DO FISHERY INFRASTRUCTURE SUBSIDIES NEED TO BE DISCIPLINED TO PROTECT SUSTAINABILITY?

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ABSTRACT

At the 2001 WTO Ministerial Conference in Doha, world Trade Ministers called for improved disciplines on fisheries subsidies, given the perceived impact of these subsidies in contributing to overfishing, overcapacity and other trade distortions. Subsequent deliberations have sought to determine which fisheries subsidies should be disciplined under the WTO framework. A review of fishery subsidisation literature revealed that the extent and impacts of subsidies of fishery infrastructure has been insufficiently investigated by the fishery economic community. In 2005 a New Zealand submission to the WTO proposed a categorisation of subsidies for fisheries infrastructure to promote discussion of these issues in the WTO arena. This paper presents a category framework for investigating fisheries infrastructure subsidies and briefly presents a range of views on how nations look at fishery infrastructure subsidies and differences over the belief that infrastructure subsidies can detrimentally impact upon fish stocks. The discussion presents several illustrations of how infrastructural subsidies have not been sufficiently factored into empirical fishery economic studies of the catching and processing sectors. Infrastructural subsidies can have negative implications for the sustainable management of the world's fish stocks.

Keywords: fishery infrastructure, subsidies, disciplined, sustainability

INTRODUCTION

The effects of fishery subsidies has been the focus of much attention since the mid 1990s in each of the government, non government and international communities (OECD, 2000, Price Waterhouse Coopers, 2000, Porter, 2004, WWF, 2006). In 2005 a New Zealand submission to the WTO proposed a categorisation of subsidies to fisheries infrastructure to promote discussion of these issues in the WTO arena. A review of fishery subsidisation literature revealed that the extent and impacts of subsidies of fishery infrastructure has been insufficiently investigated by the fishery economic community. This paper wishes to bring this area of subsidisation, and the implications for the sustainability of fish stocks of subsidisation in this area to the attention of fishery economists in IIFET and the international community.

Background to the fishery subsidies debate

Fisheries infrastructure accounts for a substantial proportion of government expenditure in the fisheries sector, particularly in developed countries. In 1996, the OECD estimated that OECD government financial transfers on fisheries infrastructure accounted for US$2,913 million, equivalent to 43 per cent of total OECD government financial transfers related to fisheries (OECD, 2001). The APEC 2000 study estimated that, in 1997, APEC Members spent approximately US$2,634 million on fishing port

[1] The views expressed in this paper are those of the authors, and do necessarily represent the views of the New Zealand Ministry of Fisheries, the New Zealand Ministry of Foreign Affairs and Trade or the New Zealand Government.

infrastructure enhancement alone, roughly equivalent to 21 per cent of the total APEC expenditure on fisheries programmes (Price Waterhouse Coopers, 2000).

At the 2001 WTO Ministerial Conference in Doha, world Trade Ministers called for improved disciplines on fisheries subsidies, given the perceived impact of these subsidies in contributing to overfishing, overcapacity and other trade distortions. Subsequent deliberations have sought to determine which fisheries subsidies should be disciplined under the WTO framework. Within this debate, New Zealand and other members of the "Friends of Fish" group (a loosely defined group of countries including Australia, Argentina, Chile, Ecuador, New Zealand, Philippines, Peru, Norway, Iceland and the US) have prepared several submissions for the WTO advocating stronger WTO disciplines. In October 2005, a discussion paper on fishery infrastructure was prepared for discussion at the WTO Rules Negotiating Group (TN/RL/GEN/70).

This paper presents the category framework proposed by New Zealand for examining fisheries infrastructure subsidies and briefly presents a range of national reactions to it. We extend the work presented in the paper to examine how fishery infrastructure subsidies can and have detrimentally impacted upon fish stocks. While the discipline debates have focused on current practices and their future trade implications, we find that from a bio-economic perspective, very few nations have sufficiently charged fishers for the true economic cost of fishery infrastructure and hence assisted fishers to deliver more than the optimum amount of effort. In particular situations where the fisheries management regime in place is weak, we argue this subsidisation can be significant and have ramifications for long term sustainability of fisheries resources globally.

THE NEW ZEALAND PROPOSAL TO THE WTO ON FISHERIES INFRASTRUCTURE

In the post Doha 2001 period, meetings of the WTO Rules Negotiating Group have seen detailed discussions on a number of categories of fisheries subsidies. In 2005, there were substantive discussions on subsidies to management services (Job(05)/44), to vessel decommissioning and licence retirement (TN/RL/GEN/41), to IUU fishing (TN/RL/GEN/47), and to aquaculture (TN/RL/GEN/54). There has also been a good initial discussion of categories of subsidies of particular importance to developing countries, such as subsidies to artisanal fishing and to access fee payments. (TN/RL/GEN/56 and TN/RL/GEN/57 Rev.2)

The purpose of these discussions has been to develop a common understanding of the definitions and treatment of various categories of fish subsidies under proposed disciplines. Much of the discussion has been technical in nature, so as to ensure that clear and enforceable rules are developed. In this context, New Zealand sought to initiate a dialogue on the category of "subsidies to fisheries infrastructure".

General Infrastructure vs. Fisheries Infrastructure

An essential part of the debate is the relationship between general and fisheries Infrastructure. Government provision of "general infrastructure" is excluded from the definition of a subsidy under Article 1.1 of the WTO Agreement on Subsidies and Countervailing Measures (ASCM). New Zealand did not intend to include general infrastructure in any new fisheries subsidies disciplines (TN/RL/GEN/141) viewing it as preferable for new fishery subsidies disciplines to be consistent with the existing Article 1 definition of a "subsidy".

The NZ paper sought to clarify "what types of programmes should be treated as fisheries infrastructure as opposed to general infrastructure." (TN/RL/GEN/70).

Discussion of Subsidy Categories and fishery infrastructure

Despite the size of this category of subsidies, there is little detailed information available on the different types of infrastructure subsidies which sit within this broader heading. The NZ paper went on to divide fisheries infrastructure into sub-categories, which would enable consideration of "how these sub-categories, or elements within them, should be treated under new rules and whether they should be exempt from any prohibition" (TN/RL/GEN/70).

Identification and Definition of Subsidy Category

The NZ study identified the types of subsidy programmes that would fall within a fisheries infrastructure category, referring to the existing subsidy classifications in the fisheries subsidies literature. The following sections are taken from the NZ paper (TN/RL/GEN/70).

" 8. The UNEP study of 2004 identified three common types of fisheries infrastructure: (Porter, 2004)

- harbour facilities and moorage
- fishing port infrastructure enhancement
- support to producers organisations

9. The OECD has recognised the following types of programmes as falling within the category of "fisheries infrastructure expenditure" (OECD, 2001):

- support to build port facilities for commercial fishers
- reduced charges for use of government provided infrastructure
- support to improve fishing villages
- regional development grants
- support to enhance the fisheries community environment
- fisheries enhancement expenditure
- support for artificial reefs
- aid for restocking of fish resources
- expenditure on exploratory fishing

10. Drawing on these and other studies, we propose that subsidies to fisheries infrastructure be broken down into the following three sub-categories:

i) subsidies to fishing port facilities;
ii) subsidies to the development of fishing communities;
iii) subsidies to processing facilities for fisheries products" (TN/RL/GEN/70).

The New Zealand paper went on to provide examples of the types of fishery infrastructure programs confer a benefit on the fishing industry, as opposed to general infrastructure. They proposed programs could fall under the three categories.

" i) <u>Subsidies to Port Facilities</u>

The port facilities sub-category is considered to include the following:

- the construction and provision of harbour facilities, including vessel moorage facilities, wharves, transhipment facilities, vessel loading and unloading facilities, vessel cleaning facilities, and vessel sanitation facilities;
- the provision of transport infrastructure, including road and rail links to harbours;

- the provision of facilities for vessel repair, including the use of slipways, dry docks, vessel lifts, ancillary cranes and pumps;
- the provision of storage facilities for raw and processed seafood, including cold stores, freezers and cooling rooms;
- the provision of facilities for the storage of fishing equipment, including the storage of fishing gear and nets and the storage of vessels in non-fishing periods.

(ii) Subsidies to the Development of Fishing Communities

The fishing community development sub-category is considered to include the following:

- the provision of housing, working and social facilities for fishermen;
- the provision of transport infrastructure for fishing areas, including road and rail links to fishing communities;
- other regional development grants for fishing-related activities

(iii) Subsidies to Processing Facilities for Fisheries Products

The fisheries processing facilities sub-category is considered to include the following:

- the provision of processing facilities, including the use and construction of: processing plants, equipment and systems; freezers; cooling rooms; packaging plants, equipment and systems; cleaning systems; waste disposal systems; and sanitation systems;
- the provision of storage facilities for raw and processed material, including cold stores, freezers and cooling rooms;
- the provision of seafood landing and sales areas, including: market floors for sale of landed catch; auction facilities; and wholesale sale facilities;
- the provision of transport infrastructure, including road and rail links to fishing processing facilities;
- the provision of sanitary facilities, including the installation of systems to improve water quality; waste disposal and sanitation measures." (TN/RL/GEN/70).

In devising the fisheries infrastructure list the New Zealand paper focused on "capital infrastructure" subsidies more typically associated with indirect costs of production - e.g. ports, storage, and transport infrastructure - rather than on what could be referred to as "operational infrastructure" subsidies more typically associated with direct costs of production – e.g. subsidies to the provision of bait services, fuel, ice and at-sea fishing support services (such as transhipment and refuelling vessels). Both the UNEP (2004) and OECD (2000) study treated fuel and bait related subsidies as part of a separate category of "subsidies to variable costs".

From this exercise it appeared there is a large amount of fisheries infrastructure expenditure and that there is little clarity or transparency about the nature of spending. Fisheries infrastructure programmes of this type can have an indirect effect on overfishing and overcapacity through lowering the cost of fishing and delaying the point at which the economic costs of fishing outweigh the economic returns. This leads to a greater level of fishing than would occur in the absence of these programmes.

With regards to the treatment of these types of subsidies, New Zealand proposed the following:

" i) Subsidies to Port Facilities

16. We note that there are examples of subsidies to fishing port facilities listed in a number of the current WTO subsidies notifications under fisheries activities[i]. However, there is generally limited information available on the types of activities in this area. The types of subsidies in this sub-category are considerably varied and, as noted above, account for a sizeable share of total fisheries expenditure. We therefore believe that further discussion and

information is needed before reaching a decision on how this sub-category, or different elements within it, should be treated under new rules.

ii) Subsidies to the Development of Fishing Communities

17. We are aware that for several Members many of the programmes in this area fulfill important social policy objectives. Consequently, removal of these subsidies may have unintended negative social or developmental impacts. Accordingly, subject to further discussion and information on these types of programmes, we consider that subsidies to the development of fishing communities would be a suitable candidate for exemption from any prohibited category of fisheries subsidies.

iii) Subsidies to Processing Facilities for Fisheries Products

18. While subsidies to processing facilities for fisheries products may not be a direct cause of overfishing or overcapacity, they would reduce the costs and/or increase the revenues associated with fishing, which would increase the incentive to fish. Unlike subsidies to the development of fishing communities, we are not aware of any mitigating reasons that would merit the exemption of subsidies to processing facilities from any prohibited category of fisheries subsidies. However, we are open to other Members' views on this point" (TN/RL/GEN/70).

Special and Differential Treatment Considerations

In addition to excluding from disciplines those subsidy programs that Members agree can contribute to achieving environmental objectives, New Zealand noted the need for special and differential treatment for developing countries. Subsidies to fisheries infrastructure can play an important part in the overall fisheries strategy of developing countries and as existing levels of infrastructure are likely to be significantly lower than that of developed countries, they are likely to require greater flexibility to fund fisheries infrastructure expenditure.

The responses of different nations

The International Centre for Trade and Sustainable Development (ICTSD, 2006) published the following summary of the reactions of different nations to the NZ paper:

"Reactions to the paper followed two general lines of thought. The Friends of Fish – (a loosely defined group of countries including Australia, Argentina, Chile, Ecuador, New Zealand, Philippines, Peru, Norway, Iceland and the US)) -- saw it as a good starting point for discussing an important category of subsidies that had not previously received much attention while pointing out that more detail was needed. However, Japan, Korea and Chinese Taipei were reluctant to introduce a distinction between subsidies for fisheries infrastructure and general infrastructure subsidies. Citing the example of ports used for multiple purposes, these countries argued that differentiation between general and fisheries-specific subsidies was an impossible exercise in practice. Korea also declared that disciplining the use of infrastructure subsidies would amount to an infringement on countries' sovereign right and political duty to develop their domestic infrastructure.

The EC and China were ambivalent on the issue, in particular with regards to subsidies to port facilities. While in principle they welcomed the consideration of subsidies to fisheries infrastructure, they also pointed to the problem of multiple use of facilities. The EC instead promoted consideration of subsidies at the boat level, rather than for infrastructure. The members of the Friends of Fish responded that addressing fisheries subsidies at the boat level separately from other parts of the value chain missed

important parts of the picture, as fish acquired value when landed, processed and presented to the consumer.

The other two sub-categories proposed by New Zealand, subsidies for the development of fishing communities and those to processing facilities, were less controversial than subsidies to ports. While China, Korea, Hong Kong and the EC felt that negotiations would touch on too many aspects beyond fisheries if they also addressed processing facilities, other Members supported the idea of disciplining subsidies in this area. However, Members -- and in particular developing countries -- supported New Zealand's proposal to consider subsidies for the infrastructure development of fishing communities as a suitable candidate for exemption from any prohibited category of fisheries subsidies. While agreeing to this principle, developing country Members stressed the importance of a clear definition of the type of "infrastructure development" and "fishery communities" covered by the exemption. New Zealand's paper only includes the provision of housing and of transport infrastructure for fishermen in the community development category. Indonesia spoke out in favour of expanding the definition to include additional support measures such as subsidised bait and fuel." (ICTSD, 2005)

The New Zealand Proposal re-visited

In a recent submission of legal text to the WTO process in 2006, New Zealand sought to clarify the treatment of subsidies to fisheries infrastructure, reaffirming the previous position that Government provision of "general infrastructure" is excluded from the definition of a subsidy under Article 1.1 of the ASCM. Under the proposal of a broad prohibition on the use of fisheries subsidies, New Zealand proposed the exemption from prohibition of the following:

> "… subsidies to the construction and maintenance of infrastructure for:
>
> (i) fishing communities, such as the provision of housing, transport infrastructure, water and sanitary waste systems;
>
> (ii) wharves and port facilities for vessel moorage, loading, unloading, cleaning, sanitation and repair; and
>
> (iii) transport infrastructure, water and sanitary waste systems serving processing facilities for fisheries products". (TN/RL/GEN/141)

While clarifying to an extent the treatment of subsidies to fisheries infrastructure and inherently drawing on development issues, concern still exists over distinguishing between subsidies for fisheries infrastructure and general infrastructure subsidies. In addition to these concerns, many question the contribution of fisheries infrastructure to the parlous state of global fisheries resources, noting that disciplines are best focused on the core of the problem, subsidies to vessels.

HOW DO INFRASTRUCTURE SUBSIDIES IMPACT FISHERY SUSTAINABILITY?

The WTO debate has brought regional economic and trade policy issues to the fore, but there has been little reconciliation of either of these with the sustainability of fisheries resources. To a resource economist it would appear that distribution has drowned out debate and analysis of subsidies and their impact on the efficiency of fishery resource use.

As pointed our by WWF, 2004 it is worth recalling that:

"A "special chapter" in the FAO's annual report for 1992 included a finding that the fishing industry viewed on a worldwide basis was operating at a net economic loss of approximately $54 billion per year, going on to conclude that "subsidies are presumed to cover most of this deficit." Although the $54 billion figure was never presented by the FAO as an estimate of global fishing subsidies (and would now be universally regarded as too high if it were), the report helped launch the current international policy dialogue over fishing subsidies" (WWF, 2004).

WTO members have debated the disciplines and potential impacts of infrastructure subsidies. However the impacts of existing subsidies to fisheries infrastructure on global fisheries has been insufficiently addressed by fishery economists.

Incorporating fishery infrastructure subsidies into empirical fishery models of sustainability.

This section presents several illustrations of how infrastructural subsidies have not been sufficiently factored into empirical economic studies of the fisheries catching and processing sectors.

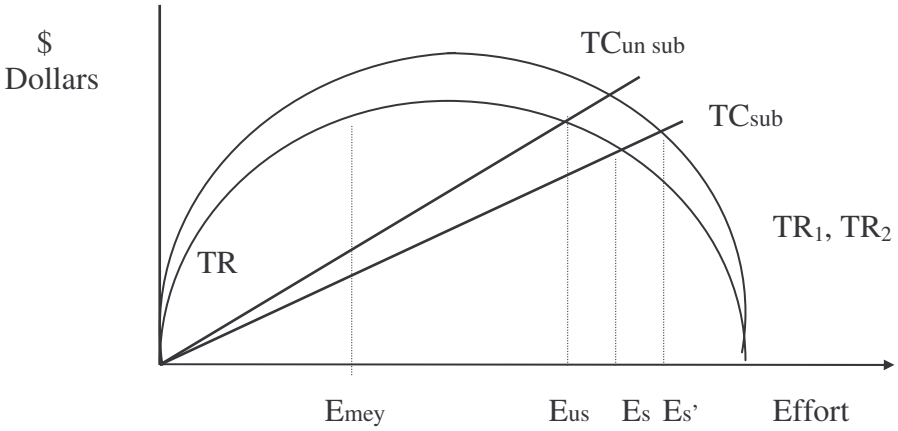
The authors are aware of few if any explicit empirical examinations dimensioning the impact of fishery infrastructure subsidisation on fishery sustainability. As in any subsidisation the test is in the comparison of the subsidised with the unsubsidised case. The impacts of infrastructure subsidisation in the open access model of the fishery are seen in three areas:

a) Lowering of operational costs and hence the cost of producing effort. This is through provision of variable and especially fixed inputs to the fishing process at lower cost than in the free market case; For example regional subsidies for fisher's housing equate to a lowering of the true economic cost of labour to the fishing enterprise or vessel; capital wharf plant, such an ice machine, lowers the cost of ice, if any, to the fishing vessel; true wharf capital costs are insufficiently captured in nominal wharf fees for vessels –wharves in remote areas are often publicly funded goods;
b) Raising the total revenue received by fishers, as enhanced processing facilities provide prices for previously unmarketed species and enable greater diversity in the species landed and processed in comparison to the unsubsidized case;
c) Supporting more vessels in the fishery than would be the case if infrastructure were not subsidized. This is related to a and b above. Infrastructure subsidies open up new fishing regions that may not be developed without government intervention in the form of government funded fishery infrastructure. The residual impact of this publicly funded fishing infrastructure is seen in excess fishing capacity that can exist for decades, contributing to unsustainable fishing.

Incorporating these Fisheries Infrastructure Subsidies into the simple bio-economic open access model of the fishery the fixed cost and variable cost of many inputs to fishers are less than their true economic cost. The total economic cost of effort and total revenue are impacted by fishery infrastructure subsidisation. The open access model scenario is illustrated in Figure 1.

In Figure 1 the open access equilibrium without infrastructure subsidies has a total revenue (TR1) and a total cost of unsubsidized effort (TCunsub). The open access equilibrium unsubsidized is a level of effort E_{us}. Under infrastructure subsidies that reduce fixed and variable costs, the total cost of effort in the fishery is reduced to TCsub, more effort is delivered by fishers and the open access effort level becomes Es. Processing subsidies increasing landed price and the diversity of species landed increasing total revenue to TR2. The infrastructure subsidy open access fishery equilibrium is an effort level of Es'.

Figure 1: The effect of Fishery Infrastructure subsidies on the open access fishery model.



We would expect the number of boats entering the fishery in the subsidised case would be more than in the unsubsidised case. For example, an effort level of Eus would represent less effort and fewer actual boats in the fishery, in comparison to Es', the infrastructure subsidized case.

DISCUSSION

This reference to bio-economic theory raises several questions. What are the levels of fisheries infrastructure subsidies and how significant are the impacts? Figure 1 presents the open access fishery case. Does managing a fishery alter the impacts from fishery infrastructure subsidies? The available information on the level of all fishery subsidies range from $12-20bn, as reported in different studies in Table 1.

Table 1: Types and estimates of fishery subsidies.

Type of subsidy	Estimate (year) USD	Source
Total fishery subsidies	$12.6bn (1999)	PriceWaterHouse (2000)
	$14.5-$20.0bn (1998)	World Bank (Millazzo)
	$15.0bn (2004)	WWF (2004)
Infrastructure subsidies	$ 2.913bn* (2000)	OECD (2000)

The scale of subsidisation relative to the value of world catch is considerable, as indicated in this quote from WWF (2004): "WWF currently considers that the total level of fishing subsidies can be reliably estimated to be at least US$15 billion per year. With the total value of fish landed from commercial wild-capture marine fisheries running at approximately US$80 billion per year, this constitutes roughly 20 percent of industry revenue" (WWF, 2004 p31).

From Table 1 it can be see there are few if any accurate estimates of the level of fisheries infrastructure subsidies globally. The OECD (2000) estimates annual Government expenditure on fisheries

infrastructure as $2.913bn[2]. The cost of fishery infrastructure subsidies, as a proportion of global catch revenue is currently unknown.

For the purpose of this paper, we assume that the WWF 2004 global fish catch revenue ($80m) was being matched by global total cost of fishing effort, as at an open access fishery equilibrium. Thus the estimated total cost of global fishing effort would be $80bn[3].

On this basis, total fishery subsidies could be 18% to 25% of the total cost of global fishing effort ($15bn/$80bn*100 and $20bn/$80bn*100). If we assume that the fishing infrastructure subsidy was $2.9bn (OECD, 2000), then fishing infrastructure subsidies would be 3.6% of total cost of global fishing effort ($2.91bn/$80bn). Given there is uncertainty about both figures this ratio should be treated with caution. Fishery and fisheries infrastructure subsidies will reduce the cost of vessel fishing effort and hence vessels supply more effort than the sustainably desirable level.

These crude estimates show that fishing subsidies are not trivial and the fishery infrastructure subsidies component definitely contributes to the total societal cost of fishing effort. The practical outcome from these calculations are:

a) Fishery economists and those concerned about global fisheries sustainability, need to clarify the data on the level of fishery and fishery infrastructure subsidies to enable correct modeling of global fishery sustainability to be undertaken; and
b) Fishery economists need to recognise and set procedures in place for the treatment of infrastructure subsidies in bio-economic studies.

The fundamental principle of sustainable fishery resource use is that all resources used in the fishing process should be priced at their social opportunity cost (Dasgupta, 1983).

What should be done about fishery infrastructure subsidies?

The debate on the treatment of subsidies has revealed several practical problems with incorporating FIS disciplines within the WTO framework. Many countries have little interest in identifying or stopping fishery subsidies, or in making their past and current subsidies transparent. Simple operational subsidies, like those for fuel to fishing fleets and vessels remain unaddressed by many nations. The step to include fisheries infrastructure subsidies is potentially opening a non-transparent area where the separation of general and fishery related infrastructure may be difficult and arbitrary between nations. This does not bode well for the inclusion of FIS disciplines in the WTO fishery discipline framework, irrespective of the political and trade debate. In the WTO framework fishery subsidies are not classed within the agriculture sector which has many subsidies. There have not be disciplines imposed on infrastructure within the agriculture sector.

Many countries leading the FIS debate would also have difficulties in defining their level of FIS. For example in the experience of the lead author, in several empirical fishery studies in Australia, the level of wharf fees paid by fishers in 2006 are unlikely to reflect the public investment expenditure made 30-40 years ago in concrete and facilities in ports that are now used predominantly by fewer commercial fishers than at the time of construction. Under public asset and economic costing practices, the fishing port infrastructure has an annual depreciation component reflecting a lifespan of up to 50 years. Does the cost recovery policy of the port authority need to be added to the subsidies argument? For example, if the true

[2] This estimate is for OECD countries and is unrealistically low, given that in TN/RL/W159, Japan noted that 69.7 per cent of Japan's government financial transfers on fisheries goes toward "fishery infrastructure". Japan considers its definition of fishery infrastructure to be wider than other nations.
[3] It is likely well in excess of this, given the FAO 1992 estimates of total cost were over $100bn

economic costs of providing the public fishing wharf facilities are not being met by the wharf fees paid by fishing vessels, then the fishing vessels are receiving a subsidy to the true economic cost of their operation. Nations should be disciplining these subsidies as part of their national resource management frameworks.

In the economic appraisal of fishing effort any subsidy should be recognized as lowering the true cost of inputs to the fishing process. We are not aware of any fishery economic studies which have incorporated the impact of infrastructure subsidies on the economic cost of effort. We reject the proposition that wharf fees fully collect the capital costs of the construction of the world's wharves and port infrastructure and suggest the capital infrastructure support to fishing vessels and processing facilities has systemically contributed to the world's over fishing problem. This is due to a failure to be properly accounted for in the true economic measurement of fishing effort.

Within the WTO subsidies debate there has been discussion on managing a fishery altering the infrastructure subsidy debate (Porter, 2004). If fish catch is limited by an output quota, then subsidized fishery infrastructure lowers the fixed cost component of effort and is a net transfer to producers over and above the fully costed case.

Should FIS be disciplined?

Yes, but how? Firstly, it is important to clarify that a range of direct fishery subsidies to vessels may be disciplined through the WTO process, as discussed in the introduction to the paper. The discussion here focuses on the treatment of fishery infrastructure subsidies. From our analysis an approach to disciplines would be to address:

a) processing subsidies, which increase fishing revenue and hence increase the level of vessel effort supplied in the fishery as illustrated in Figure 1; and
b) subsidies on fisheries wharf and landing facilities that reduce the cost of vessel operation and hence the cost of fishing effort.

We are unable to determine from empirical evidence the relative sizes of processing and wharf/landing fisheries infrastructure subsidies. We suggest that after at least 10 years of debate the international community has not this information available to it either. Disciplining infrastructure subsidies through the WTO framework will require greater transparency on subsidies and also enforcement of the disciplines (WWF, 2006).

A resource economist would be concerned that both WTO disciplines, or even governments addressing subsidies through full cost recovery at the national level, will not be applied due to political obfuscation. Much of the infrastructure component of fisheries subsidies may remain unaddressed with further deleterious impacts on global fisheries sustainability. The tragedy of the commons has left the world with an enormous legacy of surplus fisheries infrastructure, that likely exceeds the capital value of fishing vessels and may negate the net benefits received from the world's remaining fish stocks.

CONCLUSIONS

The paper has examined the emerging regime for disciplining fishery subsidies. It finds that fishery infrastructure subsidies are less transparent than operational fishing subsidies and have little publicly available information on them. It is not possible to accurately quantify fishery infrastructure subsidies as a proportion of total fishery subsidies, with currently available data. The available data indicates it is economically justified to discipline fisheries infrastructure subsidies, as they can reduce fishery

sustainability through augmenting effort levels over the unsubsidized level. The lack of transparency among countries over general and fisheries infrastructure means it is possible only some minor parts, if any, of fisheries infrastructure will be disciplined through the WTO process. The alternative is that the economic costs of fishery infrastructure should be fully cost recovered from the fishing industry at a national level, so as the full costs of fishing effort are used to protect fish stocks from excess fishing effort. This is a resource management question and nations will have to exercise resource management discipline to achieve fishery sustainability, irrespective of the results of the ongoing WTO process.

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ENDNOTES

[i] G/SCM/N/123/EEC, New and Full Notification Pursuant to Article XVI:1 of the GATT 1994 and Article 25 of the ASCM - European Communities, p 49; G/SCM/N/123/EEC/Add.5 - Demark, p. 27; G/SCM/N/123/EEC/Add.24 – Sweden, pp. 33-34.