁹

47. The implications of fishers' expectations regarding subsidies for the assessment of environmentally harmful subsidies are potentially important. In particular, they highlight the need to better incorporate a more holistic view of fishers' responses to transfer policies in any analysis of the potential environmental effects of transfers. This holistic view would need to include the full range of economic and social effects of transfers in order to more fully explore the direct and indirect linkages between these aspects and environmental outcomes.

7. Conclusion

48. In this paper, the recent OECD work on GFTs in the fisheries sector has been outlined. The level of GFTs in the OECD has declined from USD 6.8 billion in 1996 to just under USD 6 billion in 1999. The bulk of these transfers are in the form of general services, with the remainder being direct payments and cost-reducing transfers to the industry. The key issues in improving the data relate to improving the coverage and detail in the country estimates of GFTs and to extending the data collection to sub-national levels of governments.

49. In terms of identifying environmentally harmful subsidies, the environmental impact of transfers will be positive, neutral or negative depending on the circumstances under which the transfer is provided, how they are implemented and how they interact with other government policies. This paper has highlighted a number of areas that merit further attention. First, the consequences of GFTs will be determined to a large degree by the management system in place for any given fishery, particularly the way in which the management regime controls the harvest from the fishery and the effort that is applied to the fishery. Further analysis, building on existing OECD work, is required to more fully understand the links between management regimes and subsidies.

50. Second, a holistic approach is required to ensure that there is coherence between different transfer policies and between transfer policies and other government policies. Experience in the provision of transfers in the OECD has highlighted a number of cases where the apparently positive or neutral effects of transfers have been nullified or outweighed by the application of other transfers. The co-existence of fleet renewal and modernisation subsidies together with capacity-reducing transfers in a fishery is a good example.

8. 'Moral hazard' refers to the presence of incentives for economic agents to act in ways that incur costs that they do not have to bear. The related concept of 'adverse selection' refers to the incentive for economic agents to conceal information about the true nature of the costs and benefits they face in the market place.

9. Munro and Sumaila (2001, p. 25) conclude that subsidies used in vessel buyback schemes, if they come to be widely anticipated by industry, 'can, and will, have a decidedly negative impact' on resource management and sustainability.

51. Third, the role of expectations and fisher behaviour in response to transfers is a potentially important factor and the linkages between the economic, social and environmental aspects of transfer policies require further examination. In this regard, exploration of the subsidy issue within the paradigm of sustainable development would be a fruitful way to advance the identification and understanding of the direct and indirect impacts of potentially environmentally harmful subsidies.

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APPENDIX A: GOVERNMENT FINANCIAL TRANSFERS BY COUNTRY, 1996-1999

Annex Table A.1 Estimates of Government Financial Transfers to Marine Capture Fisheries in OECD Countries: 1996¹

(USD million)

	<i>Revenue Enhancing Direct Payments (A)</i>	<i>Cost Reducing Transfers (B)</i>	<i>General Services (C)</i>	<i>Total Transfers (D)</i>	<i>Total Landed Value (TL)</i>	<i>(A+B)/ TL</i>	<i>D / TL</i>
Australia ²	-	8	8	16	244	3%	7%
Canada	339	17	152	509	1107	32%	46%
European Union ³	428	397	738	1562	9466	9%	16%
Belgium	-	3	2 ⁴	5	103	3%	5%
Denmark	12	-	73 ⁴	86	525	2%	16%
Finland	3	2	24 ⁴	30	32	18%	92%
France	25 ⁴	15	119 ⁴	160	866 ⁵	5%	19%
Germany	19	4	61 ⁴	84	210	11%	40%
Greece	14	-	43 ⁴	57	441	3%	13%
Ireland	5 ⁴	3	104 ⁴	112	231	4%	59%
Italy	101	5	56	161	1937	5%	8%
Netherlands	5	-	37 ⁴	41	500	1%	8%
Portugal	36 ⁴	-	38 ⁴	74	359 ⁵	10%	21%
Spain	172	40	44 ⁴	256	3129 ⁵	7%	8%
Sweden	18 ⁴	-	44 ⁴	62	140	13%	44%
United Kingdom	16	6	93	115	992	2%	12%
Iceland	-	22	19	41	877	3%	5%
Japan	28	27	3132	3187	14117	0%	23%
Korea	20	65	283	368	4929	2%	7%
Mexico	-	-	14	114	1017 ⁶	-%	1%
New Zealand	-	-	15	15	475 ⁷	-%	3%
Norway	6	59	107 ⁴	173	1343	5%	13%
Poland	-	-	8	8	215	-%	4%
Turkey	-	0	28	29	212	-%	14%
United States of America	17	194	665	877	3644	6%	24%
OECD Total	838	789	5171	6799	37646	4%	18%

- zero

0: Value less than 0.5 of the unit of measure.

1. The table does not reflect any assessment of whether individual transfers programs have positive or negative implications for fisheries resource sustainability. Therefore, proper care should be applied in interpreting this summary information to consult the country case studies provided in the following section that discusses these implications.

2. Commonwealth fisheries only.

3. European Union values are the sum of all EU Member State values. The exception to this is cost reducing transfers, where payments for access for third country waters are not allocated to each Member State. In this case, the value is added to the EU total figure.

4. Figure includes estimates based on 1997 figure.

5. Does not include national landings in foreign ports.

6. 1997 figure.

7. Estimate.

Source: OECD (2000).

**Annex Table A.2 Estimates of Government Financial Transfers to Marine Capture Fisheries
in OECD Countries: 1997¹**

(USD million)

	<i>Revenue Enhancing Direct Payments (A)</i>	<i>Cost Reducing Transfers (B)</i>	<i>General Services (C)</i>	<i>Total Transfers (D)</i>	<i>Total Landed Value (TL)</i>	<i>(A+B)/ TL</i>	<i>D / TL</i>
Australia ²	5	7	11	24	259	5%	9%
Canada	252	18	135	405	1621	17%	25%
European Union ³	366	358	710	1434	9324	8%	15%
Belgium	-	3	2	5	99	3%	5%
Denmark	20	-	62	82	521	4%	16%
Finland	3	2	21	26	29	18%	90%
France	22	14	104	139	756 ⁴	5%	18%
Germany	8	3	52	63	194	5%	32%
Greece	12	-	38	50	387	3%	13%
Ireland	5	3	96	104	220	3%	47%
Italy	24	5	64	92	1749	2%	5%
Netherlands	4	-	32	36	466	1%	8%
Portugal	32	0	34	66	319 ⁴	10%	21%
Spain	205	81	59	345	3443 ⁴	8%	10%
Sweden	9	-	45	54	129	7%	42%
United Kingdom	23	4	101	128	1012	3%	13%
Iceland	-	18	18	36	877	2%	4%
Japan	25	22	2899	2946	14117	0%	21%
Korea	30	59	253	342	4929	2%	7%
Mexico	-	-	17	17	1017	-%	1%
New Zealand	-	-	17	17	475 ⁵	-%	4%
Norway	3	62	98	163	1343	5%	12%
Poland	-	-	8	8	215	-%	4%
Turkey	-	1	27	29	212	1%	13%
United States of America	21	194	662	877	3644	6%	24%
OECD Total	702	740	4856	6298	38032	4%	17%

- zero

0: Value less than 0.5 of the unit of measure.

1. The table does not reflect any assessment of whether individual transfers programs have positive or negative implications for fisheries resource sustainability. Therefore, proper care should be applied in interpreting this summary information to consult the country case studies provided in the following section that discusses these implications.

2. Commonwealth fisheries only.

3. European Union values are the sum of all EU Member State values. The exception to this is cost reducing transfers, where payments for access for third country waters are not allocated among each Member State. In this case, the value is added to the EU total figure.

4. Does not include national landings in foreign ports.

5. 1996 figure.

Source: OECD (2000).

Annex Table A.3 Estimates of Government Financial Transfers to Marine Capture Fisheries in OECD countries: 1998

(USD million)

	<i>Direct Payments (A)</i>	<i>Cost Reducing Transfers (B)</i>	<i>General Services (C)</i>	<i>Total Transfers (D)</i>	<i>Total Landed Value (TL)</i>	<i>(A+B)/ TL</i>	<i>(A+B+C)/ TL</i>
						%	%
Australia	5	7	11	23	1037	1.2	2.2
Canada	394	10	153	557	1062	38.0	52.4
European Union¹	266	467	515	1248	7037	10.4	17.7
Belgium	..	..	..	..	96	..	..
Denmark	28	-	5	33	515	5.4	6.4
Finland	3	2	21	26	23	21.7	113.0
France ²	6	0	67	73	1059	0.6	6.9
Germany	7	9	52	68	194	8.2	35.1
Greece	12	14	1	27	295	8.8	9.2
Ireland	3	-	116	119	237	1.3	50.2
Italy	97	5	60	162	910	11.2	17.8
Netherlands	..	..	..	..	390	..	..
Portugal	2	0	23	25	317	0.6	7.9
Spain	104	127	64	294	2314	10.0	12.7
Sweden	4	0	23	27	132	3.0	20.5
United Kingdom	0	8	83	90	1041	0.8	8.6
Iceland	0	17	18	35	862	2.0	4.1
Japan	24	44	2136	2204	10725	0.6	20.6
Korea	25	26	160	211	2795	1.8	7.5
Mexico	..	..	..	0	902	..	..
New Zealand	0	0	10	10	..	..	..
Norway	6	35	112	153	1388	3.0	11.0
Poland	..	..	..	..	181	..	..
Turkey	-	0	0	0	1	0.0	18.0
United States of America ³	38	166	799	1040	3293	6.2	31.6
OECD Total	758	772	3914	5481	29283	5.2	18.7

.. Information not available; - not applicable; 0 refers to data between 0 and 0.5

1. Excludes Belgium and the Netherlands.

2. Excludes financial transfers from the EU.

3. Includes an estimate of market price support (that is, transfers from consumers to producers).

Annex Table A.4 Estimates of Government Financial Transfers to Marine Capture Fisheries in OECD Countries: 1999

(USD million)

	<i>Direct Payments (A)</i>	<i>Cost Reducing Transfers (B)</i>	<i>General Services (C)</i>	<i>Total Transfers (D)</i>	<i>Total Landed Value (TL)</i>	<i>(A+B)/ TL</i>	<i>(A+B+C)/ TL</i>
						%	%
Australia	..	..	..	..	1103	..	..
Canada	318	25	144	487	1157	29.6	42.1
European Union¹	201	456	509	1166	6619	9.9	17.6
Belgium	..	..	..	..	96	..	..
Denmark	25	-	9	34	460	5.4	7.4
Finland	2	2	22	26	19	21.1	136.8
France ²	2	0	70	72	997	0.2	7.2
Germany	6	9	52	67	216	6.9	31.0
Greece	29	13	1	44	93	45.2	47.3
Ireland	2	-	113	115	224	0.9	51.3
Italy	65	8	71	145	815	9.0	17.8
Netherlands	..	..	..	..	390	..	..
Portugal	3	0	24	27	308	1.0	8.8
Spain	63	151	53	267	1940	11.0	13.8
Sweden	4	0	23	27	113	3.5	23.9
United Kingdom	0	6	71	76	948	0.6	8.0
Iceland	0	16	19	35	802	2.0	4.4
Japan	26	35	2481	2542	10725	0.6	23.7
Korea	203	48	183	435	3405	7.4	12.8
Mexico	..	..	..	..	960	..	..
New Zealand	0	0	13	13	..	..	..
Norway	12	53	116	181	1270	5.1	14.3
Poland	..	..	..	..	142	..	..
Turkey	..	..	..	..	..	..	..
United States of America³	105	166	798	1111	3602	7.5	30.8
OECD Total	865	799	4263	5970	29785	5.6	20.0

.. Information not available; - not applicable; 0 refers to data between 0 and 0.5

1. Excludes Belgium and the Netherlands.

2. Excludes financial transfers from the EU.

3. Includes an estimate of market price support (that is, transfers from consumers to producers).

**APPENDIX B: CLASSIFICATION OF GOVERNMENT FINANCIAL TRANSFERS
IN OECD COUNTRIES BY PROGRAM OBJECTIVES**

**Annex Table B.1 Classification by Program Objectives: 1996¹
(USD million)**

	<i>Fisheries infrastructure</i>	<i>Management, research, enforcement and enhancement</i>	<i>Access to other countries' waters</i>	<i>Decommissioning of vessels and licence retirement</i>	<i>Investment and modernisation</i>	<i>Income support and unemployment insurance</i>	<i>Taxation exemptions</i>	<i>Other</i>	<i>TOTAL</i>
Australia ²	-	8	-	-	-	-	8	-	16
Canada	37	118	-	80	-	259	-	15	509
European Union ³	61	618	318	283	128	6	3	146	1562
Belgium	0	2 ⁴	-	-	3	-	-	0	5
Denmark	3	56 ⁴	-	12	-	-	-	14	86
Finland	1	23 ⁴	-	2	1	-	-	3	30
France	7	84 ⁴	-	26	15	-	-	48 ⁴	160
Germany	7	52 ⁴	-	1	11	-	-	12	84
Greece	2	41 ⁴	-	10	4	-	-	1	57
Ireland	2	97 ⁴	-	1	3	-	3	5 ⁴	112
Italy	7	48	-	40	25	-	-	41	161
Netherlands	8	28 ⁴	-	4	1	-	-	0	41
Portugal	7	28 ⁴	-	23	10	-	-	4 ⁴	74
Spain	2	42 ⁴	-	164	40	-	-	9	256
Sweden	1	39 ⁴	-	4	8	6	-	4 ⁴	62
United Kingdom	13	76	-	16	6	-	-	4	115
Iceland	-	19	-	-	-	-	22	-	41
Japan	2601	414	-	28	26	-	-	119	3187
Korea	175	76	-	20	-	-	1	95	368
Mexico	-	14	-	-	-	-	-	-	14
New Zealand	-	15	-	-	-	-	-	-	15
Norway	-	107 ⁴	-	0	14	4	37	10	173
Poland	-	8	-	-	-	-	-	-	8
Turkey	28	0	-	-	-	-	-	0	29
United States of America	11	658	-	-	31	-	150	27	877
OECD Total	2913	2056	318	411	198	269	221	412	6799

- zero

0: Value less than 0.5 of the unit of measure.

1. The table does not reflect any assessment of whether individual transfers programs have positive or negative implications for fisheries resource sustainability. Therefore, proper care should be applied in interpreting this summary information to consult the country case studies provided in the following section that discusses these implications.

2. Commonwealth fisheries only.

3. European Union values are the sum of all EU Member State values. The exception to this payments for access for third country waters; these are not allocated to each Member State. In this case, the value is added to the EU total figure.

4. Figure includes estimates based on 1997 data.

Source: OECD (2000, p. 134).

Annex Table B.2 Classification by Program Objectives: 1997¹

(USD million)

	<i>Fisheries infrastructure</i>	<i>Management, research, enforcement and enhancement</i>	<i>Access to other countries' waters</i>	<i>Decommissioning of vessels and licence retirement</i>	<i>Investment and modernisation</i>	<i>Income support and unemployment insurance</i>	<i>Taxation exemptions</i>	<i>Other</i>	<i>TOTAL</i>
Australia ²	-	11	-	3	-	-	7	2	24
Canada	35	100	-	0	-	248	-	22	405
European Union ³	67	592	245	288	144	4	3	91	1434
Belgium	-	2	-	-	3	-	-	0	5
Denmark	3	49	-	8	12	-	-	10	82
Finland	0	21	-	1	1	-	-	3	26
France	6	74	-	5	13	-	-	41	139
Germany	6	46	-	2	2	-	-	8	63
Greece	1	36	-	9	4	-	-	1	50
Ireland	2	92	-	1	3	-	3	2	104
Italy	2	62	-	17	9	-	-	2	92
Netherlands	7	25	-	3	1	-	-	0	36
Portugal	7	25	-	21	9	-	-	4	66
Spain	16	37	-	196	80	-	-	15	345
Sweden	1	42	-	2	3	4	-	1	54
United Kingdom	15	83	-	23	4	-	-	4	128
Iceland	-	18	-	-	-	-	18	0	36
Japan	2165	628	-	25	21	-	-	107	2946
Korea	164	73	-	30	-	-	-	75	342
Mexico	-	17	-	-	-	-	-	0	17
New Zealand	-	17	-	-	-	-	-	-	17
Norway	-	98	-	0	14	3	34	14	163
Poland	-	8	-	-	-	-	-	-	8
Turkey	27	-	-	-	-	-	-	1	29
United States of America	11	664	-	4	30	-	150	18	877
OECD Total	2470	2227	245	350	206	255	213	330	6298

- zero

0: Value less than 0.5 of the unit of measure.

1. The table does not reflect any assessment of whether individual transfers programs have positive or negative implications for fisheries resource sustainability. Therefore, proper care should be applied in interpreting this summary information to consult the country case studies provided in the following section that discusses these implications.

2. Commonwealth fisheries only.

3. European Union values are the sum of all EU Member State values. The exception to this are payments for access for third country waters; these are not allocated to each Member State. In this case, the value is added to the EU total figure.

Source: OECD (2000, p. 135).