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SUSTAINABILITY CRITERIA FOR FISHERIES SUBSIDIES

Options for the WTO and Beyond

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SUSTAINABILITY CRITERIA FOR FISHERIES SUBSIDIES

Options for the WTO and Beyond

Prepared by David K. Schorr and John F. Caddy

Commissioned by

The United Nations Environment Programme (UNEP),
Economics and Trade Branch (ETB)

and

World Wide Fund for Nature (WWF)

Geneva, September 2007

Preface

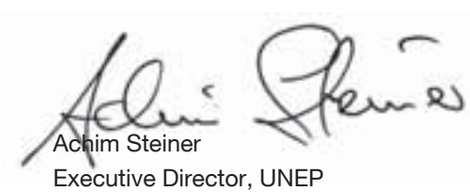
More than a decade after adoption of the 1995 U.N. Code of Conduct for Responsible Fisheries, putting an end to overfishing remains a fundamental global challenge. With perhaps a billion people dependent on fish as a primary source of protein – and with scores of millions fishing or processing fish for a living – the stakes are very high for human communities and marine ecosystems alike.

Among the acknowledged factors contributing to overfishing worldwide is the continued provision of subsidies that encourage the overcapacity of fishing fleets and unsustainable levels of fishing effort. Fortunately, governments around the world are increasingly engaged in both international and domestic efforts to eliminate these inappropriate subsidies, and to redirect public investment towards improved fisheries management. In the World Trade Organization, negotiations have made substantial progress towards a legal prohibition on the most harmful classes of these subsidies. In domestic fora, policymakers are increasingly keen to review and reform their own local practices.

While it is hoped that new WTO rules will sharply curtail the use of the most harmful kinds of fisheries subsidies, it is clear that various forms of public support for the fishing industry will continue for the foreseeable future. It is of highest importance, therefore, for governments to identify policies and practices necessary to prevent these subsidies from inadvertently continuing to drive overfishing. As a general matter, it is well known that subsidies are least dangerous where fish stocks are underexploited, where fishing fleets are well below full capacity, and where fisheries management systems are strong and effective. But governments require more specific and concrete guidelines to inform domestic policies and to develop new WTO rules.

The present paper, jointly commissioned by UNEP and WWF, provides an analysis of the fisheries conditions and management practices governments should consider as prerequisites to the use of subsidies. Given the tendency of many subsidies to encourage overcapacity and overfishing, such prerequisites cannot hope to eliminate the risks altogether. But they can provide both domestic policymakers and WTO negotiators with an important starting point in their efforts to ensure that fisheries subsidies are subjected to meaningful limits and conditions.

Progress towards improved fisheries subsidies policies has been made since 1997, when UNEP and WWF co-hosted the first international symposium to focus on the link between subsidies and fisheries depletion. But the real work of ending harmful fisheries subsidies has just barely begun. We hope that this paper will help stimulate the dialogue – and the actions – that will be required if governments and other stakeholders are to take this work to a successful conclusion.



Achim Steiner
Executive Director, UNEP

James P. Leape
Executive Director, WWF

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A preliminary public draft of this paper was discussed at the UNEP-WWF Symposium on Disciplining Fisheries Subsidies: Incorporating Sustainability at the WTO and Beyond in Geneva on 1-2 March 2007, which was attended by more than 120 participants from national governments (environment, trade, and fisheries agencies), IGOs, NGOs, regional fisheries management organizations, and academic institutions. The chairman's summary is available on Internet.[(a)]

UNEP and WWF would like to thank all the symposium participants for their review and their comments, most of which have been incorporated into the final paper. Particular thanks go to the FAO and the WTO for their participation in the review, presentations and clarifications of issues.

Special thanks are also due to a group of experts who attended a separate session following the UNEP-WWF workshop to review the original draft of this paper. Those experts included Jackie Alder (University of British Columbia), Kevern Cochrane (FAO), Anthony Cox (OECD), Stephen Hall (World Fish Centre), Milton Haughton (Caribbean Regional Fisheries Mechanism), Elizabeth Havice (University of California-Berkeley), Will Martin (former Chair of the Marine Stewardship Council, Senior Fellow WWF), Sebastian Mathew (International Collective in Support of Fishworkers), and Rebecca Metzner (FAO). James Joseph as well as Markus Lehmann and Jihyun Lee of the Convention on Biological Diversity Secretariat provided additional comments on the draft. Charlotte de Fontaubert and Louise Gallagher, working under UNEP auspices, provided valuable ideas into the preliminary drafting process.

The views and opinions expressed within this report, and the accuracy of its data, are, however, those of the authors alone, and do not in any way reflect the opinions or viewpoints of the expert-reviewers or others whose assistance was sought.

For further information, please contact:

Anja von Moltke
Economics Affairs Officer
UNEP Environment and Trade Branch
Tel:+41 (22) 917 8137
anja.moltke@unep.ch

Aimee Gonzales
Senior Trade Policy Officer
WWF-International
Tel: +41 (22) 364 9002
agonzales@wwfint.org

(a) http://www.unep.ch/etb/areas/fisherySub.php
http://www.panda.org/about_wwf/what_we_do/policy/trade_and_investment

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Context and Objectives

Ten years after UNEP and WWF cosponsored the first international symposium on the relationship between subsidies and overfishing, governments around the world are increasingly engaged in efforts to eliminate subsidies that contribute to excess fishing capacity and deplete fisheries resources. In the World Trade Organization, governments are moving towards adopting binding new limits on fisheries subsidies, including an outright ban on certain classes of them. Beyond the WTO, domestic policymakers in many countries have begun reviewing – and some even reforming – their own fisheries subsidies policies.

Perhaps the most fundamental question facing governments reconsidering fisheries subsidies is the scope of the WTO ban they have agreed to adopt – whether, for example, the ban will cover subsidies to land-based fisheries infrastructure or post-harvest processing and marketing, and how far the ban should be relaxed in accordance with the principal of "special and differential treatment" for developing countries.[1]

This paper, however, addresses a separate but related question: how should governments deal with subsidies that fall outside the scope of a new ban in order to ensure that they avoid contributing to overcapacity and overfishing? This question presents itself not only to WTO negotiators, who must decide on the legal conditions and limits that will apply to those fisheries subsidies that remain permitted. In domestic and regional fora outside the WTO, governments will need to confront the inherent risks posed by the continued use of fisheries subsidies, and will need to be proactive in pursuing policies that minimize or eliminate those risks to the greatest extent possible.

It is broadly agreed that fisheries subsidies are least dangerous where fisheries are underexploited, undercapitalized, and well-managed. But it is a more complicated matter to translate these general principles into practical guidelines or binding rules. As elaborated in Section I.B, below, workable criteria for the use of fisheries subsidies need to be sufficiently specific to guide policymakers, while also being widely acceptable and applicable to a variety of circumstances. In the special context of the WTO, criteria must also be consistent with the WTO's institutional mandate and capacities.

The aim of this paper is to assist governments in the identification of criteria for the use of fisheries subsidies, with the dual ambition of helping WTO negotiators craft new international law and providing domestic governments with useful advice as they pursue responsible fisheries subsidies policies. These two ambitions obviously overlap, but are also somewhat distinct. WTO rules cannot embody robust policy advice for fisheries managers, but can only set a few simplified (but important) legal constraints on the "policy space" governments enjoy for fisheries subsidies.

It should be noted that this paper is not intended to promote the use of fisheries subsidies. Many economists and fisheries experts would argue that fisheries subsidies are rarely, if ever, a rational policy alternative. The conditions discussed in this paper should be viewed as necessary – but not necessarily sufficient – for reducing the risk of fisheries subsidies to tolerable levels. Moreover, this paper assumes that many if not most of the most dangerous capacity- and effort-enhancing fisheries subsidies will be subject to the terms of a binding WTO prohibition consistent with the decision taken by WTO Members at the 2005 WTO ministerial conference in Hong Kong.[2]

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1 For a review of these and other issues associated with the scope of an eventual WTO ban, see WWF 2006.

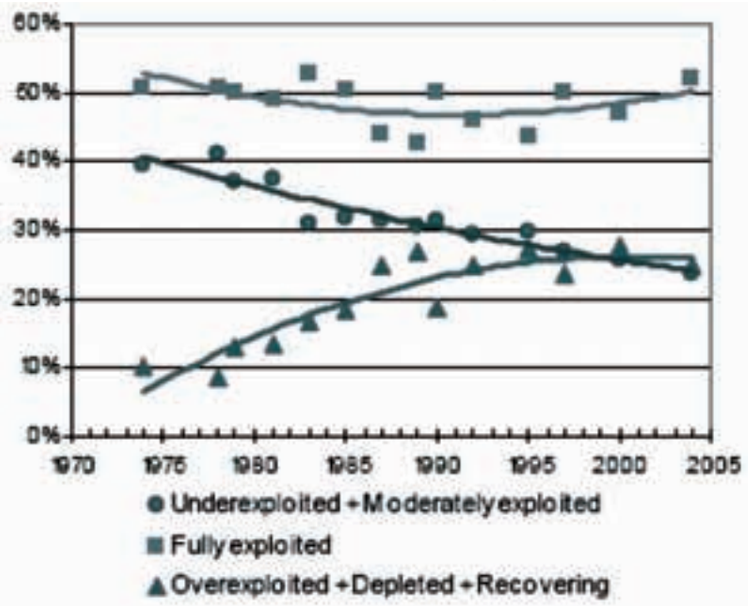
2 See Ministerial Declaration adopted on 18 December 2005, WT/MIN(05)/DEC (22 December 2005), Annex D, 9.

I General Remarks

A. Management and Subsidies: Linked Issues

The disturbing facts of the global fisheries crisis are familiar. As reflected in the analyses of the U.N. Food and Agriculture Organization (FAO), a steady trend towards worldwide depletion of fisheries resources has been underway for decades.

Global trends in world stocks state of exploitation: 1974-2004



Source: FAO 2005, Fig. A2.3 (p. 11)

Fully exploited or overexploited fisheries are now at 74 per cent worldwide, with total production apparently stuck at levels achieved in the 1990s. Meanwhile, demand for fish protein continuing to rise sharply (especially in developing countries), and climate change, toxic pollutants, alien species, and other environmental threats are adding unprecedented stress to marine ecosystems. In short, the fisheries crisis is one of the defining environmental challenges of our time.

Amidst the failure of many governments to manage their fisheries responsibly, harmful subsidies are a secondary but still significant contributing factor. Yet inadequate management and harmful subsidies have an intertwined relationship: bad management compounds the dangers of subsidies; and inappropriate subsidies contribute to bad management.[3] In the early days of debate, some governments adopted half of this equation to argue against WTO negotiations on fisheries subsidies. The problem, they said, was not subsidies, but inadequate management – and that with proper management, subsidies would only alter profits, not deplete resources.[4]

This argument was ultimately unpersuasive to the WTO membership as a whole, and the consensus has now been clearly stated – including by heads of state at the Johannesburg World Summit on Sustainable Development[5] – that management alone cannot solve the fisheries subsidies problem.

3 Beddington, et al, 2007, p. 1714 (citing C. Safina, A. A. Rosenberg, R. A. Myers, T. J. Quinn II, J. S. Collie, Science 309, 707 (2005)).

4 See, e.g., TN/RL/W/11 (Japan, 2 July 2002), 7-9.

5 United Nations, 2002, 31(f).

But it is equally true that the subsidies problem cannot be fixed without attention to management. Unless all subsidies to the fisheries sector are to be broadly and absolutely disallowed – a solution that a few stakeholders seem to consider wise and none seem to consider plausible – it will remain a relevant fact that the more poorly managed a fishery, the more likely subsidies will drive resource depletion. This negative correlation has been the subject of a number of studies, including two papers brought forth by UNEP in 2004.[6]

B. Choosing Good Indicators

1. Meta-Criteria

In drafting sustainability criteria for fisheries subsidies it is important to clarify the objectives. This paper seeks criteria with the following characteristics:

Concrete Specificity – Criteria should be sufficiently concrete and specific to allow unambiguous judgments about whether the conditions they describe have been fulfilled; they must refer to specific facts, not general characteristics or circumstances.

Predictive Power – Criteria should be strong predictors of positive or negative conditions relevant to judgments about the likelihood capacity- or effort-enhancing subsidies will contribute to overcapacity or overfishing (recalling again that no global criteria can reduce this risk to zero);

Acceptability – Criteria should be based on broadly accepted principles rooted in prevailing international norms;

Plausibility – Criteria should require behaviour that is plausible for all stakeholders;

Consistency – Criteria should be at least roughly consistent in practice (for example, criteria for judging acceptable stock health should not depend on assessment practices far exceeding those required for a minimally acceptable management infrastructure); and

Institutional Appropriateness – Criteria should require data and judgments that are appropriate to the institutional context in which the criteria will be applied.

2. Criteria at Three Different Levels of Ambition

The "meta-criteria" set forth above clearly have different implications (and different weights) in different contexts. The need for "institutional appropriateness", for example, imposes much stricter limits on criteria adopted into WTO rules than on criteria for national application; criteria for use by regional fisheries management bodies might lie somewhere in the middle of this spectrum.

In light of the different needs associated with different contexts, it may be useful to distinguish three different levels of ambition at which criteria for fisheries subsidies could be articulated:

6 UNEP, 2004a and 2004b (Porter).

At the top end of the spectrum, it is possible to describe **"best practices"**. These would set out something approaching the ideal conditions governments would achieve in order to minimize to the greatest possible extent the dangers inherent in capacity- or effort-enhancing subsidies. Accordingly, such criteria would have the flexibility needed to take full account of differences in ecological and economic circumstances, governmental capacities, and expert opinions.[7]

At a more universal level, but better suited to policy guidelines than to binding international rules, might be **"minimum recommended conditions"** for fisheries subsidies. These would aim to give relatively standardized but still flexible criteria that governments could be encouraged to apply in their domestic subsidies policies. Criteria such as these might also be appropriate in the context of a voluntary international normative instrument governing fisheries subsidies, were one ever to be developed.

At the most basic level, governments might agree to **"minimum international requirements"** for fisheries subsidies, such as could be incorporated into binding international rules – which, for purposes of this paper, principally means the WTO Agreement on Subsidies and Countervailing Measures (ASCM). Such criteria would give special weight to the institutional context in which they operate.

C. The Special Case of Artisanal Fisheries

As has been evident throughout the fisheries subsidies debate, many governments and other stakeholders feel that "small-scale" or "artisanal" fisheries present a special case for subsidies policy.[8] Some governments have proposed to exempt small-scale fisheries (or even simply small vessels) from new disciplines entirely.[9] Others are seeking exemptions only for a narrowly defined class of "artisanal" fisheries.[10] This paper will not enter too deeply into this debate. For the sake of a thorough analysis it will be assumed that subsidies to small-scale and artisanal fisheries could fall within the scope of new WTO fisheries subsidies disciplines, but that many of them – at least in the case of developing countries – will fall beyond the terms of a new WTO ban. Considerations regarding the application of the criteria discussed below to artisanal fisheries are the subject of Section III.

7 It is beyond the ability of this paper to propose "best practices" in fisheries policy. Nevertheless, the analysis below hopes to offer at least a preliminary identification of some criteria. For want of a better term, these will be presented as "best practices", with all the suitable caveats implied.

8 See UNEP 2005 (Schorr), Appendix A (excerpting WTO submissions referring to artisanal fisheries).

9 See, e.g., TN/RL/GEN/57/Rev.2 (Antigua and Barbuda; Barbados; et al, 13 September 2005). It is not clear whether all signatories to this submission continue to maintain the view that artisanal fisheries should be excluded from WTO disciplines. See TN/RL/W/210, (Barbados, et al, 6 June 2007).

10 See, e.g., TN/RL/GEN/79/Rev.2 (Brazil, 21 April 2006), fn. 3 and accompanying text.

II Technical Discussion

Most analyses suggest that subsidies are especially likely to contribute to overcapacity or overfishing unless:

- The affected stocks are well below sustainable levels of exploitation;
- The affected fleets are well below sustainable levels of capacity; and
- The affected fisheries are subject to effective management.

Many would argue that even where these conditions prevail, subsidies can pose significant dangers. At a minimum, it is clear that the absence of any one of these biological, industrial, or regulatory characteristics puts a fishery at significant risk from capacity- or effort-enhancing subsidies. Accordingly, good policy (and effective WTO rules) will often depend on the application of sustainability criteria in each of these dimensions.

A. Stock-related Criteria

1. The Necessity – but Insufficiency – of Stock-related Criteria

The major instruments establishing international norms for responsible fisheries require governments to assess their fish stocks and maintain them at levels consistent with long-term sustainability.[11, 12] Moreover, the ultimate goal of efforts to reform fisheries subsidies is to prevent them from contributing to the depletion of fish stocks. Clearly, stock-related considerations must be included among the minimum criteria for fisheries subsidies.

Nevertheless, of the three sets of criteria for fisheries subsidies to be discussed, those related to stock conditions are in some sense the weakest guarantors of sustainability. Unlike low fleet capacity or effective management, the presence of a robust stock is not in itself evidence that a fishery faces a reduced threat of depletion. There is ample evidence of how quickly an abundant stock can become overexploited if it is subject to the pressures of overcapacity and inadequate management. In short, evidence of stock health should not be considered an argument in favor of fisheries subsidies, but evidence of depletion (or the absence of evidence of good stock health) should be considered an important, if not decisive, factor weighing against the use of effort-or capacity-enhancing subsidies.

2. The Question of Access to Data

Stock-related criteria obviously will require (or at least encourage) governments to obtain certain kinds of information about their fish stocks. As stated above, this is consistent with prevailing international norms. Yet assessment practices vary in both kind and intensity, with consequent variety in the stock-related information available in specific cases. They also vary widely in cost – a fact often considered important by governments with limited budgetary and human resources.

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11 See, e.g., United Nations Convention on the Law of the Sea ("UNCLOS") Art. 61, which requires each state to determine allowable catches on the basis of "the best scientific evidence available to it" with the goal of maintaining stocks at "maximum sustainable yield" (MSY) levels (as "qualified by relevant environmental and economic factors"); Code of Conduct for Responsible Fisheries ("Code of Conduct"), Art. 7 and esp. Arts. 7.2 (referring to MSY) & 7.4, which specifically calls on states to manage fisheries in accordance with scientific evidence and to "ensure that timely, complete and reliable statistics on catch and fishing effort are collected and maintained..."; Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks ("U.N. Fish Stocks Agreement"), Art. 14 (see also Arts. 5(d), 6.3(d), & 10(d)) (regarding assessment) and Art. 5(b) & Annex II, 2 & 7 (regarding MSY).

12 The term "stock" is not defined in either UNCLOS or the Code of Conduct. The definition can vary in its technical details, but generally refers to a population of fish of the same species located in a given geographical range and sharing the same growth and mortality parameters. (Sparre & Venema, 1998).

Since stock-related criteria depend on data-based conclusions, they will reflect implicit judgments about the assessment practices prerequisite to the use of fisheries subsidies. There is thus a direct link between the choice of stock-related criteria and the assessment component of management-related criteria discussed in Section II.C.1(a), below. That section will briefly review various approaches to assessment in order to propose specific assessment-related criteria. Here is it only necessary to note that such criteria seem possible, even within the parameters of the "meta-criteria" set out in Section I.B.1, above. In short, it is not only consistent with international norms to require governments to undertake basic stock assessments as a prerequisite to subsidies, it also seems reasonable and plausible.

Indeed, according to the FAO, 80 per cent of reported global marine catches come from stocks for which "[s]tock assessment information allowing some estimate of the state of exploitation is available".[13] This information is most frequently collected by governments or government institutes, sometimes with the involvement of non-governmental actors, such as academic institutes or private consultants. At the supra-national level, some regional fisheries management organizations (RFMOs) sponsor fisheries assessments, as do other inter-governmental bodies dedicated exclusively to developing fisheries-related data and/or advice. In short, while there may be legitimate questions regarding the sufficiency of some of this information, the data needed for at least rudimentary stock assessment is available in the majority of commercial marine fisheries, and should be considered potentially available in any fishery where subsidies are intended.

3. "Optimal" Exploitation Levels, MSY, and "Reference Points"

Capacity- or effort-enhancing subsidies obviously should not be employed to expand or maintain fishing beyond (or perhaps even approaching) optimal levels of resource exploitation. But how should such "optimal levels" be defined? A leading candidate for this benchmark is the concept of "maximum sustainable yield" or "MSY". Both the UN Convention on the Law of the Sea (UNCLOS) and the UN Code of Conduct for Responsible Fisheries identify MSY as the overarching objective of fisheries management, as do a number of other international instruments. According to the FAO, MSY can be defined as:

> The highest theoretical equilibrium yield that can be continuously taken (on average) from a stock under existing (average) environmental conditions without affecting significantly the reproduction process.[14]

As suggested in the FAO's terminology for describing stock conditions (Figure 1) MSY is also an element (albeit not the sole basis) of the vocabulary used by the FAO in reporting on the status of world fisheries.[15]

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13 FAO, 2005, p. 6. While this 80% figure likely provides a good indication of the extent of assessments conducted on stocks whose harvests enter commerce, it is almost certainly an overstatement of the percentage of fisheries subject to assessment globally. The 2005 FAO review covered 584 "stock or species groups being monitored on which at least general catch trends are reported." Estimates of the total number of marine stocks being fished worldwide range into the thousands—transboundary stocks alone may number 1000-1500. (Caddy 1997). Many of these unmonitored fisheries are small and localized. Their actual catch levels are difficult to ascertain.

14 FAO Fishery Glossary (http:www.fao.org.fi/glossary).

15 The FAO categories do not, however, depend simply and directly on MSY. In other words, "fully exploited" is not equivalent to "fished at MSY". Rather, analysts may consider other factors, including precaution, in assigning exploitation status to stocks.

Figure 1 – FAO Terminology for Describing Stock Conditions[16]

Underexploited = Undeveloped or new fishery. Believed to have a significant potential for expansion in total production;

Moderately Exploited = Exploited with a low level of fishing effort. Believed to have some limited potential for expansion in total production;

Fully Exploited = Operating at or close to an optimal yield level, with no expected room for further expansion;

Overexploited = Exploited above a level which is believed to be sustainable in the long term, with no potential room for further expansion and a higher risk of stock depletion/collapse;

Depleted = Catches are well below historical levels, irrespective of the amount of fishing effort exerted;

Recovering = Catches are again increasing after having been depleted or a collapse from a previous high.

Proposals at the WTO negotiating table have also included MSY as a measure of stock health in setting conditions on fisheries subsidies.[17]

However, it is important to note that the application of MSY remains subject to significant international technical debate, in several respects.[18] First, where multi-species fisheries are involved, simple reliance on MSY is often impractical. While a theoretical MSY limit may exist for each target species in a multi-species fishery, it is not always possible simply to set overall fishing limits for the fishery by merging in some way the MSY estimates for individual stocks. While MSY may be a useful concept for discussing the health of various elements of a multi-species fishery, it may not be readily available as a benchmark for controlling output from the fisheries in question (although in such cases the MSY limit of the most heavily exploited or most vulnerable stock may be seen as the relevant benchmark).

Second – and more fundamentally – even where MSY can be directly applied to a fishery it has been increasingly viewed as a risky upper limit rather than as the best target for sustainable fishing yields. Advancing science has done little to reduce the inherent uncertainties in calculating MSY (due to both exogenous factors, such as natural stock cycles, and endogenous factors, such as the imprecision of assessment techniques). In fact, as knowledge of fisheries biology has grown, so has an appreciation of the complex linkages among species (and between species and habitats) in marine ecosystems. The emerging trend towards "ecosystem-based management" has raised new challenges for managers, while highlighting the need for strong precaution when establishing target catch levels.[19] A similar need to look beyond simple reliance on MSY can result from the need for "integrated coastal zone management", in which fisheries must be viewed as part of a larger marine and land-based complex of resources, economic opportunities, and environmental threats.

16 FAO 2005, p. 213.

17 See, e.g., WTO Doc. Nos. TN/RL/W/21 (United States, 15 August 2002), 3; TN/RL/GEN/145 (United States, 22 March 2007); TN/RL/W/154 (New Zealand, 26 April 2004), 6; TN/RL/138/Rev.1 (Argentina, 26 January 2007). Regarding the reference to MSY in Brazil's submissions, see fn. 74, below.

18 For a brief review of the history of the MSY principle, and some of the issues surrounding it, see Cochrane 2002, p. 103.

19 A corollary to ecosystem-based approaches – the marine trophic index (MTI) – can simultaneously reveal and help address the limits of single-species stock assessment. Ecosystem approaches often focus on predator-prey relations across the food web. Since historically commercial fisheries have focused on large, high value species, changes in the "trophic level" of fisheries landing may be important indicators of ecosystem (and stock) health. The MTI has been developed to help describe these phenomena. See Watson, et al, 2004.

There may also be solid economic arguments for fishing below the effort corresponding to MSY.[20] In many cases, rents associated with a fishery are maximized prior to reaching MSY, at a point called "maximum economic yield" (MEY). Maximizing the profits of a particular fleet (such as a sport fishing industry, or an export-oriented industry) may sometimes imply "optimal" fishing levels that are even lower still (e.g., in order to preserve the number of highly valued larger individuals within the target stock).[21]

Both the need for precaution and the variety of economically optimal biomass levels have given rise to the terminological distinction between "limit reference points" (LRPs) – which describe the outer limit of optimal yields – and "target reference points" (TRPs) – which set the actual target level desired in a fishery.[22] As discussed in Section II.C, below, robust management systems may depend on the formal use of both types of reference points, in addition to "threshold reference points" (ThRPs) that provide an additional layer of precaution and regulatory control. It should also be recalled that, in today's world of widespread fisheries depletion, actual TRPs and ThRPs often must be set in the context of strategies for stock recovery – i.e., far below the levels possible in healthy fisheries. In such cases, the reference points are those needed to allow stocks to be rebuilt towards the "optimal" TRPs based on MSY.

Of the various limit reference points discussed above, only MSY (suitably adjusted by precaution) most directly relates directly to the goal of maintaining the long-term biological health of target stocks. Given the objective of avoiding subsidized overfishing and depletion, this would seem the right starting point for stock-related fisheries subsidies criteria. But if stock-related criteria are to have the strong predictive power required by the meta-criteria set forth in Section I.B.1, a precautionary approach to MSY will be necessary. In effect, this means treating MSY as a "limit reference point" rather than a "target" reference point.[23] In other words, capacity- or effort-enhancing subsidies should be disallowed or strongly discouraged whereever stocks are not at a given target level above the biomass at MSY equilibrium (how far above is among the topics of the next section).

4. Quantitative vs. Qualitative Indicators

An important question in crafting sustainability criteria for fisheries subsidies is the extent to which those criteria can be quantitative as opposed to qualitative. Where they are appropriate quantitative approaches to fisheries subsidies, quantitative criteria may offer the benefits of precision and clarity. But while quantitative benchmarks may make criteria less ambiguous, they generally involve an unavoidable degree of arbitrariness in the specific numbers they contain.

In the context of rules systems such as at the WTO – where ambiguity can lead to unpredictable outcomes in the course of future disputes – a certain degree of arbitrary quantitative line-drawing

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20 In more accurate technical terms, "below MSY" should be taken to mean fishing so that the biomass of the target stock is greater than at "MSY equilibrium". This distinction is significant because catch yields may be "less than MSY" either where fishing is restrained by economics or regulation or where the target stock is overfished (i.e., has already declined to a biomass below MSY equilibrium).

21 Caddy & Mahon 1995, § 2 & esp. Fig. 2.; see also Hoggarth, et al., 2006, pp. 24-25. There may also be socio-economic arguments (i.e., to maximize employment rather than total rent) in favor of purposely fishing a stock down to less than biomass at MSY equilibrium. This argument is discussed in the context of artisanal fisheries in Section III, below.

22 For technical definitions of these terms, see the FAO's on-line Fisheries Glossary, (http://www.fao.org/fi/glossary/default.asp); for an introductory discussion of reference points, see Caddy & Mahon 1995; see also Cochrane, 2002, pp. 99-106.

23 See Cochrane, 2002, p. 103 ("This requirement of the LOS [to manage to MSY] is equivalent to specifying a limit reference point of BMSY. This is not the same as setting MSY as a target reference point for catch, however, and using MSY as a target reference point has been found to be dangerous.")

may be necessary and desirable. Indeed, WTO disciplines in the ASCM and elsewhere clearly reflect this. For example, the now-lapsed provisions of ASCM Art. 8 (Non-Actionable Subsidies) contained quantitative tests to allow subsidies for assisting "disadvantaged regions" within a Member's territory. In defining the level of economic development to be considered "disadvantaged", Art. 8.2(b)(iii) set out mandatory criteria as follows:

> (iii) the criteria shall include a measurement of economic development which shall be based on at least one of the following factors:
> - one of either income per capita or household income per capita, or GDP per capita, which must not be above 85 per cent of the average for the territory concerned;
> - unemployment rate, which must be at least 110 per cent of the average for the territory concerned;
>
> as measured over a three year period; such measurement, however, may be a composite one and may include other factors.

Obviously, the numerical terms for GDP and unemployment in this provision are somewhat arbitrary. There could be regions that reasonable observers would agree are "disadvantaged" but that do not fit this precise quantitative mold. Conversely, there may be regions whose "disadvantaged" status would be highly debatable but where these statistical tests could easily be met. Still, the drafters of this provision preferred to draw a clear if somewhat arbitrary line rather than leave the definition of "disadvantaged" to the interpretation of WTO dispute panelists. A similar exercise in line-drawing is found in the exemption from subsidy disciplines granted by the WTO Agreement on Agriculture to payments for relief from natural disasters.[24]

It follows that quantitative benchmarks could be used for in fisheries subsidies criteria, where appropriate – including in the context of WTO rules. However, in the case of stock-related criteria the trade-offs between clarity and arbitrariness may be especially discouraging, particularly if the criteria seek to establish static cut-off points based on biomass or catch levels. For example, a quantitative stock-related criterion might look something like the following:

> "Subsidies should be discouraged/disallowed unless there is room to expand catches by at least xx per cent before sustainable catch levels are reached/exceeded";
> or
> "Subsidies should be discouraged/disallowed unless current stock biomass is greater than xx per cent of the biomass at MSY equilibrium".

The numerical terms in these possible criteria would need to be set to ensure an adequate degree of precaution in setting benchmarks of stock health, as discussed above. But, even leaving aside possible debate over how much precaution is necessary, numbers such as these may be unacceptably arbitrary. The margin of safety applicable in any particular case could be heavily affected by the reproductive biology of the stock, the type of fishing, the impacts on the marine habitat, and the existing capacity level of the fleet, among other highly variable factors.

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24 Article 8(a) of Annex 2 to the agreement includes in its definition of "natural disaster" the requirement that an affected agricultural industry suffer "a production loss which exceeds 30 per cent of the average of production in the preceding three-year period or a three-year average based on the preceding five-year period, excluding the highest and the lowest entry."

In short, static quantitative benchmarks may have little application in stock-related criteria (they may make more sense in the context of capacity-related criteria). But this does not mean that quantitative terms in stock-related criteria could never be used. On the contrary, as discussed in Section II.C.1(a), trends in certain bio-economic indicators can provide significant input into qualitative judgments about stock health. Quantitative terms referring to these trends would be much less arbitrary, and thus should be considered plausible elements of stock-related criteria. Accordingly, they are included in specific criteria proposed below.

Before turning to those specific options, however, it is worth asking what kinds of qualitative benchmarks of stock health might be used where quantitative approaches are inappropriate. Here, the FAO's standard vocabulary for describing stock status provides what may be the best answer. As is apparent in Figure 1, the FAO terms are largely focused on the degree to which a stock can withstand expanded production (i.e., increased catches) – precisely the question at issue when capacity- or effort-enhancing subsidies are contemplated. Given the care with which those terms have been crafted, and their widespread acceptance in the arena of international fisheries policy, they seem well fitted for use in the context of fisheries subsidies criteria. Accordingly, FAO vocabulary could be used as the basis of stock-related criteria, including in the context of "minimum international requirements" for use in the WTO.

5. Options for Stock-related Criteria

The analysis so far has sought to establish that stock-related criteria should:

- Be data-based, understanding that the nature of the data required has implications for (or, perhaps, is determined by) the nature of the stock assessments that may be required by management-related criteria;
- Depend on the availability of reliable data about catch or landing levels, and in most cases levels of fishing effort, in fisheries to where subsidies are being considered;[25]
- Be based on MSY, applied using a precautionary approach that accounts fully for both scientific uncertainty in establishing biologically optimal fishing levels and the uncertainties inherent in predicting the impacts of capacity- or effort-enhancing subsidies;
- Avoid setting arbitrary static quantitative benchmarks, while making judicious use of quantitative terms related to trends in key bio-economic indicators; and
- Draw on the FAO stock status vocabulary where qualitative descriptions of stock status are employed.

Based on the foregoing, and on the considerations set out in Section I.B, it is possible to propose some specific stock-related criteria, ranging from WTO-appropriate "minimum international requirements" to "best practices" for implementation by national governments (see summary table, Appendix 1).

At the most basic level, stock-related criteria suitable for use as "**minimum international requirements**" could require that a target stock be declared "underexploited" (or the equivalent) on the basis of a science-based stock assessment using reliable catch or catch-plus-effort data.[26] This would give stock status reports provided by the FAO a presumption of validity. In

25 On this point, see further discussion in Section II.C.1(a), below.

26 While some consideration might be given to using "moderately exploited" as the appropriate benchmark, the FAO definition of this term (see Figure 1) suggests this would be an insufficiently precautionary benchmark.

other words, where such reports indicate that a stock is anything other than underexploited, the burden of proof would lie on governments to show that stocks targeted for subsidized fishing are significantly below MSY biomass, and are able to withstand long-term increases in fishing pressure.

At a higher level of rigor, "**minimum recommended conditions**" could encourage governments to use scientific survey assessment techniques, where appropriate. In addition, stock-related criteria could discourage capacity- or effort-enhancing subsidies where trends in key bio-economic indicators provide indirect evidence of stock depletion. Sample "red flag" benchmarks of this kind could include:

- Landings [over the past three years] are less than [50 per cent] of the average that applied for the best three years on record.
- Landings have declined by more than [X per cent] over the last Y years.
- Average catch rates for a standard commercial vessel category have declined by more than [10 per cent] over the last [5] years.
- Average catch rates for a standard research vessel (or a standard chartered commercial vessel) over a fixed series of stations have declined by more than [20 per cent] over the last [5] years.
- Prices for the product have grown by more than [20 per cent] over last [5] years (allowing for inflation). The price on international markets or the price on domestic markets has risen by more than [20 per cent] over the last [5] years.

While indirect indicators such as these may not be decisive reasons to reject fisheries subsidies, they are serious warning signs to be considered by governments in their domestic policymaking processes. Thus, the absence of these red flags could be considered among the "minimum recommended conditions" for subsidies use.

Finally, "**best practices**" in the application of stock-related criteria by domestic governments could combine the rigors of quantitative benchmarks with the flexibility of fishery-by-fishery regulation, and would do so in the context of a regulatory regime meeting "best practices" standards such as the management-related criteria discussed below. Thus – in addition to using the criteria above – best practices would encourage governments to develop quantitative benchmarks for each fishery proposed to be subsidized, employing both "fishery dependent" data (i.e., data obtained in the course of commercial fishing) and data collected through regular scientific surveys. The criteria would be set in conjunction with formally adopted and precautionary threshold reference points for controlling fishing effort, output, or capacity. For example, if a threshold reference point had been established in a given fishery requiring limits on fishing if a target stock falls below 110 per cent of biomass at MSY equilibrium, then an additional and more precautionary threshold reference point (e.g., 115 per cent of equilibrium) could be established below which capacity- or effort-enhancing subsidies could be disallowed by domestic regulations.

B. Capacity-related Criteria

As detailed in Section II.B.3, below, international norms of responsible fishing require governments to assess and control the capacity of their fishing fleets. Moreover, overcapacity is often a critical link between subsidies and overfishing, as recognized in the explicit mention of overcapacity in the mandate issued by trade ministers at the Sixth WTO Ministerial Meeting in Hong Kong. Thus, there are strong grounds to emphasize capacity-related issues in minimum criteria for fisheries subsidies. But there are also certain technical difficulties that relate to the definition of "capacity" and to the variety of methods used to assess it.[27] An authoritative discussion of the issues surrounding the definition and measurement of capacity can be found in a 2004 FAO publication by J.M. Ward, et al.,[28] which provides the principal basis for the following synopsis.

1. The Definition of Capacity

After significant review and debate, the FAO recently concluded that fishing capacity can best be defined as:

> [T]he amount of fish (or fishing effort) that can be produced over a period of time (e.g. a year or a fishing season) by a vessel or a fleet if fully utilized and for a given resource condition. Full utilization in this context means normal but unrestricted use, rather than some physical or engineering maximum.[29]

The FAO's definition combines two basic approaches to defining fishing capacity: "input-based" and "output-based." **Input-based** measures of capacity look at the factors of production used to harvest fish, such as the number of vessels active in a fishery or the level of effort they apply (days at sea, number of traps deployed, etc.). **Output-based** measures describe capacity in terms of potential levels of production – i.e., in quantities of fish. While input-based measures are often found in the vocabulary of fisheries regulators, output-based measures may make more intuitive sense to the layperson. In talking about the capacity of an automobile factory, for instance, it would be more common to speak of the number of cars it can produce per day, rather than the number of conveyor belts or factory workers employed in the production.

Ward et al. review various uses of input-based and output-based definitions, and conclude that the approaches are "not necessarily incompatible" and possibly complementary.[30] In practice, the definition adopted by the FAO–and the advice promulgated by Ward et al. and other FAO publications–suggests that neither approach can really be excluded. Similarly, the definition of capacity adopted in the context of WTO rules would be strongest if it adopted this dual-basis approach.

It should be noted that the definition of capacity accepted by the FAO is fundamentally different from simplistic definitions of capacity that are sometimes used in discussions of fisheries policy. It is not uncommon for fishing capacity to be equated with one or more rudimentary characteristics of a fishing fleet, such as the number of vessels of a given size or engine power. These crude physical

27 These considerations are also highly relevant to aspects of the WTO debate over the scope of an eventual prohibition on certain fisheries subsidies, where various notions of "capacity" are very much at issue. See WWF 2006.

28 Ward et al., 2004.

29 Id at §1.1, citing FAO 2000, Report of the Technical Consultation on the Measurement of Fishing Capacity. FAO Fisheries Report No. 615 (FIPP/R615(En)).

30 Id., § 1.1.

attributes cannot provide genuine measures of fleet capacity for two reasons. First, in many cases such physical attributes are not reliable indicators of fishing power. For example, vessels of similar size may deploy very different levels of fishing power, depending on the gear they use. Similarly, engine size may be highly relevant in some cases (e.g., trawl fisheries) and less so in others.

Second, these crude physical measures look only at the input side of the capacity equation, and so cannot support a complete definition of fishing capacity. As noted below, however, even simple physical inventories of fleets can play a meaningful role in the management of fishing capacity.

2. Capacity, "Overfishing", and the Need for Strong Precaution

Capacity is a critical variable in any fishery and the most important link between subsidies and overfishing. Even an underexploited fishery is in significant danger if it is the target of overcapacity fleets.

Where subsidies are involved, a fishery that is approaching full capacity is fraught with risk due to the following factors:

- The difficulty of knowing reliably and precisely how much capacity is appropriate or how much capacity is actually in a fishery;
- The consistent trend in fisheries towards technological "creep" (advances in effective capacity), often without much visible change in the configuration or number of licenses of a fleet;
- The frequent practice of replacing old licensed vessels with vessels of higher efficiency;
- The difficulties of effectively controlling capacity growth in many fisheries, and especially in fisheries where illegal fishing is a significant factor;
- The often significant and unpredictable impact of exogenous causes of fish mortality, including both natural ecosystem cycles and anthropogenic threats such as pollution and climate change; and
- The lifespan of fishing vessels that, with regular refitting, may continue to operate for up to 40 years or more, such that the subsidy decision has long-term consequences.[31]

What all this implies is that capacity- or effort-enhancing subsidies to any fishery that is not substantially under-capacity are inherently very risky. Indeed, even at less than full capacity levels, regulatory management of capacity through licensing or other mechanisms is often necessary just to compensate for the tendency of capacity to rise inexorably. All this suggests that capacity-related minimum criteria need to be strongly precautionary if they are to include a margin of safety sufficient to offset the factors listed above. Where such margins are not present, it may even be safer to use subsidies to reduce capacity rather than to increase it.

3. Assessing Capacity: An Unmet International Commitment

Very few fisheries appear to have been the object of formal capacity assessments, and in this sense the practice of capacity assessment lags far behind the practice of stock assessment. This circumstance persists despite repeated commitments made by governments in both binding and voluntary international instruments. The U.N. Convention on the Law of the Sea (UNCLOS), for example, requires coastal states to determine the capacity of their fleets to harvest their EEZ

31 See Caddy 1994.

fisheries.[32] The first objective that the Code of Conduct identifies for the sustainable management of fisheries is to avoid excess fishing capacity.[33] The FAO, for its part, has called the regular assessment of capacity "essential".[34]

Most specifically, in 1999 FAO members adopted an **International Plan of Action for the Management of Fishing Capacity** (IPOA-Capacity) that calls on governments to undertake a series of steps to assess their major national fishing fleets by the end of 2000 and to develop preliminary capacity management plans by 2002. Full completion of the assessment, diagnosis, and management planning of fleet capacity was to have been completed by the end of 2005. Similarly, the IPOA calls on regional fisheries organizations to undertake similar steps for the assessment and management of capacity within their zones of responsibility, on the same timetable as national governments.

To date, only a single "national plan of action" has been submitted to the FAO and posted on its website.[35] This low level of formal compliance with the IPOA-Capacity may in part reflect rational priority-setting on the part of overworked and under-funded national fisheries administrations. Moreover, it may be that de facto attention to capacity management is increasing more than is reflected in formal capacity assessments or management plans. Nevertheless, where subsidies come into play, there are strong and obvious arguments for raising both the priority and formality accorded to capacity assessment and management.

4. Various Approaches to Capacity Assessment

Capacity assessments can be grouped into three basic types that correspond roughly to three levels of data availability. At the lowest level, "**crude fleet inventories**" can provide basic information about the number, size, and physical characteristics (e.g., engine power, hold volume, etc.) of the vessels active in a fishery. As noted above, such inventories do not constitute genuine assessments of capacity since they include no correlation to outputs (e.g., average catch per vessel), and because they may not correctly capture important determinants of fishing power (e.g., type of gear employed). Nevertheless, as long as they are regularly updated, crude fleet inventories can be used to establish important trends in gross levels of fleet capacity, and may be used in combination with other bio-economic indicators to provide rough estimates of current capacity levels.

At the other end of the scale, are various kinds of "**direct capacity assessments**" which are based on scientific survey methods and involve often elaborate techniques to describe the relationship between characteristics of fishing inputs and the resulting level of outputs (catches). Impossibly simplified, a quantitative assessment depends on deriving a formula that says something like:

1 vessel = 10,000 tonnes of fish per year

Unfortunately, however, the relationship between fishing inputs and outputs is rarely so simple. There are multiple relevant inputs (vessel size, vessel shape, engine power, gear type, quantity of gear, fishing technique, etc. – as well as the varying abundance of the target stock), each of which

32 UNCLOS article 62.2.

33 Code of Conduct, Art. 7.2 .2 (a).

34 Ward, et al, 2004, § 1.4.

35 See NPOA-Capacity of the United States, at www.fao.org.

can have very different relevance and weight in different fisheries. Moreover, fishing firms can vary substantially in their efficiency, and random factors (e.g., weather) may need to be considered.

These facts result in both theoretical and practical complications. Theoretically, the equations used to quantify capacity can be enormously complex, while in practice it is impossible to define input-output relationships (such as the relative importance of vessel size or engine power) without extensive empirical observations. A quantitative capacity assessment, then, is a theoretically complex and data-intense business. It is no wonder that, despite their obvious value, only a relatively few have been undertaken.

The third category of capacity assessments – occupying a middle level between crude fleet inventories and direct quantitative assessments – are "**indirect capacity assessments**". Although based on scientific methods, these assessments do not depend on measuring and correlating specific mixes of inputs with output levels. Instead, they look at basic bio-economic conditions in a fishery in order to reach gross judgments about whether a state of overcapacity exists. According to the FAO treatise, indirect indicators that suggest overcapacity include:

- A stock is depleted;
- Catches exceed their target reference points;
- Quotas are used up prior to the end of the fishing season, or the effective fishing season has been progressively reduced from year to year;
- There is a trend towards unused (or "latent") fishing permits (such that vessels with permits remain tied up at dockside for a significant proportion of the total fishing days); or
- There is a declining catch or value per unit effort or expenditure.

It should also be noted that much of the data used for indirect assessments is identical to that used to for indirect assessments of the biological health of a fishery – i.e., data about levels of fishing effort and catches.

Although indirect assessments cannot establish whether or to what degree a fishery is under the optimal capacity level, they can be useful tools for identifying fisheries that are already "overcapacity". Moreover, some indirect indicators can support quantitative estimates of overcapacity (e.g., the ratio of unused or latent fishing permits to total permits).

5. Options for Capacity-related Criteria

Capacity-related criteria are more critical to the proper regulation of fisheries subsidies than stock-related criteria, but may also raise greater challenges. The fundamental dilemma is this: the responsible use of fisheries subsidies requires reliable capacity assessment, yet capacity assessment is technically difficult and remains the exception rather than the rule in fisheries management practice. From this flow three important implications for capacity-related criteria:

- First, they will be more likely than stock-related criteria to require governments to improve current management practices as a prerequisite to employing fisheries subsidies;
- Second, they need to be especially precautionary; and
- Third, they can only be effective in conjunction with strong management-related criteria aimed at ensuring good capacity assessment and management practices (discussed in Section II.C below).

With these considerations in mind, proposals for capacity-related criteria can once again be offered at the three successive levels of ambition identified in Section I.B:

Beginning this time at the top, it is relatively clear what "**best practices**" in capacity-related criteria entail. Before granting capacity- or effort-enhancing subsidies (to the extent they remain permitted by new WTO rules), governments should be encouraged to conduct thorough quantitative capacity assessments based on direct scientific observations of fleet characteristics, fishing practices, and stock conditions. Armed with those assessments, governments would proceed with subsidies only if the total current capacity in a target fishery is far below the full capacity that can be supported by the biological productivity of the resource. While judgments will vary from fishery to fishery, even in accordance with the kind of subsidies contemplated, the margin of safety needs to be generous. A good rule of thumb would be to avoid subsidies unless total current capacity in a fishery is 50 per cent or less of the capacity needed to take the MSY by full time operation. Moreover, subsidies should be discouraged where capacity has been growing in their absence, except possibly in new or very underdeveloped fisheries where historical growth rates have been positive but very low, such that the 50 per cent threshold would not be breached during the economic life of the subsidies.

Given the importance of capacity-related criteria to responsible subsidies policies, the "**minimum recommended conditions**" for subsidies would depart only slightly from the foregoing. In other words, where capacity- or effort-enhancing subsidies are employed, responsible fisheries policy may require something very close to best practices in capacity assessment and management. Minimum recommended conditions would thus require governments to arrive at science-based quantitative estimates of actual and optimal fleet capacity levels, using scientific survey techniques to the greatest extent possible.

The greatest difficulty comes in identifying "**minimum international requirements**" of the type that could be incorporated into WTO rules. Here, the basic question is whether new international rules should require science-based quantitative demonstrations of under-capacity or whether it would be enough to rely on qualitative assessments that suggest the absence of overcapacity. It could be argued that, in conjunction with robust stock-related and management-related criteria, a qualitative demonstration of "not overcapacity" status would suffice.

There are, however, good grounds to reject this view. As noted above, even strong stock-related criteria are insufficient guarantors against overfishing. And, as evident in the discussion to follow, it seems unlikely that WTO rules can ensure that all subsidized fisheries are well-managed. Since both stock-related and management-related criteria will have inherent weaknesses, there is good reason to view strong capacity-related criteria as an indispensable element of effective new WTO rules. Moreover, considering the links between subsidies, overcapacity, and overfishing – and recalling the particularly undeveloped state of capacity management practices worldwide – it can be argued that improvements in capacity assessment and management are among the highest priority goals WTO fisheries subsidies disciplines should aim to achieve.

Accordingly, "minimum international requirements" could require total capacity in a target fishery to be quantified and to be far below full capacity, so that subsidized fishing entails little or no risk of causing overcapacity in the foreseeable future. To be meaningful, the quantitative requirement would demand a "science-based" assessment, although it might be possible to indicate (through

interpretive footnotes or otherwise) that calculations could be based on a combination of crude fleet inventories and indirect bio-economic indicators rather than on specialized data collected through scientific surveys. Given the need for especially strong precaution, the level of total capacity above which subsidies should be avoided or forbidden should be relatively low – e.g., on the order of 50 per cent.

A far weaker – and possibly insufficient – alternative to a rule including a quantitative threshold would be to adopt a highly precautionary verbal formula requiring a declaration of undercapacity supplemented by a requirement that governments track a basket of indirect indicators in order to establish that the "red flags" of an overcapacity fishery are not present. Such indirect "red flag" indicators could include:[36]

- The active fleet capacity in the target fishery is more than 20 per cent higher than active capacity was during the last of the best three years landings on record;
- Quotas are used up prior to the end of the fishing season;
- The effective duration of the fishing season has declined from year to year;
- There are unused (or "latent") fishing permits;
- Catch per unit effort is declining, and/or unit value of the resource (or, where fishing rights are marketable commodities, their value) is rising.

This alternative approach would effectively require little more than indirect evidence of the absence of overcapacity. If this weaker alternative were to be adopted, it could be reinforced through an additional criterion requiring quantitative inventories of fleets (e.g., number, type, size, and power of vessels) to be annually updated, along with strict limits on capacity growth rates established by a licensing body.

C. Management-related Criteria

The foregoing sections have discussed the biological and industrial conditions necessary to help reduce the risks inherent in fisheries subsidies. Unfortunately, however, even underexploited and undercapacity fisheries can be subject to overfishing and rapid depletion in the absence of effective management. Fisheries subsidies thus cannot be responsibly employed without attention to the regulatory condition of target fisheries. But management-related criteria for fisheries subsidies are very different from those that focus on biomass or fleet capacity. "Good management" cannot be quantified, and saying what it is in any given case can raise substantial controversy.

Unlike with stock health and fleet capacity, there is no international obligation on governments to assess the quality of their fisheries management regimes. There is not even an organized process – such as exists at the WTO with regard to national trade policies – for the periodic international review of national fisheries policies, although it is worth noting current international efforts to develop criteria for reviewing the performance of regional fisheries management organizations (RFMOs).[37] In fact, at the moment there appears to be only one globally-focused institution that regularly attempts formal evaluations of fisheries management regimes – the private certification and labeling regime known as the Marine Stewardship Council.[38]

36 This list draws on Ward, et al., 2004.

37 For a recent report on the progress of this effort, see IISD, 2007.

This does not mean, of course, that the tools for assessing management are undeveloped or that assessments of management regimes do not take place. The FAO among others has invested substantial energy into developing instruments for assessing the adequacy of management, of which two relevant examples are a 1996 checklist for management issues associated with implementation of the Code of Conduct,[39] and guidelines adopted in 2005 for the eco-labelling of fish products.[40] Moreover, the FAO and many other institutions are regularly engaged in studying and writing about the effectiveness of specific management regimes all around the world.[41]

But the MSC and FAO guidelines clearly illustrate that assessing good management cannot easily be reduced to a few basic indicators or rules of thumb. Rather, to discover whether a management regime is fully meeting the tests of sustainability (or of "responsible" fishing) requires a detailed, case-by-case investigation. This does not pose any analytic impediment to describing the "best management practices" governments should employ in subsidized fisheries – they are nothing less than the best practices that can be recommended in the absence of subsidies.

But the problem is quite different when it comes to proposing globally applicable minimum preconditions (whether recommended or required) for fisheries subsidies. The practical reality is that simple tests of "good management" meeting all of the meta-criteria set out in Section I.B probably cannot be found.

It follows that management-related criteria for fisheries subsidies (other than at the level of best practices) must aim at something less than identifying "well managed" fisheries. Instead, the following discussion seeks to elaborate criteria for judging whether the minimum elements of good management are in place – or, in the context of WTO rules, whether the most obvious management failures are being avoided.

1. The Basic Elements of Responsible Management

At the outset, management-related criteria should ensure that subsidized fisheries are subject to all the basic necessary elements of a management regime recognized by the Code of Conduct and other international fisheries norms. While the application of those norms can be complex in practice, the rudiments of good management that they require are simple and few. They include:[42]

- Science-based assessments (counting and functional analysis) of fish stocks and fishing fleets;

38 For information on the MSC generally, see www.msc.org. The MSC "Principles and Criteria" set out a general framework for the evaluation of fisheries. These are then filled out in significant detail on a case-by-case basis during the certification process. See, e.g., MSC Assessment Report: The United States Bering Sea and Aleutian Islands Pollock Fishery, 15 February 2005 (available at www.msc.org/assets/docs/AK_Pollock/BSAI_Pollock_Final_Rpt_15Feb05.pdf).

39 Caddy, 1996 (hereafter also called the "FAO Checklist").

40 FAO. 2005a.

41 See, e.g., FAO, 1999.

42 The FAO has proposed a "working definition" of fisheries management that encapsulates these three basic elements: "*The integrated process of information gathering, analysis, planning, consultation, decision-making, allocation of resources and formulation and implementation, with enforcement as necessary, of regulations or rules which govern fisheries activities in order to ensure the continued productivity of the resources and accomplishment of other fisheries objectives."* FAO 1997, p. 7 (emphasis added); see also Cochrane 2002, p. 3; Flewwelling, et al. 2002, p. 8. For other synoptic overviews of the components of responsible management, see, e.g., FAO, 1999 29,. See generally Caddy 1996.

- Appropriate regulatory limits on fishing and fishing capacity (sometimes referred to as "controls");
- Surveillance and enforcement of those limits.

Some observers might argue that this list should be expanded to require other elements, such as "ecosystem-based management"[43] or the involvement of all stakeholders in a participatory management regime.[44] There is little doubt that elements such as these would be widely accepted as "best practices". Other observers, tending in a different direction, might argue that the three aforementioned elements are inapplicable or inappropriate in some small scale developing country fisheries – a significant question that is given separate treatment in the discussion of "artisanal" fisheries, below. But these issues do not significantly detract from the global consensus – reflected in multiple international norms and national management systems – that the three elements outlined above form the backbone of responsible fisheries management.

To be meaningful, management-related criteria for fisheries subsidies need to address each of the three basic elements just outlined. The pressing question is how to do this while balancing specificity and rigor against the need for criteria that can be broadly and fairly applied.

(a) Assessment

The assessment of fish stocks is a necessary step towards several important aspects of fisheries management. As stated in a comprehensive treatise recently published by the FAO:

> Quantitative data are required under the precautionary approach, to evaluate the performance of the fishery in meeting its selected goals and objectives, and to enable managers to make rational decisions "based on the best scientific evidence available".[45]

The quote within this quote serves as a reminder that stock assessment is also a basic requirement of UNCLOS, the Code of Conduct, and other international instruments.[46]

Still, stock assessments are often difficult, expensive, and imprecise undertakings. In order to know how much assessment can be reasonably required by practical criteria for fisheries subsidies (in accordance with the "meta-criteria" set out in Section I.B), a rudimentary review of stock assessment techniques is in order.

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43 Note that ecosystem considerations can be treated as possible sub-elements of stock assessment or of the regulatory establishment of fishing limits. For example, ecosystem considerations may have an impact on stock assessments by identifying inter-species relationships that alter predictions about the reproductive potential a stock. Or they may affect the establishment of fishing limits where it is necessary to maintain a balance between populations of stocks connected by a predator-prey relationship.

44 See, e.g., Flewwelling et al 2002, p. 8, which gives a 4-part description that interposes "participatory management planning" between assessment & setting limits. Many descriptions of good management include the consideration of socio-economic factors/goals. Id.; FAO 1997, § 1.5; Cochrane 2002, esp. pp. 14-16

45 Hoggarth, et al, 2006, p. 51.

46 FAO 2007.

For purposes of this analysis, it may be useful to classify stock assessment methods into five broad categories according to the techniques they employ and the kind of data they require.[47] They are listed in Table 1, in declining order of data-intensiveness (and thus also of cost).

The variety of assessment practices illustrated in Table 1 derives in part from the diversity of fishery ecologies and theories of population dynamics, and in part from the choices of governments regarding the resources they dedicate to assessment activities. In other words, the variety relates both to the kinds of assessments and to the degree of assessment rigor that may be applied in given circumstances. These might be respectively called "technical" and "political" sources of variety.[48]

The most powerful assessment practices combine some scientific surveys on target stocks with at least one of the next two techniques ("analytic methods" and "biomass dynamic modeling"). But many governments lack the financial and/or human capacities necessary to conduct scientific surveys on all of their fisheries. In fact, on a global basis, regular scientific surveying remains the exception rather than the rule. This suggests that such surveys cannot be reasonably required by "minimum international requirements", but could be encouraged by criteria at the two higher levels of ambition.

At the other end of the scale of quantitative rigor, assessments that depend only on economic analyses cannot provide more than general or even supplementary indications of likely stock conditions or trends. Except where economic information points strongly to an advanced state of depletion, these assessments alone would usually be considered to lack strong predictive power. Rapid informal assessments, for their part, are generally considered a sufficient basis for policy only in artisanal fisheries in impoverished developing country settings, where data needed for more quantitative approaches is simply unavailable. These are further discussed in Section III, below.

The remaining two assessment types set out in Table 1 – analytic methods and biomass dynamic modeling – provide the bulk of quantitative assessments carried out today. Moreover, they depend on data much of which is considered basic in the documentation of fishing activities. Biomass dynamic modeling in particular, with its heavy dependence on catch and effort data, seems eminently "plausible", as it involves data whose collection is essentially mandated by prevailing international norms.

The foregoing analysis suggests that stock-related minimum criteria for fisheries subsidies (leaving aside the artisanal case) could be based on basic catch and effort data, and on the analytic methods or biomass dynamic modeling that employ such data. In some cases, it may even be acceptable to base assessments purely on catch data. However, assessments that rely exclusively on catch data can be misleading, particularly where data are available for only a few years. Especially in a new or developing fishery, catches may rise consistently until well past the point of MSY. The "minimum" nature of stock-related criteria that rely on such assessment methods should not be overlooked. As developed below, such criteria should be accompanied by other requirements, such as mandatory transparency in assessment practices.

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47 Various more technically sophisticated approaches to classifying stock assessment methods can be found in Hoggarth, et al., 2006, pp. 43ff, and the treatises cited therein; see also Cochrane 2002, pp. 106-110.

48 A candid review of assessment practices today would suggest that governmental choices about how much assessment "rigor" to support are not always consistent with even a lenient interpretation of the norms of responsible fishing. Thus, to some extent, the variety of assessment practices is a symptom of the undermanagement that underlies the global fisheries crisis.

Table 1 – Various Approaches to Stock Assessment

Name	Method	Data	Result
Scientific Surveys	Primary research, usually by specially equipped scientific vessels, sometimes over multiple years. May include "scientific fishing"[49] as well as technologies such as acoustic surveys and satellite tagging. May also include dissection of fish to study diets and reproductive biology.	"Fishery-independent" data of many types, collected by or under the control of fisheries scientists.	Direct calculations of biomass and target biomass levels.
Analytical Methods	Analysis of size, age, and species composition of catches via biological theories or assumptions about growth, reproduction, and predator/prey characteristics of target species.	"Fishery-dependent" data (i.e., from commercial fishing) on size, age, & species composition of catches (data must be taken at sea, since discards must be included).	Indirect estimates of biomass and/or trends in stock conditions.
Biomass Dynamic Modeling	Analysis of fishing effort and/or catch trends via sophisticated statistical models (also based on biological theories or assumptions) that relate these trends to stock conditions.	"Fishery-dependent" catch and/or effort data (ideally collected at sea, since reliability is lower when data taken at the landing place only)	Indirect estimates of biomass and/or trends in stock conditions.
Economic Analyses	Analysis of costs, revenues, and product prices.	Economic data at various levels of detail (industry-wide to enterprise-specific).	Qualitative estimates of trends in stock conditions and economic performance.
Informal Rapid Assessments	Local surveys, interviews, and observations coupled with expert knowledge of the dynamics and history of specific fisheries. Analysis may be partly or mainly non-quantitative.	Various; often anecdotal; does not include comprehensive data on catches or effort.	Informed expert opinion about basic stock conditions and trends in resources and earnings.

49 Scientific fishing in the most rigorous sense implies fishing with a predetermined spatial and temporal pattern combined with a careful identification and measurement of catches. Often, the gear used for scientific fishing may be different from that used for commercial fishing, for example through the use of nets with smaller holes purposefully intended to collect juvenile fish so that the age structure of a stock can be directly studied. Strictly scientific fishing is not generally combined with commercial operations. However, commercial vessels are sometimes said to engage in "scientific" fishing when their activities are subject to temporal and spatial limits, the catch carefully documented, and the data made available for use in a pre-designed study.

(b) Controls

The establishment of controls on fishing is important, and requires some further elaboration. There is substantial technical discussion and debate over various approaches to setting limits on fishing activities. It is not necessary for the purposes of establishing feasible management-related criteria to enter far into these technical issues, since the criteria sought here are specifically intended to avoid them. What is critical is that minimum criteria for fisheries subsidies would explicitly require controls on fishing to be in place in any fishery where subsidies are intended or applied. Criteria could also require (or encourage) these controls to have certain basic characteristics to promote their effectiveness and their consistency with international norms. For example, criteria could require controls on fishing activities to:

- Be contained in legally binding legislative or regulatory provisions;
- Be part of formal management plans designed to achieve the long-term sustainability of the target fisheries (with or without explicit mention of maintaining stocks at or above MSY equilibrium and/or the need for precaution);

  (NOTE: Particular consideration should be given to requiring controls to include a formal capacity management plan consistent with the FAO International Plan of Action for the Management of Fishing Capacity, discussed in Section IIB.3, above)
- Include clear reference points (see Section II.A.3, above) articulating targets and limits for levels of capacity, and biomass and/or catches;
- Include regulations mandating specific actions to be taken when target reference points (or "threshold reference points") are exceeded.[50]

(c) Surveillance and Enforcement

Criteria related to surveillance and enforcement of controls are also of obvious importance; good management depends in significant part on effective enforcement. Moreover, the Code of Conduct urges, and the Compliance Agreement obliges, governments to undertake effective enforcement of their fisheries management laws.[51] To the extent that fisheries subsidies criteria are intended simply as a guide to domestic policymakers, there seems no particular obstacle to criteria that look directly at the effectiveness of enforcement in target fisheries.

But where criteria are to be adopted into WTO rules – which have sharper teeth than the Compliance Agreement – governments may find it more difficult to accept criteria that subject their enforcement practices to international quality control. The problem is especially pointed when it comes to the actions of developing countries, many of which face real limits on the resources available to police their fisheries effectively, and may confront the impacts of foreign vessels active in their EEZs or operating just outside of it.

Still, trade provisions requiring the enforcement of domestic laws are not without precedent. The WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), for example, not only requires enforcement procedures to be included in domestic Intellectual

50 This seemingly formalistic requirement is receiving increased attention among fisheries management specialists, who point out that breaching target reference points often means a fishery is in trouble—with associated economic and political stressors that can delay or prevent appropriate regulatory responses (such as halting or restricting fishing). Accordingly, legally predetermined actions triggered by breaching targets can be important to effective management. See, e.g., Beddington, et al., 2007.

51 Code of Conduct, Art. 8.2.7; Compliance Agreement, Art. III.8. These provisions contain nearly identical language. The question of effectiveness is the object of some drafting finesse: the term "effective" is used to describe the sanctions associated with the enforcement measures rather than with the measures themselves.

Property Rights (IPR) laws, but also that these provisions permit effective action" against IPR infringements.[52] The TRIPS text goes on to set out significant detail some key operating elements of the required enforcement procedures.[53] Also of interest are the provisions of several U.S. bilateral and regional trade agreements that require parties to enforce their environmental laws effectively.[54] While these precedents are interesting, they are also may be controversial, and are perhaps unlikely to serve as models for binding fisheries subsidies criteria.

Nevertheless, given the importance of enforcement to achieving responsibly managed fisheries, evaluating effective enforcement cannot be left out of "minimum international requirements" for fisheries subsidies. Nor would it seem sufficient for minimum criteria to stop at merely requiring enforcement provisions to exist on paper. Instead, a verbal formula could be adopted that requires enforcement efforts to be reasonable, and to be at least sufficiently effective to prevent a significant pattern of illegal fishing. For some countries, even this relaxed standard might require significant additional resources to be directed at enforcement efforts. Where capacity- or effort-enhancing subsidies are on offer, however, this is perhaps not an entirely unreasonable requirement.

2. Monitoring, Control, and Surveillance (MCS) Infrastructure

Beyond criteria that require management regimes to include the three elements outlined in the previous section, governments should consider adopting criteria could look to the basic administrative apparatus necessary to implement them. Such basic administrative elements of management are sometimes called the Monitoring, Control, and Surveillance (MCS) infrastructure for a fishery, and they are increasingly the focus of international efforts aimed at improving and establishing cooperative links among them.

An excellent example is the maintenance of public **vessel registry information**. Various international instruments – including UNCLOS[55], the Code of Conduct,[56] the IPOA-Capacity,[57] and the U.N. Compliance Agreement[58] – establish a clear norm requiring every government to maintain a registry (or "record") of vessels authorized to fish under their flag, and to cooperate in the sharing and harmonization of registry information. Consistent with these norms, governments have already undertaken significant cooperative efforts to establish international vessel registries. In accordance with the Compliance Agreement, the FAO maintains the High Seas Vessel Authorization Records (HSVAR) database,[59] while the EU administers the international EQUASIS system as part of its vessel safety programme.[60] And currently, efforts are accelerating towards the establishment of a Comprehensive Record of Fishing Vessels (or "Global Record") to be administered by the FAO.[61]

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52 TRIPS Art. 41:1.

53 Id., Arts. 42-49.

54 See, e.g., North American Agreement on Environmental Cooperation (side agreement to the North American Free Trade Agreement), Art. 5:1;

55 UNCLOS Art. 94.2(a). The UNCLOS obligation refers to all vessels of a flag state, and not just fishing vessels.

56 Code of Conduct Art. 8.2.1.

57 IPOA-Capacity 17.

58 FAO, Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (1995), Art. IV. The Compliance Agreement applies only to vessels engaged in fishing on the high seas.

59 See http://www.fao.org/fi/website/FIRetrieveAction.do?dom=collection&xml=compliance-agreement.xml (accessed 4 September 2007).

60 See http://www.equasis.org

61 A key step towards implementation of this system was taken in March 2007, when the FAO's political level Committee on Fisheries accepted a report recommending the establishment of the Global Record, and agreed to convene an expert consultation to begin hammering out the technical details. FAO 2007a, 70. See the related background report, FAO 2007b; see also FAO 2007c, 20.

The Compliance Agreement and HSVAR are of particular interest, since they establish specific information requirements that governments could use as elements of management-related fisheries subsidies criteria.[62]

The prominence of these efforts, and the essential role of vessel registries in tracking both capacity and subsidies, strongly suggests that registration should be required for all vessels active in a subsidized fishery. In addition, criteria could require such national registries to participate in or cooperate fully with any applicable regional or global registry systems.

A second basic element of MCS infrastructure – and a corollary to vessel registration – are **fishing license regimes** that require all vessels active in a fishery to be formally authorized to fish, and that public records of those authorizations be maintained.[63] Here again, international norms already establish that fishing should be subject to mandatory licensing.[64] **Catch documentation** schemes are similarly fundamental to responsible fisheries management. As discussed above, maintaining catch records is the minimum level of data necessary for all but informal methods of stock assessment. Catch documentation schemes have not yet been subject to the same degree of international harmonization and cooperation as vessel registries, but relevant efforts are underway, including a new international consortium for the sharing of fisheries data (the Fishery Resources Monitoring System, or "FIRMS")[65] and the FAO Strategy for Improving Information on Status and Trends of Capture Fisheries.[66] Here again, full participation in these efforts could be an important management-related criterion. Similarly, catch documentation systems should fully satisfy the requirements of any applicable RFMO or other international cooperative instrument (e.g., the catch documentation program for toothfish set up by the Commission for the Conservation of Antarctic Marine Living Resources ("CCAMLR").[67]

Finally, consideration should be given to the extent to which **on-board observers** could be treated as a required element of catch documentation schemes. In the context of WTO rules, this may be a step too far. But for "minimum recommended conditions" or "best practices", the presence of observers could be an important element.

Such basic elements of MCS are clearly very important, and their presence or absence is easily ascertained.

3. Rapid Evaluation of Management Regimes

The criteria discussed in the previous two sections would help ensure that the rudiments of an adequate management regime are in place in a fishery where subsidies are to be utilized. Although significant, this would hardly amount to a guarantee that subsidized fisheries are well managed. Unfortunately, as noted above, criteria sufficient to judge when a fishery is well managed are likely

62 HSVAR, for example, distinguishes between "mandatory", "optional", and "additional" information to be provided by participating governments. The use of these different categories in specific management-related criteria is discussed in Section II.C.5, below.

63 See Code of Conduct Arts. 8.1.1 & 8.1.2

64 See, e.g., Code of Conduct Art. 8.2.2

65 Launched in 2004, FIRMS is an important and ambitious effort to centralize national, regional, and international management-relevant data on fisheries on a global basis. The effort is based on a partnership among international organizations (including RFMOs) and national governments, with the FAO serving as secretariat. For further information, see the FAO website, esp. http://www.fao.org/fi/website/FIRetrieveAction.do?dom=topic&fid=14822 (as of 15 September 2007). See also the report of the most recent FIRMS steering committee, FIRMS 2007.

66 FAO 2003.

67 CCAMLR Conservation Measure No. 10-05 (2006) (available on CCAMLR website, www.ccamlr.org).

to require case-by-case application of detailed indicators, such as those typical of the MSC or of the FAO's checklist for implementation of the Code of Conduct. Such criteria are not necessarily suitable for use in the globally applicable criteria which are the main focus of this paper.

But this does not mean that tools for the evaluation of overall fishery conditions are irrelevant to discussion of fisheries subsidies criteria. On the contrary, since responsible fishing policies generally require that capacity- and effort-enhancing fisheries subsidies be avoided in any fishery that is not truly well managed, such tools are ultimately necessary.

In an effort to steer a course between the inadequacy of rudimentary criteria and the unacceptable complexity of fully mature instruments for assessing fisheries management, it is possible to articulate a set of rudimentary benchmarks to serve as a guide to policymakers seeking a rapid evaluation of the efficacy of their management regime. Such benchmarks could look to bio-economic trends to establish whether some basic warning signs of overfishing[68] or depletion are present. The data required for these benchmarks would be of a kind that is – or should be – readily available in commercial fisheries where subsidies are contemplated. A proposed set of such benchmark indicators is set forth in Appendix 2.

Taken together, benchmarks such as those presented in Appendix 2 can serve as a preliminary scorecard for evaluating the health of a fishery and the strength of its management system. The further elaboration of such an approach could produce a valuable tool for governments in their domestic policies and in establishing benchmarks for comparing management conditions on an international basis. It remains an open question whether it is presently possible to integrate criteria even at this level of intermediate detail directly into binding international rules. One option might be to use them as an illustrative guide wherever rules require information about overall compliance with international norms of responsible fishing.

4. International Fisheries

Note that the foregoing discussion refers mainly to domestic fisheries management regimes. But the analysis applies equally, if not more strongly, to fisheries involving migratory, straddling, or high seas stocks (i.e., any fishery not contained entirely within the territorial waters or EEZ of a single nation). In the case of such international fisheries, responsible management requires international cooperation, without which the criteria outlined above cannot be met satisfactorily. Thus, wherever subsidies affect international fisheries, criteria should require the existence of a binding international management regime, and the criteria articulated here should apply to that regime. In some respects, the criteria for international fisheries would need to be strengthened. For example, MCS on the high seas poses significant logistical hurdles, some of which might be seen to require the use of satellite tracking systems and/or on-board observers for effective surveillance.

5. Options for Management-related Criteria

As evident in the foregoing analysis, the complexities of fisheries management make the identification of management-related criteria for fisheries subsidies a stiff challenge. At the level of "best practices", criteria for using fisheries subsidies would require management regimes to pass the most rigorous and detailed tests available, such as those set forth in MSC guidelines, FAO ecolabelling guidelines, and the FAO checklist for implementing the Code of Conduct.

68 Note that "overfishing" – which is a matter of effort – can occur on a stock that is not yet "overfished".

But where simpler and more broadly applicable criteria are required, the discussion above suggests a three-tiered approach that includes:

1. setting out the basic regulatory elements of a management regime (assessment, control, and enforcement);
2. requiring management regimes to include certain key elements of MCS administrative infrastructure; and
3. employing a set of simplified benchmarks to help inform qualitative judgments about the basic health of the fishery and it's management regime.

Some options within these steps have already been discussed above, and here will only be collected into the three classes of indicators set forth in Section I.B.2 (this time working from the lowest to the highest level of ambition).

With regard to "**minimum international requirements**" (suitable for use in WTO rules) governments could consider adopting criteria that require:

- Science-based stock assessments using reliable catch data or catch–plus-effort data (i.e., assessments that employ "analytical methods" or "biomass dynamic modelling") with data collected for at least three years prior to subsidization, and ongoing annual assessments during the life of the subsidies;
- Science-based capacity assessments that result in quantitative estimates of total fleet capacity (active and latent) in target fisheries, including assessments of trends in capacity for at least three years prior to subsidization, and ongoing annual assessments during the life of the subsidies (but noting that these assessments can be based on indirect indicators rather than full-fledged direct scientific surveys);
- Adoption of a formal management plan for each target fishery, including a capacity management plan consistent with the FAO International Plan of Action for the Management of Fishing Capacity;
- Legally binding precautionary target and limit reference points for both stocks and capacity based on science-based assessments, taking MSY equilibrium as the outer limit of acceptable limit reference points for stock biomass;
- Pre-determined mandatory regulatory responses to be taken in the event target reference points are breached;
- Mandatory registration of all vessels active in the target fishery in a public registry that includes all "mandatory" information required by the HSVAR database,[69] and provision of all requisite information to any applicable international registry system;
- Mandatory licensing of all vessels in the target fishery, detailing their authorization to fish, and maintenance of license information in a public license registry;
- Mandatory reporting of catches or landings by all vessels active in the target fishery;
- Enforcement provisions and procedures sufficient to permit reasonably effective action against illegal fishing activities in the target fishery, and to prevent significant patterns of illegal fishing therein;

69 See fn. 62.

- Enforcement provisions to include mandatory withdrawal and repayment of subsidies received by any vessel found to have engaged in illegal fishing activities; and
- Use of rapid evaluation benchmarks (see Appendix 2) to provide additional information during implementation of rules.

As noted in the next section, in the context of possible WTO rules, the foregoing criteria could be combined with a broad obligation to maintain a management system consistent with the Code of Conduct and related norms. The advantages and disadvantages of such an approach are discussed at that point.

With regard to "minimum recommended conditions" for fisheries subsidies – that is, criteria of the kind that could plausibly be used by national governments or adopted into voluntary or "soft law" international standards of subsidy practice – the criteria just listed could be supplemented and strengthened by adopting criteria that, in addition to the required conditions, encourage:

- Stock assessments to be based on catch data (not only landing data), and to be supplemented wherever possible by scientific surveys of target fisheries and by investigations into ecosystem or coastal zone considerations, including changes in trophic levels of catches[70] and marine environmental productivity;
- Capacity assessments based on fleet inventories and indirect methods to be supplemented by scientific surveys and direct capacity assessment techniques;
- Management plans to include ecosystem-based management and, where appropriate, coordination with integrated coastal zone management plans;
- Vessel registry information to include all "optional" information sought by the HSVAR database;
- Mandatory reporting of catches (including all discards), to be verified by at least partial on-board observer coverage in target fisheries;
- Enforcement procedures to include a public record of enforcement actions; and
- Structured and regular use of rapid evaluation benchmarks (see Appendix 1) as part of ongoing evaluation of fishery.

Finally, with regard to management-related criteria establishing "**best practices**" for fisheries subsidies, only a few specific ideas will be presented here. In general, "best practices" would require governments to implement best management practices across the board in any subsidized fishery. In essence, such fisheries would meet the highest standards for management practices (such as would characterize fisheries warranting certification and ecolabelling).[71] Nevertheless, building on the criteria elements discussed above, it may be useful to suggest that best practices criteria would additionally require:

- Scientific surveys and stock assessments to be conducted on all subsidized fisheries;
- Legally binding reference points to include "threshold" reference points triggering restrictions on subsidies;

70 See fn. 19, regarding trophic levels and the "marine trophic index" assessment tool.

71 A possible conundrum: the presence of subsidies may be viewed as a contra-indication against certification. See, e.g., MSC, Principles and Criteria for Sustainable Fishing (2002), Principle 3, 6; see also FAO 1999, supra fn. 41.

- Vessel registry information to include all "additional" information sought by the HSVAR database;
- Full on-board observer coverage of all vessels active in target fisheries; and
- Enforcement procedures to include independent public review of enforcement actions and effectiveness thereof.

6. The "Simple Reference to International Norms" Approach

As an alternative to spelling out specific criteria such as those just described, some governments have proposed a simple and broad approach that would rely on a single "mega-criterion" requiring subsidizing countries to have in place a fisheries management system in line with the FAO Code of Conduct.[72]

This "simple reference" approach has inherent strengths. The Code of Conduct provides a substantial and growing body of international norms for responsible fishing. The Code itself enjoys a breadth of support and an absence of dissent that is rare even for a "voluntary" agreement. And many of its core elements are replicated in binding international instruments, including the Law of the Sea, the U.N. Stocks Convention, and the U.N. Compliance Agreement, to name a few. Using the Code in establishing minimum criteria – at the WTO or elsewhere – would thus appear to fulfill many of the "meta-criteria" set out in Section I.B.1. Depending on how a blanket reference to the Code of Conduct is interpreted, it could also set a fairly high bar for the management-related prerequisites to the use of permitted fisheries subsidies.

But therein lies the main problem with this approach – it fails to provide specific and concrete guidance, and thus would require substantial interpretation in the course of rule implementation. While the core elements of the Code may be easy to identify, they are not simple to apply.

It might be suggested that this interpretive challenge is manageable. Proponents argue that dispute panels need only consider the narrow circumstances of the case before them, and thus would have an easier time implementing a brought reference to the Code than negotiators would have in seeking to craft more specific minimum criteria. The analysis set forth in the preceding section, however, has hoped to remove some of the difficulty in identifying appropriate criteria for use in "minimum international requirements" fisheries subsidies.

The best approach may simply be to combine all of the above. A rule requiring compliance with the Code of Conduct could be much more manageable if it were accompanied by the other specific management-related criteria proposed in the previous section. Certainly, such a rule could add significant strength to those detailed criteria.

72 See TN/RL/GEN/138/Rev.1 (Argentina, 26 January 2007), proposed article X.3(c).

III Criteria for "Artisanal" Fisheries

As noted in Section I.C, the question has been repeatedly debated whether "small scale" or "artisanal" fisheries should receive special treatment under new WTO rules. For purposes of this paper, the specific question is whether sustainability criteria for subsidies affecting these fisheries should depart from those that apply more generally.

The question is a significant one, because even if the social and developmental needs of artisanal communities require special consideration, artisanal fisheries cannot be considered immune to overfishing and depletion, or to the potential harms of inappropriate fisheries subsidies. Indeed, responsible management is especially important where subsidized fisheries development is intended to alter fishing patterns or transform a fishery's traditional economics. Even where subsidies to artisanal communities may be perceived as necessary to offset competition from subsidized foreign fleets, it is important to ensure that subsidy policies are not used in ways that cause inadvertent environmental or economic harms.

In order to determine what, if any, special accommodations should be made in the minimum criteria for subsidies to artisanal fisheries, it may help to review the basic arguments offered in favor of special treatment. These arguments generally fall into three broad classes:[73]

- First, those arguing that competing national policy goals make proper fisheries management prohibitively expensive for some developing countries;
- Second, those arguing that social policy goals for artisanal fishing communities may be more important than achieving "optimal" fishing practices; and
- Third, those arguing that the techniques of modern, science-based fisheries management are inappropriate for many artisanal fisheries.

The first argument accepts (or at least does not reject) both the goal of MSY and the suitability of science-based command-and-control management techniques, but argues that achieving these goals is prohibitively expensive in some developing countries contexts. The second argument does not necessarily reject "modern" management techniques, but rejects the need to fish within the limits of MSY (e.g., where maximizing employment in a given fishery takes priority over maximizing catch levels or even over maximizing total catch value). The third argument accepts the goal of fishing within the limits of MSY, but rejects science-based command and control management techniques as the best means to achieve that goal in the context of artisanal fisheries.

All three arguments are clearly rooted in the real world experiences of many developing countries. But where fisheries policy includes granting subsidies, it is not certain that they present persuasive reasons for altering sustainability criteria. The first argument, to start with, seems hard to apply where governments have the resources to subsidize increased fishing. If public funds exist to support more fishing pressure, they would seem to exist to support improved data collection and management in parallel.

The second argument – in favor of maximizing employment rather than the biomass of fish or the aggregate income of fleets – seems more compelling,[74] but still ultimately fails where subsidies are

73 See, e.g., Andrew et al 2007; *S&DT in the Fisheries Subsidies Negotiations: Views of the Small, Vulnerable Economies (SVES)*, WTO Doc. No. TN/RL/W/210 (Barbados et al., 6 June 2007), B.iii

74 The argument also has some grounding in the Code of Conduct itself, which refers in Art. 7.2.1 to the objective of achieving MSY "as qualified by relevant environmental and economic factors, including the special requirements of developing countries" This language has already received some attention at the WTO negotiating table (see TN/RL/W/176 (Brazil, 31 March 2005), fn. 2 and accompanying text).

available. Whatever the rationality of purposefully fishing beyond MSY to protect livelihoods,[75] it seems an unnecessary policy in the context of fisheries subsidies. Subsidizing people to fish past MSY would be a "lose-lose-lose" scenario in which subsidies promote overfishing while failing to maximize total industry revenue. If subsidies are available, a far more rational policy would be to grant income supports to people who restrain their fishing effort or leave the industry, thus guaranteeing livelihoods while allowing greater total production of both protein and profits.

The third argument – which accepts the basic goals of responsible fishing but questions the applicability of data-intensive, centralized management techniques – is the most consistent with prevailing international fisheries norms and obligations. It simply insists that the social realities of artisanal communities require flexibility in how responsible fishing practices are defined and implemented – a claim with strong apparent merits.

This "right goals, wrong techniques" argument also has direct implications for the definition of "artisanal" fishing. As discussed in a paper published by UNEP in 2005, the terms "small scale" and "artisanal" have been used with a wide and inconsistent variety of meanings in the academic language of fisheries science, in the formal instruments of fisheries law, and in the course of the WTO fisheries subsidies talks.[76] This paper will restrict itself to the term "artisanal", and will build on the 2005 UNEP paper by adopting the following functional definition focused on precisely those economic, social, and physical characteristics that make artisanal fisheries poor candidates for data-intensive, command and control management regimes:

> "Artisanal fisheries" are fisheries in developing countries consisting of a large number of small, owner-operated vessels using low-tech fishing gear (such as manual net retrieval) in nearby inshore fisheries, whose products are destined for consumption by the fishers' own households or for sale in highly localized markets, and whose poverty, geographic location, traditional social organization, diffuse patterns of fishing and landing, and disconnection from centralized markets make them particularly difficult to manage through data-intensive, command and control techniques.

Fisheries having these characteristics do require special treatment under sustainability criteria for fisheries subsidies. Criteria that require formal stock and capacity assessments or key elements of an MCS system may simply run counter to artisanal realities. The organization of management in these communities needs to be adapted to their social and economic circumstances with more flexibility than a standard checklist of assessment, regulatory, and MCS criteria allows.

Thus, minimum criteria for subsidies to artisanal fisheries need to reflect their condition. This may require a deeper analysis of two aspects:

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75 This is, at best, a risky argument. As noted in Section II.A.3, above, the current trend is towards an increasingly precautionary approach to using MSY as a target reference point. Moreover, even the proponents of this argument agree that fishing intentionally beyond MSY should never be carried to the point of causing irreversible stock depletion. Accordingly, good fisheries management would continue to depend on at least rudimentary stock assessment and mechanisms for controlling capacity and/or effort.

76 UNEP. 2005 (Schorr) pp. 12-18.

- First, what are the precise constraints that limit application of the standard criteria discussed above? Which elements of fisheries administration are most difficult in a given context, and which most plausible?
- Second, are the constraints in question to be considered permanent or temporary (and, if the latter, how rapidly subject to change)? What is the vision for how the fishery will be organized when it achieves a better developed condition, and when is that likely to occur?

These questions in turn imply at least two possible responses to the challenge of attaching minimum criteria to subsidies to artisanal fisheries: adaptation of the criteria to artisanal contexts, and providing for phase-in periods for their application.

These two elements of flexibility for artisanal fisheries could be built into minimum criteria, and into WTO rules, in ways that provide flexibility while still giving priority to public investments in good fisheries management before subsidizing increases in fishing capacity or effort. For example, assuming adoption of a careful and narrow definition of "artisanal fishery":

- Criteria for stock and capacity assessments could be relaxed for a limited number of years to allow the use of non-quantitative informal methods, so long as such informal assessment processes (and their results) are transparent to the public and based as closely on scientific methods as conditions allow;[77]
- If the stock- or capacity-related criteria adopted for non-artisanal fisheries include quantitative benchmarks (such as "fleet capacity less than 50 per cent of capacity needed to harvest at long-term MSY"), these could be relaxed without being discarded by requiring informal assessments to establish explicitly that such conditions likely prevail;
- Criteria related to vessel registries, licensing, and catch documentation could likewise be delayed or relaxed, or even put aside indefinitely if certain other conditions are fulfilled, such as maintaining the local, in-shore character of the fleet, or requiring phase-in of catch documentation to the extend that the fishery moves towards an export orientation.

Ideas such as these obviously require further development. It should be noted that a number of them may entail substantial risks. For example, some experts argue forcefully in favor of quantitative stock assessments methods.[78] The fundamental concept, however, would be that where social conditions genuinely make "modern" approaches to fisheries management inapplicable, the rules would allow appropriate adjustments to – but not elimination of – minimum criteria.

77 Methodologies for the assessment of artisanal fisheries, including so-called "rapid rural assessments", have been a topic of substantial technical discussion. See, e.g., FAO 2005b, Halls, et al. 2005 (esp. Part 5), McGoodwin 2001. These methodologies may depend on informal survey techniques (where "survey" refers to investigations on land based on interviews with partipants in the fishery). Although they may be performed with rigor, the limited and often anecdotal nature of the data on which they depend makes such approaches tantamount to "the subjective assessment of individuals who are in a position to provide an informed judgment." (Ward et al, 2004, § 3.3.2). One review of assessment techniques applicable to tropical fisheries, where small scale operation is often the rule, concludes that true "stock assessments" cannot depend on participant surveys alone, but must include some data on catch or catch and effort. (Sparre & Venema. 1998, p. 348.) Still, while the informal and subjective character of these participant survey assessments makes them less than ideal management tools, they can be of critical importance to the sustainable development of artisanal fisheries. FAO 1999a, pp. 51-52.

78 See, e.g., Hoggarth, et al, 2006, p. 51 ("Quantitative data are required under the precautionary approach, to evaluate the performance of the fishery in meeting its selected goals and objectives, and to enable managers to make rational decisions "based on the best scientific evidence available").

IV Application to the WTO Context

For domestic policymakers intent on using fisheries subsidies – to the extent still permitted under eventual WTO rules – minimum criteria such as those outlined above might offer practical guidance for reducing the attendant environmental and economic risks. They also suggest a path forward for WTO negotiators seeking to craft new fisheries subsidies disciplines in line with sustainable development imperatives. However, the translation of these criteria into binding WTO language requires confronting several legal and institutional issues.

In fact, WTO negotiators face a delicate task. Workable criteria would need to be sufficiently precise to avoid unacceptable ambiguity in WTO rules, while also steering clear of language that is overly specific, lest governments find themselves renegotiating existing international fisheries norms or inadvertently restricting the meaning of legal concepts whose global effectiveness requires an element of flexibility in their interpretation. Similarly, new WTO rules would need to be rigorous, without setting standards that would be unattainable by many WTO members. And they need to be readily enforceable, without creating a system of rule implementation that interferes with the right of member governments to pursue legitimate policies.

These challenges are not unique to the fisheries subsidies talks; every aspect of WTO negotiations shares similar difficulties to some degree. But the interdisciplinary character of the fisheries subsidies question adds a layer of complexity.

A. Legal Considerations

In technical terms, three questions seem relevant to the choices WTO fisheries subsidies negotiators face:

1. What legal effect(s) could be given to criteria for fisheries subsidies that are incorporated into WTO legal texts? At least three possibilities should be considered:

    - A criterion can serve as an element of a dispositive legal test.[79] For example, the right to subsidize could be conditioned (among other requirements) on the registration of all vessels to be subsidized in an open international registry.

    - A criterion can have less than dispositive legal effects, such as shifting or changing the level of a burden of proof. For example, a finding by the FAO that a fishery is overexploited could be presumed true unless proved false by "clear and convincing" evidence.

    - A criterion may have no automatic legal effect, but can serve as a factor to be considered in reaching a dispositive judgment. For example, evidence that fishing quotas have been exhausted prior to season closure for several consecutive years may be considered evidence tending to prove that a fishery is in a condition of overcapacity.

2. What standards and burdens of proof could be associated with minimum criteria? If WTO fisheries subsidies rules are to emphasize sustainability, the basic burden to prove conditions justifying the use of capacity- or effort-enhancing subsidies should fall initially on the

79 A "dispositive" test is one that decides a significant or ultimate legal question.

subsidizing member. But, as just illustrated, burdens of proof can be manipulated within legal tests to give greater or lesser emphasis to particular fisheries-related criteria.

3. Who could adjudicate whether minimum WTO criteria for fisheries subsidies have been met? To what extent should new institutional mechanisms be devised for involving expert intergovernmental bodies such as the FAO in the administration of fisheries subsidies rules? This question is examined further in subsection IV.C, below.

All three of these questions affect not only the eventual function of minimum criteria in WTO rules, but also the choice of the criteria to be incorporated. A flexible approach to the legal effects of minimum criteria – and to the burdens associated with them – may allow a greater range of criteria to enter the rule system. A willingness to involve experts and other authoritative intergovernmental bodies may similarly expand the criteria considered suitable for WTO adjudication.

B. The Need for Comprehensive Criteria

It is possible that perceived difficulties with the availability or reliability of data about the health of fish stocks or the capacity of fishing fleets have contributed to the trend in the WTO negotiations towards proposals that focus only or mainly on the regulatory condition of a target fishery (i.e., the existence of an appropriate management system). As argued above, however, robust criteria for fisheries subsidies would also need to include both stock-related and capacity-related indicators.

Indeed, even the adoption of a purely management-related vocabulary probably could not save WTO adjudicators from the need to examine relevant biological and industrial factors. Good management requires assessment of both stocks and fleets, and so management-related criteria will require that the data produced by such assessments be shown to exist. And where that data reveals fleet overcapacity or stock depletion, there is the strongest possible evidence of a failed management system. It thus seems likely that minimum criteria need to be drawn from all three categories discussed above.

Additionally, since the stringent limits imposed by the WTO's institutional context will sharply reduce the range of potentially useful criteria, effective rules may require negotiators to adopt a "mix and match" approach that draws on the strengths of multiple criteria. Such an approach could, for example, include the following:

- A basic requirement that capacity- or effort-enhancing subsidies be offered only in the context of fisheries that are underexploited and undercapacity;
- A broad requirement that subsidized fisheries be subject to management systems consistent with the UN Code of Conduct for Responsible Fisheries;
- A set of criteria characterizing minimally adequate fisheries management systems, using criteria that either require simple and objective judgments (e.g., whether a vessel registry is in place) or are drafted with standards and burdens of proof that reduce the scope of likely controversy; and
- A separate set of criteria applicable to artisanal fisheries (as discussed above).

A preliminary attempt to provide model WTO language reflecting this approach is set out in Appendix 3 to this paper. To function properly, the language set out in the Appendix would need to be accompanied by new institutional mechanisms, as discussed in the next section.

In addition, it would be hard to overstate the importance of transparency in the administration of rules such as those suggested here. Even the most concrete and detailed approach imaginable will leave room for interpretation and possible obfuscation. Proper transparency would allow all stakeholders to gauge whether criteria for fisheries subsidies contained in WTO rules have been met.

C. Institutional Mechanisms

The proposed language set out in Appendix 3 attempts to employ minimum criteria that are fully suitable to the limits of the WTO's mandate and competence. However, the scope for potential controversy could be sharply reduced, and the quality of WTO adjudications significantly increased, if new WTO disciplines include mechanisms for the involvement of expert individuals and the cooperation of authoritative organizations from the world of fisheries management. For example, asking a WTO panel to decide whether a stock assessment is "science-based" seems analogous to questions WTO adjudicators have already faced under existing WTO law.[80] But such cases, which are likely to turn on contests between partisan experts, have often proved controversial and might seem to stretch WTO decision-makers to the outer edges of their competence. Improved institutional mechanisms could help achieve smoother and less controversial implementation of new fisheries subsidies disciplines.

1. What Role for External Authorities?

When external authorities are invited to make findings of fact or other judgments in the context of WTO adjudication, the input they provide can be given legal effects of at least three kinds:

- The answers given can be binding on WTO panels;
- The answers given can be subject to explicit or implicit "standards of deference"; or
- The answers can have a purely advisory quality.

Although perhaps seemingly radical, the first possibility has precedent within the WTO system. Article XV:2 of the GATT requires the WTO to consult with the International Monetary Fund (IMF) whenever issues concerning monetary policy are at issue in a WTO dispute. Moreover, Article XV:2 states that the WTO shall accept certain determinations by the IMF as legal facts.[81]

At the other extreme, WTO panels routinely receive advisory views in the form of expert testimony, including from non-adversarial experts engaged directly by the panels themselves.
There is, however, little experience within the WTO rule system with formal standards of deference.

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80 In the so-called "Hormone Beef" case (U.S. and Canada vs. E.C.), a core issue was whether the E.C. had, prior to imposing an import ban on certain beef products, carried out a risk assessment as required by the WTO Agreement on the Application of Sanitary and Phytosanitary Measures. To answer that question, WTO adjudicators were drawn into a detailed examination of the nature and the scientific adequacy of procedures that the E.C. claimed did constitute the requisite assessment. See, Report of the Appellate Body, EC Measures Concerning Meat and Meat Products (Hormones), Report No. AB-1997-4, WTO Doc. No. WT/DS26/AB/R (16 January 1998), Part XI (pp. 68 ff.).

81 For a brief survey of such outsourcing mechanisms within the WTO, see Schorr 2004, V.I.4(a).

Much of the controversy over cases such as *Hormone Beef* might be reduced if such standards were clarified.

In the case of institutional mechanisms for applying criteria to fisheries subsidies, the articulation of standards of deference could be very helpful in creating shared expectations by parties and panels alike. For example, if a panel faced a case that raised the question whether a certain study conducted by a Member government was a stock assessment (much as the panel in Hormone Beef had to decide whether certain activities by the EC amounted to a "risk assessment"), a standard of deference might require it to accept the finding of an expert external entity unless that finding was "arbitrary" or (a lesser standard) "unreasonable". In this way, WTO rules would cede substantial responsibility to external experts without abandoning the ultimate right of panels or the Appellate Body to pass judgment.

2. What Kinds of Mechanisms?

Options for creating new institutional mechanisms (along with a few brief comments on them) include:

1. Not creating new mechanisms, but merely urging panels and parties to make good use of the right to experts.

   This option is simple, and requires no innovation within the structures or procedures of the WTO. However, this approach also entails several risks. First, it opens the possibility of contention during disputes over the process for securing expert advice, and leaves the quality of the process open to the uncertainties of each case. Second, it commonly leads to the use of partisan experts, and can draw WTO adjudicators directly in expert argument (as in the *Hormone Beef* case, discussed above). Finally, it leaves the WTO open to criticism for overstepping its mandate.

2. Creating a standing body wholly under the auspices of the WTO, such as a Permanent Group of Fisheries Experts.

   The option of using the existing ASCM's Permanent Group of Experts[82] has already been raised at the negotiating table,[83] and the idea of creating a body with dedicated fish expertise has also been discussed, at least informally. This option has the benefit of creating a standing capacity for expert advice, and thus insulating the WTO process from some of the risks mentioned in the first option discussed above. However, this option has its own risks. First, the creation of a body of fisheries experts within the WTO might be greeted by stakeholders as overreaching into the domain of fisheries policymaking. Second, a standing body lacks flexibility with regard to its membership. It might not include individuals with the necessary knowledge for any given case. Moreover, it could be seen as unrepresentative – for example, if a case involves an international fishery, and the standing body does not include any representative of the relevant RFMO.

82 See ASCM Arts. 4.5 & 24. The PGE is meant as a group of trade law experts, intended to advise on certain elements of the Subsidies Code. Although the PGE has been formed, it has never convened to render advice.

83 TN/RL/GEN/134 (E.C., 24 April 2006), Annex, Art. 4.

3. Creating a soft or hard obligation on panels to consult with relevant IGOs (such as a rule saying "panels shall [where appropriate and useful] consult with any regional fisheries management body with responsibilities for some or all of the fisheries in question").

   This option introduces the idea of outsourcing some judgments of fact to relevant external authorities. As noted above, this again is a concept with some precedent within the WTO system, including e.g., the WTO's relationships with the IMF and the Codex Alimentarius. This option leaves open several questions, however. It is not always clear that external IGOs are prepared to respond to the consultative process this option implies, or even whether a competent IGO exists for the questions raised by a given casee. Moreover, it would be necessary for WTO rules to state clearly how the advice rendered by external IGOs would be used – i.e., what legal weight it would have in the course of disputes.

4. Entering into formal relationships with existing external IGOs (such as FAO or RFMOs) through MOUs to identify the role they may play in advising the WTO on facts within the remit of those IGOs. This could include creating in cooperation with other IGOs a standing body or the framework for creation of ad hoc bodies to serve as an explicit liaison between the WTO and fisheries IGOs (modeled, for example, after the panel created in accordance with the memorandum of understanding between the FAO and the Convention on International Trade in Endangered Species (CITES)).[84]

   This option is the most elaborate, as it would require a separate phase of international (and inter-IGO) negotiations to devise the terms of the formal relationships and the character of any standing or ad hoc bodies to be created. However, especially if coupled with clear rules of deference (which could make findings of the liaison body binding on panels, or advisory), this option seems to offer several possible advantages, including:

   - Sufficient "ownership" by both the WTO and external IGOs;
   - Sufficient independence of the liason body;
   - Balancing flexibility with predictability (especially where a framework for ad hoc bodies is created, in the fashion of the FAO-CITES relationship);
   - Pre-agreement on critical elements of process for potential disputes; and
   - A means of involving multiple external IGOs in a single arrangement body.

Further exploration of these options, and particularly of precedents such as the CITES-FAO panel, presents a potentially productive avenue for future analysis and dialogue.

84 The FAO and CITES have had a nuanced formal relationship for several years in which the FAO – or "ad hoc expert panels" convened under FAO auspices – have provided advice to CITES with regard to CITES general criteria for listing commercial fish on its trade-restrictive appendices, and with regard to specific proposals for the listing of commercial fish. (See FAO 2004, FAO 2007d). The FAO-CITES relationship was formalized by MOU in the autumn of 2006. (See FAO 2006)

V Conclusion

This paper has sought to ascertain whether, from the complex science and policy of fisheries management, a set of relatively simple criteria can be distilled which governments can apply to reduce the risks inherent in the use of fisheries subsidies. Most immediately, the goal has been to contribute ideas of utility to WTO negotiators as they craft appropriate limits and conditions on fisheries subsidies that fall beyond the scope of a proposed new WTO ban.

Accordingly, this paper has laid out biological, industrial, and regulatory criteria for policies designed to reduce the risks associated with the use of fisheries subsidies. In each area, criteria have been articulated at three levels of environmental ambition: “minimum international requirements”, “minimum recommended conditions”, and “best practices”. Specific proposals for criteria in each category have been set out above, and are summarized in Appendix 1.

It may be interesting to note some general implications of the proposals made with regard to the WTO in particular. The “minimum international requirements” proposed would impose new constraints on the freedom of WTO members to subsidize their fisheries. But these constraints would vary significantly from category to category in the degree to which they imply forward-looking policy reforms.

For example, the stock-related “minimum international requirements” discussed in Section II.A (and the assessment practices associated with them) mainly require governments to do what many of them are already doing – and what all are obliged to do by well-established (if imperfectly implemented) international norms. There is little real innovation required by these criteria, even if they might impose some real limits on the number of fisheries eligible for subsidies.

The capacity-related criteria of Section II.B, in contrast, would require many elements of “best practices” in capacity assessment and management to be treated as minimum international requirements. Here, before employing capacity- or effort-enhancing subsidies, governments often would have to undertake significant policy reforms. While all of these reforms are clearly promoted – and arguably even required – by existing international instruments, they are still far from standard practice today. But it may be particularly appropriate to require tangible improvements in capacity management in the context of rules aimed directly at preventing subsidized overcapacity.

Finally, the management-related “minimum international requirements” of Section II.C reflect a difficult compromise. On one hand, they aim only to identify those fisheries in which the most rudimentary tests of adequate management have been met. On the other hand, by highlighting key aspects of fisheries regulation, and then focusing on a number of very specific and concrete elements of management infrastructure, they could result in significant improvements in the administration of fisheries where subsidies are to be used.

Regardless of these differences, all of the criteria discussed above have the potential to improve existing fisheries subsidies policies and practices, even if they are not always sufficient to eliminate the risks posed by fisheries subsidies altogether.

This paper has sought to demonstrate that sustainability criteria for fisheries subsidies can be plausible, solidly rooted in accepted international norms and practices, and tailored for use by national governments as well as in the WTO. It is hoped that the options and technical suggestions outlined here will serve as a starting place for further investigation and dialogue.

References

NOTE: These references do not include official documents, such as treaties and formal submissions to the WTO, which are referenced in footnotes only.

Andrew, et al. 2007. "Diagnosis and management of small-scale fisheries in developing countries", in *Fish and Fisheries*, Vol. 8, No. 3, September 2007, pp. 227-240, Blackwell Publishing.

Beddington, et al. 2007. "Current Problems in the Management of Marine Fisheries", in *Science Magazine* vol. 316, pp. 1713 et seq.

Caddy. 1994. *The age structure of fishing fleets and its relevance for reconstructing past fishery trends and forecasting* (paper presented at Lowell Wakefield Fishery Symposium on "Management strategies for exploited fish populations", Anchorage, Alaska, 21-24 Oct 1992).

Caddy. 1996. *A checklist for fisheries resource management issues seen from the perspective of the FAO Code of Conduct for Responsible Fisheries*, FAO Fisheries Circular. No. 917. Rome.

Caddy. 1997. "Establishing A Consultative Mechanism or Arrangement for Managing Shared Stocks Within the Jurisdiction of Contiguous States", in D. Hancock (ed.), *Taking Stock: Defining and Managing Shared Resources, Australian Society for Fish Biology and Aquatic Resource Management Association of Australasia Joint Workshop Proceedings, Darwin, NT, 15-16 June 1997,* Sydney, Australian Society for Fish Biology: pp. 81-123.

Caddy & Mahon. 1995. *Reference points for fisheries management*. FAO Fisheries Technical Paper. No. 347. Rome.

Caddy & Surette. 2005. *In retrospect the assumption of sustainability for Atlantic fisheries has proved an illusion*. Revs. Fish. Biol. Fisheries 15; 2005, pp. 313-337.

Cochrane (ed.). 2002. *A Fishery Manager's Guidebook. Management Measures and Their Application.* FAO Fisheries Technical Paper. No. 424. Rome.

FAO. 1997. *Fisheries management*, FAO Technical Guidelines for Responsible Fisheries. No. 4. Rome.

FAO. 1999. *Indicators for Sustainable Development of Marine Capture Fisheries*, FAO Technical Guidelines for Responsible Fisheries. No. 8. Rome.

FAO. 1999a. Guidelines for the routine collection of capture fishery data, FAO Fisheries Technical Paper. No. 382. Rome.

FAO. 2003. *Strategy for Improving Information on Status and Trends of Capture Fisheries*, Rome.

FAO. 2003a. *Report of the twenty-fifth session of the Committee on Fisheries, Rome, 24–28 February 2003.* FAO Fisheries Report. No. 702. Rome.

FAO. 2004. *Report of the FAO Ad Hoc Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species*, FAO Fisheries Report. No. 748. Rome.

FAO. 2005. *Review of the state of world marine fishery resources*, FAO Fisheries Technical Paper. No. 457. Rome.

FAO. 2005a. *Guidelines for the Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries*, Rome.

FAO. 2005b. *Report of the FAO/WorldFish Center Workshop on Interdisciplinary Approaches to the Assessment of Small-Scale Fisheries. Rome, 20–22 September 2005*. FAO Fisheries Report. No. 787. Rome.

FAO. 2006. "FAO-CITES agreement promotes sustainable fish trade: Collaborative relationship formalized in MoU", FAO Newsroom release dated 3 October 2006 (available at http://www.fao.org/newsroom/en/news/2006/1000410/index.html).

FAO. 2007a. *Report of the Twenty-Seventh Session of the Committee on Fisheries*. Rome, 5–9 March 2007, FAO Fisheries Report. No. 830. Rome.

FAO. 2007b. *Report on the Development of a Comprehensive Record of Fishing Vessels*, COFI/2007/Inf.12. Rome.

FAO. 2007c. *Report of the Twenty-Second Session of the Coordinating Working Party on Fishery Statistics, Rome – Italy, 27 February-2 March 2007*. Rome.

FAO. 2007d. *Report of the second FAO Ad Hoc Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species. Rome, 26-30 March 2007*. FAO Fisheries Report. No. 833. Rome.

FIRMS. 2007. *Final Report, FIRMS Steering Committee Meeting, Fourth Session, Rome, Italy, 26 February-2 March 2007*, FIRMS FSC4/2007/ Report (available on FAO website).

Flewwelling, et al. 2002. *Recent trends in monitoring, control and surveillance systems for capture fisheries*, FAO Fisheries Technical Paper. No. 415. Rome.

Halls, et al. 2005. *Guidelines for designing data collection and sharing systems for co-managed fisheries, Part 2: Technical guidelines*, FAO Fisheries Technical Paper. No. 494/2. Rome.

Hoggarth, et al. 2006. *Stock assessment for fishery management – A framework guide to the stock assessment tools of the Fisheries Management Science Programme (FMSP)*, FAO Fisheries Technical Paper. No. 487. Rome.

IISD. 2007. "Summary of the Sixth Informal Consultations of States Parties to the UNFSA: 23-24 April 2007", in *Earth Negotiations Bulletin, Vol. 7*, No. 62 (Friday, 27 April 2007), International Institute for Sustainable Development, 2007 (available online at http://www.iisd.ca/vol07/enb0762e.html).

McGoodwin. 2001. *Understanding the cultures of fishing communities: a key to fisheries management and food security*, FAO Fisheries Technical Paper. No. 401. Rome.

MSC. 2002. *Principles and Criteria for Sustainable Fishing*.

Schorr. 2004. *Healthy Fisheries, Sustainable Trade, WWF*.

Sparre & Venema. 1998. *Introduction to tropical fish stock assessment, Part 1 (Manual)*, FAO Fisheries Technical Paper. No. 306 (FAO 1998), p. 2.

United Nations. 2002. *World summit on sustainable development plan of implementation, in Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002*.

U.N. Doc. A/CONF.199/20, p. 24.

UNEP. 2004a. Gareth Porter. *A Matrix Approach to analyzing the resource impacts of fisheries subsidies*.

UNEP. 2004b. Gareth Porter. *Incorporating Resource impact into Fisheries Subsidies Disciplines: Issues and Options*.

UNEP. 2005. David Schorr. *Artisanal Fishing: Promoting Poverty Reduction and Community Development Through New WTO Rules on Fisheries Subsidies*.

Ward et al. 2004. *Measuring and assessing capacity in fisheries*, FAO Fisheries Technical Paper. No. 433/1. Rome.

Watson, et al. 2004. "Mapping Global Fisheries: Sharpening Our Focus" in *Fish and Fisheries*, Vol. 5, pp. 168-77.

WWF. 2006. *The Best of Texts; The Worst of Texts*.

Appendix 1 – Summary of Proposed Criteria

Stock- and Capacity-related Criteria *(see additional details, Sections II.A.5 & II.B.5)*

	Examples of Possible Best Practices	Minimum Recommended Conditions	Minimum International Requirements
Stock-related Criteria	Biomass is known quantitatively with high levels of confidence on the basis of assessments that include scientific surveys; Biomass is significantly above formal science-based precautionary threshold reference points below which additional limits on fishing would be imposed; and Biomass is stable or rising.	Science-based assessments reveal that the stock is "underexploited" (per FAO definition); and Bio-economic data for at least [three] previous years does not reveal any "red flag" trends, such as those listed on p. 13.	Science-based assessments reveal that the stock is "underexploited" (per FAO definition). (Absence of "red flag" bio-economic trends could also be incorporated into WTO rules)
Capacity-related Criteria	Capacity is known quantitatively with high levels of confidence on the basis of assessments that include direct scientific observations of fleet characteristics, fishing practices, and stock conditions; Capacity is far below full capacity (e.g., <50 per cent); and Capacity has been flat or declining (or, in new or very underdeveloped fisheries, has been growing very slowly (e.g., 5 per cent per year) such that the 50 per cent threshold would not be breached during the economic life of the subsidies).	(Same as "best practices", with some possible relaxation of intensity of scientific data collecting)	(Same as "best practices" except that quantitative science-based assessments could rely on crude fleet inventories and indirect bio-economic indicators (see p. 18) rather than dedicated scientific surveys) (for a much weaker alternative, see discussion on p. 19)

Management-related Criteria *(see additional details, Section II.C.5)*

	Examples of Possible Best Practices	Minimum Recommended Conditions	Minimum International Requirements
Assessment	Scientific survey stock assessments to be conducted in all subsidized fisheries, supplementing fisheries-dependent assessments carried out on an ongoing basis; Direct measurement and calculation of capacity through scientific surveys of capacity to be carried out in every subsidized fishery.	Stock assessments to be supplemented wherever possible by scientific surveys and by investigations into ecosystem or coastal zone considerations, including changes in trophic levels of catches; Capacity assessments to be supplemented by scientific surveys and direct capacity assessment techniques.	Science-based stock assessments based on catch data or catch and effort data for at least three years prior to subsidization, and annually during the life of the subsidies; Science-based capacity assessments (may be based on crude inventories & indirect indicators) resulting in quantitative estimates of total fleet capacity and trends in capacity for at least three years prior to subsidization, and annually during life of the subsidies.
Controls	In addition to “recommended” and “required” controls, legally binding reference points to include “threshold” reference points triggering restrictions on subsidies.	In addition to “required” controls, management plans to include ecosystem-based management and, where appropriate, coordination with integrated coastal zone management plans.	Formal management plan in place, including a capacity management plan consistent with the FAO International Plan of Action for the Management of Fishing Capacity; Legally binding precautionary target and limit reference points for both stocks and capacity based on science-based assessments, taking MSY equilibrium as the outer limit of acceptable limit for stock biomass; Pre-determined regulatory responses to be taken in the event target reference points are breached.

Management-related Criteria (continued)

	Examples of Possible Best Practices	Minimum Recommended Conditions	Minimum International Requirements
Enforcement	In addition to "recommended" and "required" conditions, enforcement procedures to include independent public review of enforcement actions and effectiveness thereof.	In addition to "required" conditions, enforcement procedures to include a public record of enforcement actions.	Procedures sufficient to permit reasonably effective action against illegal fishing activities in the target fishery, and to prevent significant patterns of illegal fishing therein; Mandatory withdrawal and repayment of subsidies to any vessel once engaged in (non *de minimis*) illegal fishing activities.
MCS Administrative Infrastructure	In addition to all "required" and "recommended" conditions: Vessel registry information to include " additional" information sought by the HSVAR database; Full on-board observer coverage of all vessels active in target fisheries.	In addition to all "required" conditions: Vessel registry information to include all "optional" information sought by the HSVAR database; Mandatory reporting of catches (including all discards), to be verified by at least partial observer coverage in target fisheries.	Mandatory registration of all active vessels, providing "mandatory" information required by the HSVAR database, and provision of all requisite information to any applicable international registry system; Mandatory licensing of all vessels/ fishers, detailing authorization to fish and license information kept in a public license registry; Mandatory reporting of catches or landings (and effort, where applicable).
Rapid Evaluation (per Appendix 2)	(Used in context of overall detailed evaluation).	Structured use of these or similar benchmarks as ongoing evaluation of fishery.	Rapid evaluation questions could provide additional information during rules implementation.

Appendix 2
Benchmarks for Rapid Overall Evaluations

This "condensed questionnaire" to establish the state of management and exploitation of marine resources was prepared by John Caddy on commission to UNEP and WWF for purposes of this paper. It should be viewed as illustrative, and as a basis for further development.[85]

Characteristics of the fishery for resource A over the last decade	**Yes** (Green)	**Maybe/ partially** (Yellow)	**No** (Red)
OUTPUTS			
1) Landings are still above 50 per cent of the average for the best three years landings on record (FAO Statistics)?			
2) Landings have not continued to decline significantly over the last 5 years?			
3) Catch rates have not declined significantly over the last 5 years (by standard vessel category)?			
4) The fleet capacity utilizing the resource has not grown by more than 10-15 per cent since the second of the best three years landings on record?			
5) Prices for the product on the domestic market of the coastal state have not grown by more than 25 per cent over the last 5 years?			
6) Biological data are collected in port, OR in-port interviews are carried out, OR copies of catch log books are completed and collected by port officials?			
7) The capture of protected species is actively discouraged?			
8) The diversity of resources/habitats is being actively maintained and protected?			
9) Illegal or unreported fishing is being kept under strict control by active at-sea surveillance?			

85 Although exact criteria are not proposed, if scored impartially by persons familiar with the fishery, traffic light criterion (e.g. Caddy and Surette 2005) should return a high percentage of 'Green' responses if the fishery is properly managed. A proportion of 'Yellow' responses can be accepted, but any 'Red' responses should be seen as the basis for urgent improvements.

Characteristics of the fishery for resource A over the last decade	**Yes** (Green)	**Maybe/ partially** (Yellow)	**No** (Red)
INPUTS			
10) Research vessel surveys are carried out at regular intervals?			
11) There is a limited license system in operation that covers all vessels fishing the resource, and an up-to-date registry of active fishing vessels and their characteristics is maintained?			
12) There is a formal system of licence transfers on vessel replacement that ensures that fleet capacity is not increasing?			
13) There is a system of at-sea surveillance of the fleet operation or on-board observers ?			
14) Biologists are employed to evaluate the fishery with at least Masters in Science education ?			
15) A management plan exists for the fishery?			
16) Closed areas or MPAs are in effect? Such areas within the stock range are still unfished or form refugia, nursery areas or spawning areas?			
17) For shared, straddling and highly migratory stocks, there are fisheries agreements or negotiations in course with other users of the resource?			
18) The government fisheries agency meets regularly with local community or fishing industry representatives?			
19) Sports fishing or diving activities are revenue earners on the fishing grounds for the resource?			
20) If there are foreign access agreements, do these specify avoidance of national fishing areas/resources, and are these provisions policed?			
21) Are the provisions of ecosystem management/biodiversity conservation applied?			
22) Is there an integrated coastal area management plan in effect, protecting coastal resources from pollution/unwise developments?			

Appendix 3
Model WTO Language

The following model language assumes that new WTO fisheries subsidies disciplines will include a prohibition that, at a minimum, covers all directly capacity- or effort-enhancing subsidies. This language illustrates one possible approach to minimum fisheries-related criteria for permitting the use of otherwise prohibited subsidies. This language is not comprehensive, and is meant to illustrate how some of the criteria discussed above could be integrated into WTO terms. Some of the options for criteria discussed above are not reflected here (e.g., the use of indirect criteria such as those set forth in Appendix 2 to inform judgments about stock health or fleet capacity), but are not therefore meant to be given lower priority. This model language also does not cover new institutional mechanisms that may be advisable to facilitate the involvement of external fisheries experts and authorities in the implementation of the proposed rules.

ARTICLE [X]
[preconditions based on minimum fisheries-related criteria]

1. The subsidies referred to in paragraph __ [establishing the right to S&DT or other exemptions from a broad prohibition] shall be maintained or granted only on condition that:
   a. All fish stocks affected by subsidized fishing operations are subject to regular science-based stock assessments, and assessments[1] conducted for at least [three] years prior to the use of subsidies provide a reasonable basis to conclude that the target stocks are underexploited.[2]
   b. All fleets affecting the target stocks are subject to regular science-based capacity assessments[3], and assessments conducted for at least [three] years prior to the use of subsidies provide a reasonable basis to conclude that total capacity in the fishery is [substantially less than] [less than [50 per cent] of] full capacity.[4]
   c. Every fishery to be affected by subsidized fishing operations is subject to an effective fisheries management system consistent with the UN Code of Conduct for Responsible Fisheries, in accordance with paragraph 2 of this article.

2. Except in the case of artisanal fisheries, a fisheries management system shall be presumed to fulfill the requirements of paragraph 1.c if [its objectives are consistent with the objectives set forth in article 6 of the UN Code of Conduct for Responsible Fisheries, and]:
   a. it is designed and implemented on the basis of regular science-based assessments of target fish stocks and fishing fleets;
   b. it includes a formal fishery management plan, including a capacity management plan consistent with the FAO International Plan of Action for the Management of Fishing Capacity;

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1 Except in the case of artisanal fisheries, "science-based stock assessments" shall be quantitative assessments based, at a minimum, on regularly collected and publicly documented data about catches or landings. Members are encouraged to use the best available scientific methods for stock assessments, including full biological surveys of target stocks, where appropriate.

2 "Underexploited" shall mean that the biomass of the target stocks is significantly below "maximum sustainable yield" equilibrium levels, such as in a new or developing fishery, and that there is a reasonable basis to conclude that the stock has significant potential for expanded production. A finding or report by the FAO regarding the status of fishery, such as those routinely contained in the FAO's biannual *State of World Fisheries and Aquaculture*, shall be presumed valid in the absence of clear and convincing evidence to the contrary.

3 Except in the case of artisanal fisheries, "science-based capacity assessments" shall, to the maximum reasonable extent, be quantitative assessments based on regularly collected and publicly documented data. Members are encouraged to use the best available scientific methods for capacity assessments, including direct surveys of fleets and stocks, where appropriate.

4 "Substantially less than full capacity" shall mean that the total capacity of all active fleets is significantly below the level necessary to achieve catch levels consistent with long-term "maximum sustainable yield" when fleets are fully employed, and that there is a reasonable basis to conclude that the stock has significant potential for expanded production.

c. it includes legally binding regulations setting precautionary limits on fishing capacity, fishing effort, and/or fishing production on the basis of target reference points designed to maintain populations of harvested species at levels no lower than necessary to produce the maximum sustainable yield, taking into account ecosystem interactions, where applicable;
d. it includes regulations requiring the mandatory withdrawal and repayment of subsidies received by any vessel or enterprise found to have engaged in illegal fishing activities;[5]
e. it requires all vessels active in the fishery to be registered in a national vessel registry (and/or, where applicable, international vessel registries);[6]
f. it requires all vessels active in the fishery to hold a valid fishing license, with such licenses maintained in a public registry;
g. it includes a system for the regular collection of data on catches and/or landings, and all vessels active in the fishery are required to participate in that system;
h. it includes mechanisms for monitoring and enforcement of its regulations, and reasonable monitoring and enforcement activities are regularly undertaken;[7] and
i. it prohibits all vessels and enterprises benefiting from subsidies to seek or receive licenses to fish in, or otherwise to be transferred to, any fishery not meeting all conditions set forth in this article.

3. In the case of an artisanal fishery[8], the requirements of paragraph 1.c shall be deemed to be fulfilled if:
   a. the status of its fish stocks and its fleets are subject to regular investigation by qualified fisheries experts, including through informal, non-quantitative methods, and there is a reasonable basis to conclude that the target stocks are underexploited and the fleets are at substantially less than full capacity;
   b. there is in place a formal plan for the management and development of the fishery which includes the identification of precautionary target reference points for both stocks and fleets designed to maintain populations of harvested species at levels no lower than necessary to produce the maximum sustainable yield, taking into account ecosystem interactions, where applicable;
   c. there are in place, or there are being developed, community-based mechanisms for the control of fishing activities within the fishery;
   d. subsidized increases in fishing capacity or effort are carefully monitored and recorded; and
   e. other government expenditures in proportion to the subsidies affecting the fishery are achieving continuous improvements in the management of the fishery, including through the increased availability of data relevant to the quantitative assessment of its stocks and fleets.

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5 For purposes of this paragraph, illegal fishing activities shall not include de minimis violations of applicable laws or regulations.

6 To qualify as a "national vessel registry" for purposes of this article, the registry must be open to the public and include all types of information considered "mandatory" under the High Seas Vessel Authorization Records (HSVAR) database maintained by the FAO.

7 The existence of laws and administrative mechanisms for the monitoring and enforcement of fisheries regulations shall raise a rebuttable presumption that reasonable enforcement activities are being undertaken. A finding that reasonable enforcement activities are not being undertaken shall require clear and convincing proof of (i) a consistent pattern of illegal activity having biologically [or commercially] significant impacts on the fishery or its surrounding ecosystem or on markets for its products, and (ii) an unreasonable inattention to enforcement activities on the part of public authorities, taking account of economic circumstances, including the economic value of the fishery.

8 "Artisanal fisheries" are fisheries in developing countries consisting of a large number of small, owner-operated vessels using low-tech fishing gear (such as manual net retrieval) in nearby inshore fisheries, whose products are destined for consumption by the fishers' own households or for sale in highly localized markets, and whose poverty, geographic location, traditional social organization, diffuse patterns of fishing and landing, and disconnection from centralized markets make them particularly difficult to manage through data-intensive, command and control techniques.

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Inappropriate subsidies contribute to widespread overfishing and to the distortion of trade in fisheries products. Current negotiations in the World Trade Organization aim to address this problem through binding new subsidies rules. Meanwhile, many governments are working to reform their domestic fisheries subsidies programmes. But some fisheries subsidies will undoubtedly continue to be used for years to come. In this context, a knowledge of the policies and practices that can reduce the risks associated with these subsidies is critically important. This paper seeks to develop "sustainability criteria" for fisheries subsidies to guide both WTO negotiators and domestic policymakers. By examining issues related to the health of fish stocks, the capacity of fishing fleets, and the adequacy of fisheries management regimes, the paper proposes a series of basic tests whose application may allow the risks of fisheries subsidies to be reduced. The aim is to demonstrate that sustainability criteria for fisheries subsidies can be plausible, solidly rooted in accepted international norms, and tailored for use in the WTO as well as in the broader context of national practices.

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United Nations Environment Programme
P.O. Box 30552 Nairobi, Kenya
Tel: ++254-(0)20-762 1234
Fax: ++254-(0)20-762 3927
E-mail: uneppub@unep.org

UNEP

For more information, contact:
UNEP DTIE
Economics and Trade Branch
11-13, chemin des Anémones
CH-1219 Geneva, Switzerland
Tel: +41 22 917 8243
Fax: +41 22 917 8076
Email: etb@unep.ch
www.unep.ch/etb

WWF

for a living planet®

WWF International
Avenue du mont Blanc
1196 Gland
Switzerland
Tel : +41 22 364 9002
Fax : +41 22 364 8219
www.panda.org

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