

Fishing capacity management and IUU fishing in Asia



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Foreword

In response to the recommendations of the 29th Session of the Asia-Pacific Fishery Commission (APFIC) to assist members improve management of their fishing capacity, APFIC Secretariat convened a regional workshop on “Managing fishing capacity and illegal, unreported and unregulated (IUU) fishing in the Asian region in Phuket, Thailand, from 19 to 21 June 2007. This report has been commissioned as a background paper for this workshop to identify the major issues faced by APFIC Members.

The report provides a regional synthesis based on responses to questionnaires sent to 15 countries in the region in addition to the previously available information. These focused on the current status of the management of fishing capacity and how countries in the region are addressing IUU fishing by both national and foreign fleets. The report shows that there were still many fishing overcapacity issues in the region and that some progress to address these issues is being made. This included the formulation of National Plans of Action (NPOAs) on fishing capacity and attempts to assess fishing capacity and implement fishing capacity reduction programme in major fisheries, particularly small-scale fisheries.

At the regional level, fishing capacity in both industrial and small-scale fisheries has continued to rise and production had also decreased in the majority of fisheries for which data were provided, indicating that the problem still pervades in the region. Identified problems include lack of policy and operational tools as a major constraint to solving the problem, with only 50 percent of the major fisheries having management plan. Very weak vessel licensing systems and catch and effort data systems and monitoring, control and surveillance (MCS) capabilities further hamper progress. IUU fishing also remains a major issue in the region, with many Members identifying illegal fishing by both national and foreign fishers in their Exclusive Economic Zones (EEZs) as the main issues.

This background report gives a clear picture of the need for action to address capacity management and IUU fishing in the Asia region.



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Executive summary

The Asian region accounts for about 50 percent of global wild capture fisheries production and about 90 percent of aquaculture production. The sustainable management of these fisheries resources, therefore, is an activity of global importance as well as being critical to countries of the region. However, the history of exploitation of wild fish stocks of the region has been one of sequential overexploitation, open access fisheries and low profitability. Despite this history, there has been a growing recognition in recent years of the need to manage fish stocks for long-term sustainability. This regional synthesis summarizes information, based on responses to questionnaires sent to 15 countries of the region and previously available information, on the current status of the management of fishing capacity and how countries of the region are addressing illegal, unregulated and unreported (IUU) fishing by both national and foreign fleets.

National Plans of Action (NPOAs) on fishing capacity in the region are now more common than in 2002 and some progress has been reported in attempting to assess fishing capacity in major fisheries, particularly small-scale fisheries. In addition, the number of specific capacity reduction programmes undertaken in the region has increased since 2002, again with the emphasis on small-scale fisheries. However, the effectiveness, on a regional scale, of these initiatives is not yet apparent since fishing capacity in both industrial scale and small-scale fisheries has continued to rise in the region and is now, on average, 12.5 percent above 2002 levels. Production has also decreased in the majority of fisheries for which data were provided. A lack of policy and operational tools in the region was highlighted by many countries, with only 50 percent of the major fisheries having management plans. Methods for measuring fishing capacity, such as vessel licensing systems or census data, and catch and effort data systems are often being poorly developed and monitoring, control and surveillance (MCS) capabilities generally inadequate. IUU remains a major issue to be addressed although the recent Asia-Pacific Fisheries Commission (APFIC) “call for action” and the Regional Plan of Action for Responsible Fisheries, signed by 11 countries, may provide a template for regional action and coordination on this.

1. Introduction

Asia is the world's largest producer of seafood, accounting for over 50 percent of global production from wild capture fisheries as well as around 90 percent of global aquaculture production. As such, the management of wild capture fisheries in the region for long-term sustainability is of global significance as well as being of vital national interest to the countries of the region because fishing activities account, in many countries, for a significant proportion of GDP and are often important in supporting large rural populations. Despite this importance, the history of exploitation and management of wild fish resources in the region has generally not been good with stocks often being overexploited both historically and also in recent times (for example, see Butcher, 2004 for a review of the history of sequential overexploitation in the industrial marine fisheries of Southeast Asia and Sugiyama, Staples and Funge-Smith, 2004 for a review of the status of regional fisheries), fisheries that are usually characterized by open access and hence overcapacity and low profitability and weak enforcement of fisheries regulations (see Box 1 for the benefits of better management of fisheries).

However, there has been a growing recognition within the region that the rapid decline in fishery resources over the past thirty to forty years must be curtailed and that there is a need to manage wild fisheries resources for long term sustainability (see, for example, Morgan, 2006). This is being reflected in many countries by an increasing emphasis on measuring and managing fishing capacity and on controlling illegal, unreported and unregulated (IUU) fishing, both by nationals of coastal states and also by foreign fishing fleets.

The extent to which progress has been made by countries of the region in addressing the key issues of overcapacity and IUU fishing was examined as part of a workshop, organized by the Asia-Pacific Fisheries Commission (APFIC) and held in Phuket, Thailand in June 2007. As a background paper to this workshop, this regional synthesis has been prepared to provide information on progress and trends in the region in identifying and implementing actions on the major issues of overcapacity and IUU fishing and to provide an assessment of the effectiveness of these actions. This synthesis relies on information provided directly by the APFIC countries, which was requested from all country delegates as part of the preliminary work undertaken for the workshop. The information is therefore current and provides a snapshot of fishing capacity and IUU issues which has not previously been available.

It is anticipated that the information contained in this regional synthesis will provide the necessary background for identifying the major issues related to management of fishing capacity and IUU fishing and for developing specific action plans at both national and regional level.

Box 1: A required paradigm shift – the benefits of improved management of marine capture fisheries

1. Poor management of fisheries is currently resulting in:
 - Harvesting overcapacities
 - Declining catch per unit of effort
 - Change in catch composition towards short-lived low-value species
 - Non-selective fishing gear types becoming advantageous relative to selective fishing gear
 - A growing intensity of the “race for fish”
 - A proliferation of IUU fishing
 - Technological progress that is targeted on increasing catch in quantity rather than in value
 - Fishers who operate under economically marginal conditions
 - Low-value fish that becomes a critical share of revenue to make ends meet
 - Post-harvest value addition severely impaired
2. Management that is focused on maximizing the economic potential of capture fisheries would result in:
 - Reduced growth and recruitment overfishing and lowered ecosystem impacts
 - Restored species diversity
 - Better quality and higher value of catch
 - Reduced fishing costs
 - Greater net benefits to society at large
 - Potential to redistribute fishery benefits to meet social objectives
 - Greater value addition in post-harvest sector
3. A Global Rent Drain study being undertaken by FAO has shown that, by reducing global fishing effort from the present 13.9 m GRT to 7.3 m GRT, the following would be achieved:
 - Increase in harvest from 85 to 93 million tonnes
 - Increase in fish biomass from 123 to 254 million tonnes
 - Increases in operational profits from the present loss of US\$5.3 billion to a profit of US\$41.6 billion
 - Increase in rents generated from the present zero US\$50.8 billion
4. To achieve this paradigm shift of moving to management which maximises benefits rather than landings, there is a need to:
 - Invest more in fisheries management in order to capture the benefits
 - Change the focus of debate from quantity to value
 - Establish baselines for measuring the economic health of the world’s fisheries
 - Raise awareness through targeting a broader set of national policy-makers and delivering the benefits of the change to major global and regional fora
5. The practical issues that need to be addressed in achieving this paradigm shift in fisheries management are:
 - High upfront economic and political costs versus long-run benefits
 - Low activity and marginal vessels easiest to encourage to exit the fishery
 - Where fishery access cannot be made exclusive through rights-based management regimes, high risk of re-investments
 - Concepts of cost-recovery and payment of resource rentals are hard to sell

Source: Adapted from “Economic considerations in the management of fishing capacity”, presentation by Rolf Willmann at the APFIC Regional consultative workshop on Managing Fishing Capacity and IUU Fishing, Phuket, June 2007.

2. Methodology

Up to date information on fishing capacity and IUU fishing is notoriously difficult to access because much of the information is held within country Ministries and is not often published in media that is widely available. The approach that has been used for this synthesis has been to develop a questionnaire that was sent to each of the APFIC member countries prior to the June 2007 workshop requesting current information on issues related to fishing capacity management and IUU fishing, and how the various countries were dealing with these issues. The questionnaire that was distributed was designed to build on information that was already available, particularly that from previous surveys by FAO in 2003 (De Young, 2006) and information collected from selected countries by the University of British Columbia, Canada, in 2006 (Pitcher, Kalikoski and Ganapathiraju, 2006). To ensure this connection with previous work, the questionnaires requested information on specific fisheries for each country, which were the three largest, by quantity, industrial scale fisheries and the three largest artisanal fisheries. These fisheries were, in most cases, the same fisheries for which countries reported to FAO in 2003 and therefore updated information was gathered on what progress had been made in addressing fishing capacity and IUU issues since that time. While recognizing that initiatives in addressing fishing capacity and IUU fishing had been taken in a number of countries for a large number of fisheries, the questionnaire's concentration on the three largest industrial-scale and artisanal fisheries in each country ensured that the overall scale and impact of actions that had been taken by countries to address these issues were fully taken into account.

The questions within the questionnaire were also specifically designed to gather quantitative data on the extent of fisheries overcapacity and IUU fishing in each country with a clear separation between fisheries in which nationals of the country were the main producers and fisheries that were primarily undertaken by foreign vessels. Questionnaires were sent to 15 member countries of APFIC (ten countries submitted responses). Data from the ten responses has, therefore, been used to develop a regional picture of fishing capacity and IUU issues, while recognizing that the picture is incomplete because of the missing (five countries) responses. As such this review can be considered an ongoing review and a contribution to our overall understanding of the IUU and fishing capacity issues in the region.

In addition to some countries not being able to provide information, a further note of caution should be added in using the available questionnaire responses for any definitive inter-country comparisons regarding fishing capacity and IUU fishing issues. Inevitably, questionnaire responses may be compiled by different personnel in different Government agencies, each with their own individual, and sometimes limited, perspective on the issues being addressed. As such the responses may reflect these individual and/or agency perspectives rather than provide a broader view. This is not a criticism of the diligence with which individuals have provided information for this work but rather an observation that inevitably limits the value of questionnaire responses, no matter where or by whom they are collected.

Analysis of the responses to the questionnaire was, however, undertaken so as to address a number of key questions related to fishing capacity and IUU fishing in the region. These questions were:

A. Management fishing capacity

- Have countries of the region identified fishing capacity issues that require management?
- To what extent have national plans of action to address fishing capacity issues been developed?
- For what parts of the national fishery sector (industrial, marine artisanal and inland) has fishing capacity been assessed?

- What are the legislative and institutional barriers to addressing fishing capacity?
- Do countries of the region have the necessary tools in place to assess and manage fishing capacity and are the tools being used relevant to the issues in the region?
- What methods have been most commonly used in the region to date for capacity reduction?
- Have previous attempts at capacity reduction been successful?
- What progress has been made by countries of the region since 2002 in implanting specific actions to address fishing capacity issues?
- What plans do member countries have to address fishing capacity issues within the next five years?

B. Addressing IUU issues

- What is the extent of IUU fishing in the region and what changes have occurred since 2002? What are the main IUU fishing issues reported by member countries?
- Where are the region's foreign fishing fleets fishing? In other EEZs or on the high seas?
- Do countries of the region control IUU fishing in other countries or on the high seas by their nationals?
- To what extent have national plans of action been developed to address IUU fishing?

3. Fisheries capacity management in APFIC countries

3.1 Have countries of the region identified fishing capacity issues that require management?

Of the ten responses received, nine countries reported that they had identified fishing capacity issues that required management (Table 1)¹. All of the identified capacity issues related to overcapacity in some form or other in specific fisheries (see Box 2 for further information on optimal fishing capacity) and were usually a legacy of open-access arrangements.

Table 1: The current situation in the region in recognizing and taking action on fishing capacity issues

	Capacity issues identified?	NPOA on fishing capacity developed? Date? If No, are there plans to develop an NPOA within the next 5 years?	Steps already taken to reduce fishing capacity?	Percentage of fisheries where capacity has been assessed (a) large-scale industrial (b) artisanal marine (c) inland
Australia	Y	Y – 2001	Y	(a) 75-100 percent (b) 75-100 percent (c) n/a
Bangladesh	Y	Y – 2006	Y	(a) 75-100 percent (b) 25-50 percent (c) 0-25 percent
Cambodia	Y	Y – 2005/08	N	(a) 0-25 percent (b) 50-75 percent (c) 50-75 percent
Indonesia	Y	Y – 2006	Y	No data
Malaysia	Y	Y – to be completed in 2007	Y	No data
Pakistan	Y	N – plan to develop NPOA within 5 years	Y	(a) 50-75 percent (b) 50-75 percent (c) 50-75 percent
Philippines	Y	N – plan to develop NPOA within 5 years	Y (moratorium on the issue of new licenses – reduction by attrition)	(a) 50-75 percent (b) 25-50 percent (c) 25-50 percent
Sri Lanka	N	N – no plans to develop an NPOA within the next 5 years	N	(d) n/a (e) 50-75 percent (f) 25-50 percent
Thailand	Y	Y – ongoing	Y, industrial and artisanal fisheries but not inland	(a) 50-75 percent (b) 25-50 percent (c) 0-25 percent
Viet Nam	Y	N – plan to develop NPOA within 5 years	N	(a) n/a (b) 50-75 percent (c) 0-25 percent

In three industrial-scale fisheries, the identified capacity issues were related to changes in the efficiency of industrial vessels over time, combined with interactions with small-scale fisheries who shared the same stock, rather than significant changes in the number of vessels.

¹ In addition, China has reported (this workshop) that it has identified fishing capacity issues and is managing them.

Box 2: What is ‘Optimal Fishing Capacity’?

1. The ‘optimal fishing capacity’ depends on the management objectives. These can be:
 - Biological/ecological, such as maximum sustainable yield
 - Social such as providing a social safety net or maximizing employment
 - Economic such as maximum profits, perhaps from non-consumptive uses such as Ecotourism.
2. However, these three objectives are not independent. For example, economic objectives (such as improving profitability) can significantly impact on social objectives (such as poverty alleviation) and vice versa.
3. In practice, ‘optimal fishing capacity’ will be that capacity that takes into account all of these objectives. There is therefore no “ideal” capacity that can be applied to all situations – each fishery should define its own objectives and the appropriate fishing capacity to achieve those objectives.
4. Biological objectives are critical since the resource on which the fishery is based is the foundation for other objectives. These biological objectives should be orientated towards ensuring a sustainable fish resource in the longer term. To ensure such sustainability, the biological objectives may need to include ecosystem management issues to ensure that the marine ecosystem upon which the fish resource depends is also protected.
5. Economic objectives are important if the exploitation of the fish resource is to be done in a way that generates profits and economic rent. In unmanaged, open-access fisheries, economic rent is usually near zero and profits from fishing minimal. In such fisheries, particularly if they are small scale, this low profitability can often contribute significantly to poverty.
6. The management of fishing capacity also needs to take into account social issues, both in terms of specific social objectives (such as employment or poverty alleviation) and also the social impacts and appropriateness of implementing management changes.
7. In Asia, defining the objectives of management and of optimal fishing capacity is vital, given the general state of fisheries of being overexploited and with low profitability.
8. The scale of the problem is also significant in Asia. Nearly 88 percent of an estimated 41 m people (or 36.28 m) working full-time or otherwise as fishers in the world are in Asia (FAO 2007). Most of these are employed in small-scale or artisanal fishing.
9. Therefore, solutions to defining management objectives (including optimal fishing capacity) and implementing actions to achieve those objectives should consider the social context in which they are operating. For example, it may not be appropriate to implement management arrangements that stress individual rights and do not fit the collective and cultural ethos of Asian countries.

Source: Adapted from “Scientific evidence – status of resources and optimal capacity” by Derek Staples and presentation “Social implications of capacity reduction” presentation by Chandrika Sharma at the APFIC Regional consultative workshop on Managing Fishing Capacity and IUU Fishing, Phuket, June 2007.

In essence, therefore, the fishing capacity issues that countries have identified relate to the significant problems associated with moving from essentially open-access fisheries (which have been the most common form of fisheries in the region) to some type of limited or restricted entry. However, the first pre-requisites for effective limitation of entry and control of fishing capacity of (1) a method, such as a vessel registration and licensing system or vessel census data, for measuring fishing capacity in all fisheries with associated enforcement and (2) reliable catch and fishing effort information, have often not been met in many countries, particularly for small scale fisheries (see Table 3).

Unless these pre-requisites are addressed, initiatives to address fishing capacity issues may not be successful. Only five countries of eight who reported (63 percent) stated that more than 90 percent of industrial vessels were actually registered while only two countries of nine (22 percent) reported that more than 90 percent of small-scale, artisanal vessels were registered². Vessel registration systems in the region therefore appear generally ineffective and therefore may not be useful tool for the essential measurement of fishing capacity. To implement and measure the impact of any capacity limitation initiative under these circumstances will be extremely difficult, unless either the vessel registration systems are made more robust or alternative measures of fishing capacity (e.g. a regular census of vessels) are adopted. It is likely that the most appropriate tool for measurement of fishing capacity in the region will be different for large-scale, industrial vessels (where vessels registration systems are already reasonably well developed) than for small-scale fisheries where other methods such as vessel census may be more appropriate.

One approach to managing capacity reported by some countries was the imposition of a ban on the issue of new vessel licenses and to reliance on attrition to reduce the numbers of vessels in a fishery. However, unless this is accompanied, at least, by a robust vessel registration process and good control and surveillance (both of which are often lacking), such an approach is unlikely to be effective in reducing fishing capacity, since the most likely result would simply be an increase in the number of unregistered vessels.

Conclusion: *The vast majority of countries of the region have now recognized fishing capacity as an issue that requires management and that there is a need to move from open access fisheries to some type of restricted or controlled entry. However, the essential pre-requisites for restricting or controlling entry (particularly in small-scale, artisanal fisheries) of enforceable vessel and fisher registration systems and fishing effort data collection systems are not yet in place in many countries and therefore it is likely that initiatives to address fishing capacity issues will not be successful. Moreover, the common absence of these registration and data collection systems may also mean that measuring the effectiveness (if any) of capacity-reduction initiatives will be extremely difficult.*

3.2 To what extent have national plans of action to address fishing capacity issues been developed?

Of the ten responses received, six countries have already developed NPOAs to address fishing capacity with a further three countries planning to develop these within the next five years (Table 1). Several of these NPOAs have been developed within the last few years (Table 2). Unfortunately, copies have not been provided to FAO, and casts some doubt on the accuracy of reporting on this item. It suggests that the questionnaire approach and differences in interpretation of what constitutes an NPOA may over state the extent to which NPOAs have actually been developed. An example of this is a country response to a questionnaire in 2003 that an NPOA had been developed, but a more recent response indicating that it now has no NPOA and has no plans to develop one.

Table 2 provides information, based on responses from the questionnaires, as to how activity in the development of NPOAs on fishing capacity has changed since 2002. In the current survey, 66 percent of countries stated that they had already developed an NPOA on fishing capacity, with a further 25 percent stating they were planning to develop one within the next five years. This is a marked improvement over the situation in 2002 where only 40 percent of countries stated that they would meet a 2005 deadline for having an NPOA on fishing capacity in place. Table 2 also

² The measurement of fishing capacity in small-scale fisheries is a particular problem in Asia, given the large number of vessels and their wide distribution. The methods used to measure fishing capacity in such fisheries (for example, by regular census methods) may be quite different from that used to measure fishing capacity in industrial fisheries, such as robust and enforceable vessel licensing and registration systems.

Table 2: Reported progress in developing National Plans of Actions on fishing capacity and reducing fishing capacity

	NPOA on fishing capacity?	Three largest industrial fisheries – steps taken to reduce fishing capacity?	Three largest artisanal fisheries – steps taken to reduce fishing capacity?
2003	40 percent of countries	31 percent of fisheries	16 percent of fisheries
2007	66 percent of countries have developed NPOAs. A further 25 percent have plans to develop NPOA within 5 years	36 percent of fisheries	33 percent of fisheries

demonstrates that practical implementation of capacity reduction measures has been undertaken in 33 percent of small-scale fisheries (see Box 3 for a summary of small-scale fishers views on fishing capacity and IUU issues), compared with only 16 percent in 2002, although the proportion of large industrial fisheries that have been the subject of capacity reduction initiatives has remained about the same. In addition to the progress on NPOAs reported, China has also developed a NPOA on reducing fishing capacity through vessel buy-back schemes (Pitcher, Kalikoski and Ganapathiraju, 2006).

Conclusion: Significant progress has been made in the region since 2003 in developing national approaches to the management of fishing capacity. This has *included actual implementation of capacity reduction programmes, particularly in small-scale fisheries*. The effectiveness of these capacity reduction programmes will be further examined below. However, in some countries there remains the question of what has actually been done in support of implementation of the NPOA and whether such NPOAs are seen as just paper documents or are used to guide and initiate concrete actions to address fishing capacity.

3.3 For what proportion of fisheries (industrial, marine artisanal and inland) has fishing capacity been assessed?

Of ten countries that responded, eight were able to give estimates of the proportion of their fisheries that had been the subject of capacity assessment. The results are shown in Table 1 and Figure 1. From these limited figures, it appears that attention has generally been paid to the assessment of fishing capacity in industrial fisheries (where they exist) with capacity having been assessed in an average of 62.5 percent of major industrial fisheries in the respondent’s countries. Although progress has generally been made since 2002 (see above), artisanal fisheries have received the most attention in recent years (see below), although capacity has still been assessed in only 54.7 percent of major artisanal fisheries. Inland fisheries have not received very much attention at all with fishing capacity having been assessed in only 33.1 percent of major inland fisheries. In 2002, countries³ reported that they had a process for measuring fishing capacity in 71 percent of their three largest industrial fisheries although fishing capacity was measured in only 33 percent of the three largest small-scale artisanal fisheries. While there was no data collected for inland fisheries during the 2002 survey, capacity measurement may be difficult in many inland fisheries of the region⁴.

Conclusion: The assessment of fishing capacity appears to have been given some attention since 2003 with most countries reporting that fishing capacity has been assessed in the majority of industrial fisheries and about half of small-scale, artisanal fisheries. However, little attention has

³ A larger sample of countries, consisting of all APFIC members.

⁴ Also, there are relatively few examples of industrial inland fisheries so that most inland fisheries in the region are artisanal in nature which, generally, have not been addressed so far as capacity measurement is concerned.

Box 3: What the fishers are saying about fishing capacity and IUU fishing in Southeast Asia

1. The fisheries of Southeast Asia are characterized by:
 - Complex coastal development and management
 - Conflicts among various aquatic resource users
 - A wide range of projects/initiatives and cooperation on fisheries at various levels
 - Well recognized signs and different extent of overfishing, declined fishery resources, overcapacity, destructive fishing, IUU fishing
2. According to a study by SEAFDEC (this workshop), the fishers opinions are that:
 - There is unfair competition between large-scale and small-scale fishers
 - Fisheries conflict is a symptom but not a root cause of poor management – overcapacity & IUU fishing has resulted from ineffective management framework
 - Laws, regulations and rules are complicated and their enforcement is poor
 - There is a lack of an access regulatory system to provide certainty of access
 - Institutional arrangement are poor – there are too many agencies chasing fishers
 - There is a lack of clear management policies and frameworks that are clear, coherent, are updated regularly and have continuity.
3. As a result, there has been:
 - A “Back Fire” of management as a result of shifting problems from long-term objectives to achieving short-term gains
 - Offshore fisheries development
 - A failure to identify acceptable alternative livelihoods for displaced fishers who are willing to leave a fishery
 - An undermining of social structures by management attempts although the community role and involvement is usually well recognized
 - Some good individual initiatives but there is a lack of continuity and scaling up
4. The key regional directions that are therefore required are:
 - “Indicators” – a better tool for understanding of and communication about the status and trends of tropical fisheries
 - Co-management and rights-based fisheries (introduction of group-user rights and improvement of licensing systems)
 - “Freezing” and control number of fishing vessels
 - Strengthening existing regional collaborative framework to support national management, perhaps by the establishment of a Regional Scientific Advisory Committee for Fisheries Management in Southeast Asia.
 - Such a body could coordinate data and information, undertake and commission regional strategic research and package recommendations in the form of policy brief and guidelines
5. The role of SEAFDEC and APFIC would need to be defined in contributing to these initiatives.

Source: Adapted from “Managing fishing capacity and IUU fishing in Asia” presentation by Suriyan Vichitkarn at the APFIC Regional consultative workshop on Managing Fishing Capacity and IUU Fishing, Phuket, June 2007.

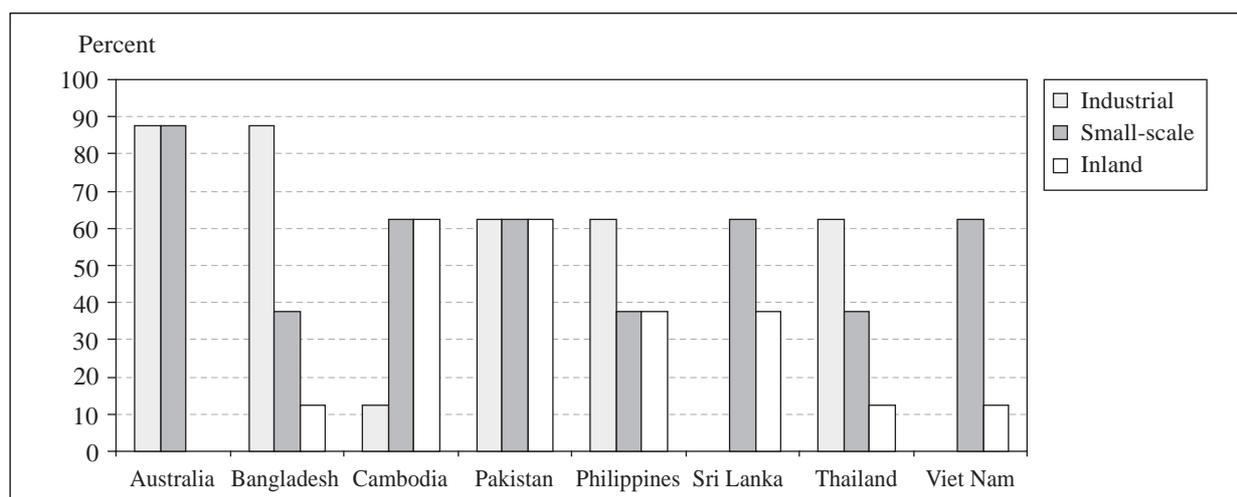


Figure 1: The percentage of the three largest industrial, small-scale and inland fisheries in each country where fishing capacity has been reported to have been assessed

been paid to the assessment of fishing capacity in inland fisheries. Therefore, *the situation with regard measuring fishing capacity in industrial fisheries does not seem to have changed significantly since 2002, although there seems to have been an increase in the number of small-scale fisheries where fishing capacity is being measured*⁵. The proportion of small-scale fisheries for which fishing capacity has been assessed is, however, still only about 50 percent, compared with about 62 percent for industrial fisheries but only 33 percent for inland fisheries.

3.4 What are the legislative and institutional barriers to addressing fishing capacity in the region?

A review of fisheries legislation in the region in 2006 (Morgan, 2006) showed that 56 percent of countries of the region did not have the legislative ability within their national fisheries laws to limit the number of licenses issued to fishers and/or vessels. However, of the ten countries that responded to the current questionnaire, only two responded that they did not have such legislative powers for both industrial and small-scale, artisanal fisheries (Table 3a and 3b). This discrepancy may be due to the extent of administrative powers within national legislation⁶. The ability to limit licenses is critical to addressing capacity issues and countries that do not have these powers should be encouraged to review their relevant legislation.

Management plans, which often have a formal legal status⁷, (see below), are becoming increasingly common in most countries. Of the ten respondents, eight reported that they had developed management plans for their major industrial fisheries (Table 3a). However, management plans are much less common for small-scale fisheries (Table 3b) with only four countries reporting that they have these in place for their largest small-scale, artisanal fisheries. This contrasts with responses in 2003, when only two countries reported that they had developed management plans for *any* fishery. It is, however, important that management plans for any fishery in the region are actually used to guide implementation of management measures and are widely disseminated. In this regard, it is encouraging that, of the fisheries that were reported as having management plans, 86 percent of these management plans were reported as having a formal legal status although in 35 percent of

⁵ Although this is based on a limited sample of countries.

⁶ China and India also reported at the workshop that they have the power, at either national or state (provincial) level to limit licence numbers and have used these powers in capacity management programmes.

⁷ Since some countries are still using fisheries legislation which dates back more than thirty years, revising and reforming the legislation is an essential accompanying activity to introduction of management measures.

Table 3: A summary of tools available to address fishing capacity issues

(a) In the three largest industrial fisheries:

	National or foreign vessels?	Vessels registered?	Fishermen registered?	Fishing gear licensed?	Catch and effort statistics collected?	Management plans in place?	Laws allow license limitation?
Australia	100 percent national	>90 percent registered	>90 percent registered	Y	Y	Y	Y
Bangladesh	(1) 70–90 percent national (2) 100 percent national	>90 percent registered	>90 percent registered	(1) N (2) Y	Y	Y	Y for both fishers and boats
Cambodia	100 percent national	(1) 30–50 percent registered (2) 50–70 percent registered (inland)	(1) 30–50 percent registered (2) 50–70 percent registered (inland)	30–50 percent licensed	Y	Y	Y for both fishers and boats
Indonesia	(1) 100 percent national (2) 100 percent national (3) >90 percent national	>90 percent registered	>90 percent registered	>90 percent licensed	Y	(1) Y (2) being drafted (3) in draft	Y for both fishers and boats
Malaysia	100 percent national	>90 percent registered	70–90 percent registered	>90 percent licensed	Y	N	Y for both fishers and boats
Pakistan	(1) 100 percent national (2) >90 percent national (3) 100 percent national	>90 percent registered	Not fisheries specific	N	Y	N	N for both fishers and boats
Philippines	(1) 100 percent national (2) 100 percent national (3) 100 percent national	70–90 percent registered	70–90 percent registered but not fisheries specific	70–90 percent licensed	(1) Y (2) N (3) Y	(1) N (2) Y (3) Y	Y for both fishers and boats
Thailand	100 percent national	70–90 percent registered	Not fisheries specific	(1) 70–90 percent licensed (2) >90 percent licensed	Y	Y	N for fishers, Y for boats

(b) In the three largest artisanal fisheries:

	National or foreign vessels?	Vessels registered?	Fishermen registered?	Fishing gear licensed?	Catch and effort statistics collected?	Management plans in place?	Laws allow license limitation?
Bangladesh	100 percent national	10–30 percent registered	Not fisheries specific	N	N	N	Y for both fishers and boats
Cambodia	100 percent national	30–50 percent registered	30–50 percent registered	30–50 percent registered	Y	Y	Y for both fishers and boats
Indonesia	100 percent national	>90 percent registered			Y	Y	Y for both fishers and boats
Malaysia	100 percent national	70–90 percent registered	70–90 percent registered	70–90 percent licensed	Y	N	Y for both fishers and boats
Pakistan	100 percent national	>90 percent registered	Not fisheries specific	N	N	N	N for both fishers and boats
Philippines	100 percent national	50–70 percent registered	Not fisheries specific	(1) 30–50 percent licensed (2) & (3) not fisheries specific	Y	(1) Y (2) N (3) Y	Y for both fishers and boats
Sri Lanka	100 percent national	70–90 percent registered	Y	70–90 percent licensed	N	N	Y for both fishers and boats
Thailand	100 percent national	(1) 70–90 percent registered (2) N (inland)	Not fisheries specific	(1) 70–90 percent licensed (2) 50–70 percent licensed (inland)	Y	Y	N for both fishers and boats
Viet Nam	100 percent national	50–70 percent registered	30–50 percent registered	50–70 percent licensed	Y	N	Y for both fishers and boats

fisheries with management plans, there were no actual published regulations⁸. This would therefore suggest, at least in some instances, that management plans are being seen as policy statements of intent rather than management tools.

A further trend in the region seems to be the move towards clarification of national policy on fisheries management generally and limitation of fishing capacity in particular. Although implementation of such management policy is often carried out at regional or provincial level, there has been reported an improved coordination between national policy-setting agencies and local implementation agencies. Such trends enable greater consistency in the application of fisheries policy. Most countries (78 percent) reported that they had formal coordination mechanisms in place between national and regional authorities to implement fisheries regulations and provide monitoring, control and surveillance activities.

Conclusion: *Most countries have reported or demonstrated that they have the legislative powers to limit fishing capacity. Management Plans for specific fisheries (which should provide guidance on capacity issues) are becoming more common in the region for industrial fisheries although they are still not commonly used for small-scale, artisanal fisheries. Appropriate legislative powers and supporting Management Plans for specific fisheries are critical in addressing fishing capacity and providing a strategic context for long-term management. Therefore, those countries that do not have the legislative powers or specific fisheries Management Plans should be encouraged to review their legislation and to develop Management Plans.*

3.5 Do countries of the region have the necessary tools in place to assess and manage fishing capacity and are those tools appropriate to the region?

To develop appropriate policy and to implement, where necessary, capacity management or capacity reduction programmes, there is a range of tools that are necessary. For policy formulation and implementation on fishing capacity within any fishery, these tools are essentially (a) robust data on current production and capacity measurement within the fishery (b) clear capacity targets and an understanding, usually from research programmes, of the biological, economic and social impacts of those targets (c) a data collection system that allows the collection of relevant data on the fishery so that the progress and impact of capacity changes can be measured and monitored over time (d) an effective monitoring, control and surveillance capability to ensure the policy rules are followed and (e) political and administrative support to carry the implementation through to completion.

Ten respondents to date have provided information on to what extent these policy tools are available within the region and Table 3 provides a summary of this information.

As noted above, there has been significant progress in the development of management plans for industrial and artisanal fisheries of the region, although there remains a question of whether such plans are actually being used in all countries as a management tool to guide long-term strategic directions for fisheries management. In two countries, capacity management was legislatively extremely difficult because national legislation did not allow the limitation of fishing licenses.

Although some type of vessel and fisher registration system is reported to be in place and fishing effort statistics were being collected for most of these major fisheries, the accuracy of some of these statistics must be questioned because a number of countries reported that up to 80 percent of vessels and the fishers that were fishing were unregistered. The ineffectiveness of licensing systems (and data collection on landings and fishing capacity) was most acute in small-scale fisheries, which are the fisheries where most capacity reduction programmes have been implemented in recent years

⁸ Although in one instance, it was reported that regulations were in the process of being developed, based on the Management Plan.

(see below). Boxes 4 and 5 provide an assessment of the policy tools that have been shown to work in addressing fishing capacity and those that do not.

Conclusion: While there has been progress in the region since 2002 in developing appropriate policy instruments (mainly fisheries-specific Management Plans) for long-term strategic management of fishing capacity, *there appears to be a major issue within the region of a lack of appropriate tools for policy implementation. The tools that are lacking include methods, such as regular census or*

Box 4: Capacity management tools – what does work		
Tools that do work	Immediate Effect(s)	Longer-term Effect(s)
Individual effort quotas (IEQs) denominated in trawl time, gear use, time away from port, fishing days, etc.	<ul style="list-style-type: none"> enforcement difficult additional regulations required to control input substitution 	<ul style="list-style-type: none"> capital stuffing – where a vessel’s horsepower, length, breadth, and tonnage are increased – frequently occurs requires regulations to ensure traceability and to control transshipment create motives for IUU fishing capacity will increase
Group fishing rights Community Development Quotas (CDQs)	<ul style="list-style-type: none"> reallocation of the fishery to the recipient community 	<ul style="list-style-type: none"> requires group understanding of asset value of user rights, capability to manage reduction of overcapacity or capacity containment depends on subsequent management
Territorial Use Rights (TURFs) Management and Exploitation Areas for Benthic Resources (MEABRs) Limited Access Privilege Programs (LAPPs) Designated Access Privilege Programs (DAPPs)	<ul style="list-style-type: none"> reallocation of the fishery to the recipient community 	<ul style="list-style-type: none"> requires group understanding of asset value of user rights, capability to manage reduction of overcapacity or containment of capacity linked to subsequent management
Individual fishing rights (IFQs) Individual transferable quotas (ITQs)	<ul style="list-style-type: none"> market forces drive out overcapacity consolidation occurs if overcapitalized 	<ul style="list-style-type: none"> capacity managed automatically, overcapacity does not occur/recur compliance concerns internalized by fishers to protect asset (rally against IUU fishing) supplementary regulations helpful to reinforce conservation
Taxes and royalties	<ul style="list-style-type: none"> market forces drive out overcapacity consolidation if overcapitalized 	<ul style="list-style-type: none"> administratively intensive: require constant adjustment of tax levels to maintain capacity at desired level politically difficult to impose, easier to rescind

Source: Adapted from “Management tools – what does not work and what does” presentation by Rebecca Metzner at the APFIC Regional consultative workshop on Managing Fishing Capacity and IUU Fishing, Phuket, June 2007.

registration and licensing systems, to effectively measure fishing capacity as well as policy tools that have been shown to be effective in reducing or managing fishing capacity. Without these tools, capacity measurement, management and reduction initiatives will be difficult. Data collection systems to measure catch and fishing effort are reported to be widespread among the largest industrial and artisanal fisheries although, given the commonly reported ineffectiveness of vessel

Box 5: Capacity management tools – what does not work		
Tools that do not work	Immediate effects	Long-term effects
Gear & vessel restrictions	Initial reduction in harvests	<ul style="list-style-type: none"> • Substitution of unregulated inputs or new gear types to replace restricted inputs • regulations lose effectiveness and additional regulations required • create motives for IUU fishing • capacity will increase
Limited entry programs	Limits participation	<ul style="list-style-type: none"> • capital stuffing – where a vessel’s horsepower, length, breadth, and tonnage are increased – typically occurs • drives changes (technological innovations) in gear, in fishing periods or areas • create motives for IUU fishing • capacity will increase
Aggregate quotas total allowable catches (TACs)	Likely to accelerate, not reduce, the growth of fishing capacity	<ul style="list-style-type: none"> • capacity and effort increase if effort and entry unrestricted • race for fish (“fishing derby”) develops • potential for frequent overruns of the TAC resulting in overexploitation frequently result in excess processing capacity and processing plant down time during closed season(s) additional regulations required, particularly to limit discarding and false • reporting, ensure traceability and to control transshipment • create motives for IUU fishing • capacity will increase
Non-transferable vessel catch limits (individual quotas/ IQs)	Overcapacity not addressed may limit additional growth of capacity	<ul style="list-style-type: none"> • requires regulations to ensure traceability and to control transshipment • additional regulations required • create motives for IUU fishing • capacity will increase
Buy-back programs	Purchase of vessel(s), license(s), and/or gear(s) capacity may be temporarily reduced in the fishery	<ul style="list-style-type: none"> • any improvements in stock abundance will attract additional capacity • create motives for IUU fishing • capacity will increase

Source: Adapted from “Management tools – what does not work and what does” presentation by Rebecca Metzner at the APFIC Regional consultative workshop on Managing Fishing Capacity and IUU Fishing, Phuket, June 2007.

licensing systems (Table 3), and the assumed consequent uncertainty in the numbers of vessels actually fishing, the quality of data on fishing effort at least must be questioned. Effective monitoring, control and surveillance of fisheries regulations is also a major issue in many fisheries of the region and will be further discussed below.

3.6 What methods have been most commonly used in the region for capacity reduction?

Of the ten respondents, seven have reported that they have actually undertaken capacity reduction programmes in their fisheries, with most of these occurring within the last five years. In addition, China has also undertaken significant reduction capacity reduction programmes while India has ceased issuing licences in a number of industrial fisheries⁹.

The ten respondents reported on a total of 42 fisheries, of which 18 were industrial scale and 24 small-scale (Table 3). Within these fisheries, 33.3 percent of industrial fisheries and 29 percent of artisanal fisheries had been the subject of capacity reduction programmes.

The most common tools used to reduce capacity varied, as would be expected, between the two types of fisheries and these are summarized in Table 4. Boat and gear restrictions were common for both types while, as expected, social support measures as an incentive to leave a fishery were restricted to small-scale fisheries. However, the tools that have been shown to be effective in addressing fishing capacity issues (see Box 4) have been little used in the region while the most commonly used tools, such as boat and gear restrictions, are the tools that have been proven to be least effective (see Box 5).

Table 4: Tools used by countries of the region to reduce fishing capacity in industrial and artisanal fisheries

	Industrial fisheries	Small-scale fisheries	Total
No. fisheries reported:	18	24	42
No. and proportion of fisheries where capacity reduction programmes have been implemented	5 (27.8 percent)	6 (25.0 percent)	11 (26.2 percent)
No. and proportion of fisheries where the following has been used:			
Boat restrictions	4 (80 percent)	5 (83 percent)	9 (82 percent)
Gear restrictions	4 (80 percent)	6 (100 percent)	10 (91 percent)
Fisher restrictions	1 (20 percent)	0 (0 percent)	1 (9 percent)
Boat building restrictions	2 (40 percent)	5 (83 percent)	7 (64 percent)
Subsidy removal	3 (60 percent)	4 (66 percent)	7 (64 percent)
Buy-back of vessels ¹⁰	0 (0 percent)	0 (0 percent)	0 (0 percent)
Space or time restrictions	4 (80 percent)	6 (100 percent)	10 (91 percent)
Incentive schemes	3 (60 percent)	4 (66 percent)	7 (64 percent)
Social support schemes to leave fishery	0 (0 percent)	6 (100 percent)	6 (55 percent)

⁹ Reported at this workshop.

¹⁰ Buy-back schemes have been used by China.

It is also interesting to note from Table 4 that, although there were *no* small-scale fisheries reported where capacity reduction programmes actually targeted a reduction in fisher numbers, *all* of these small-scale fisheries were provided with some sort of social support programme. Social support measures for small-scale fishers, if well designed and targeted, can provide income support for fishers who are *required* to leave a fishery because of a capacity reduction programme but there are not, in themselves, a method that can achieve capacity reduction. Rather, if they are implemented in isolation, they can act to *increase* fishing capacity by effectively subsidizing the costs of fishing. It is therefore of some concern that these programmes are being reported as being implemented without parallel programmes to achieve real fishing capacity reduction.

Another significant aspect of Table 4 is the lack of use of buy-back schemes to reduce fishing capacity¹¹. This rather surprising result may be because of the significant costs of such programmes but is worthy of further investigation, particularly since such schemes, when well designed, remove capacity permanently rather than re-allocate capacity to other fisheries (see Box 4). It is also interesting to note that eight of the ten respondents intend to implement capacity reduction programmes over the next five years (see below), and, of those that are implementing such programmes, two are intending to use buy-back schemes¹² while none intend using the mandatory scrapping of vessels.

Conclusions: *Approximately 33 percent of fisheries that have been reported on have undergone some type of capacity reduction programme within the last five years.* The most common tool used in industrial fisheries capacity reduction in the region has been boat and gear restrictions, followed by space/time restrictions. In small-scale fisheries, the most common tool used for capacity reduction has been gear restrictions and space/time restrictions followed by boat and boat building restrictions. As expected, social support schemes have also been important in trying to reduce fishing capacity in small-scale fisheries. Significantly, *restrictions on the number of fishers have not often been used*, which is probably a reflection of the significant social implications of reducing fishing capacity in the region. Also, somewhat surprisingly, *boat buy-back schemes have been little used*, despite their efficiency in permanently reducing fishing capacity, although China has used such schemes and Thailand is considering using buy-back schemes to reduce capacity in their industrial demersal trawl and push net fisheries in the Gulf of Thailand. This latter observation is in stark contrast with other areas of the world where buy-back schemes are the method of choice for reducing fishing capacity, particularly in industrial fisheries.

3.7 Have previous attempts at capacity reduction in specific fisheries been successful?

Of the six respondent countries that had undertaken capacity reduction programmes, only one country reported that the resources management, economic and social objectives of its previous capacity reduction programmes had been successful. Another two reported that the objectives had been partially met while none reported that the objectives of capacity reduction had not been met at all (no data were provided by another three respondents). These responses are not surprising since other data, presented in Table 5 below, show that fishing capacity in the region has continued to increase significantly across the region since 2002 and landings have fallen in most fisheries (see Box 6 for a summary of the status of the region's fish stocks).

Conclusion: Both the responses from countries that have undertaken capacity reduction programmes in recent years, and regional capacity and landings data for the major industrial and artisanal fisheries *indicate that capacity reduction programmes in the region to date have not been successful in limiting or reducing fishing capacity.* The reasons why the programmes have not been successful will be explored further below but some of the apparent causes, such as ineffective or inappropriate policy tools, inadequate MCS capabilities and, despite recent improvements, the still-general lack of management plans have already been identified.

¹¹ Although China reported at the workshop that it has used such schemes.

¹² These two countries have actually begun implementation of these buy-back schemes.

Box 6: State of commercial fish resources in Asia – the scientific evidence

- The World's production from capture fisheries is now about 95 million tonnes with 46.7 million tonnes from Asia Pacific region.
- China remains the largest producer with a reported catch of 17.5 million from capture fisheries
- There is a clear trend in marine landings of a decline in "other Asia" areas and increase in Southeast Asia, which now has largest share of landings in the region
- Landings from freshwater fisheries show that both South Asia and Southeast Asia increased in the late 1990s but are now leveling off
- Statistics on total landings however masks what has really been happening.
- Of the two main marine fish groups (pelagic and demersal), pelagics peaked in late 1980s and then declined and leveled off. Significantly, demersals peaked in mid-1970s, declined and then leveled off. Neither group has returned to their mid-1970s level.
- About 25 percent of landings in the Asia-Pacific region is now low value or trash fish
- Most stocks are considered to be overexploited although only a few countries in the region carry out regular stock assessments and use these in management. The reason for this is that given the large number of species and the diversity of gears and fisheries this would be an enormous task and most countries don't have the capacity to do it.
- There is current interest in tuna in region. All species, however, except skipjack and perhaps albacore are already fully or overexploited.
- Scientific surveys, which have been carried out regularly in many areas of Asia including India, Viet Nam, Thailand, Philippines and Indonesia, are one of the best sources of information in the region for information on fish stocks, particularly demersal stocks. In almost all areas, these surveys show there have been dramatic declines in fish biomass with current biomass estimates being between 6 and 30 percent of the biomass recorded 20-30 years ago.
- There have also been significant changes in the composition of the catches from scientific surveys over the past 20-30 years as 'fishing down the food chain' occurs. This is supported by an analysis of mean trophic levels of landings within the Large Marine Ecosystems (LMEs) of the region which show that these mean trophic levels are declining in all LMEs except Southeastern Australia.
- In summary, the capture fisheries of the region are almost all significantly overexploited with the history of exploitation being one of 'sequential' overexploitation of moving from one species or area to another as stocks become exhausted. However, there are now no more obvious stocks or areas to move to. Therefore the region faces a critical point where the existing stocks must be managed sustainably.

Source: Adapted from "Scientific evidence – status of resources and optimal capacity" presentation by Derek Staples at the APFIC Regional consultative workshop on Managing Fishing Capacity and IUU Fishing, Phuket, June 2007.

3.8 What progress has been made by countries of the region since 2002 in addressing fishing capacity?

While countries that have actually undertaken capacity reduction programmes in recent years in specific fisheries have reported mixed success (see Question 7 above), information gained from the questionnaires has also enabled comparisons with similar data from the FAO survey in 2003, which reported fisheries production and capacity data for most countries up to 2002 (De Young, 2006). This comparison was possible because the present questionnaire specifically asked questions about the *same* three largest large-scale industrial and the three largest small-scale artisanal fisheries in each country that were addressed in 2003. The results of this comparison (Table 5) are illuminating, given the reported increase in implementing capacity reduction programmes over the past few

Table 5: Comparison between reported production and fishing capacity (measured as number of vessels) in 2002 and 2005

	Three largest industrial fisheries in each country	Three largest small-scale fisheries in each country	Total
No. fisheries compared:	15	20	35
Production change 2002-2005	Production decreased in 73 percent of fisheries Production increased in 27 percent of fisheries	Production decreased in 100 percent of fisheries	Production decreased in 89 percent of fisheries Production increased in 11 percent of fisheries
Fishing Capacity (no. vessels) change 2002-2005	9.7 percent	14.4 percent	12.5 percent

years. In 2003, 71 percent of the respondents (which included the majority of APFIC member countries) reported that they had *begun* taking actions to measure fishing capacity in all marine capture fisheries as provided for in the FAO International Plan of Action (IPOA) for the Management of Fishing Capacity¹³ although actual assessment of fishing capacity in major fisheries had, generally, not been implemented (see Question 3 above). However, of those countries that reported they had not yet completed this process, 50 percent reported that they would *not* have this process completed by the 2005 target.

In 2003, countries reported that capacity reduction programmes had already been implemented in 31 percent of the largest industrial-scale fisheries while such programmes had been used in 16 percent of the largest small-scale artisanal fisheries. The most common method used to reduce fishing capacity in 2002 was reported to be the buy-out of fishing vessels and licenses from the fishery, which is in stark contrast to the responses received to the questionnaire where no respondent country now reported the use of buy-back of vessels as a capacity management tool (Table 4). The reason for this discrepancy is unclear but informal discussions indicate that few countries of the region have actually used buy-back schemes for capacity reduction.

By 2007, countries reported that capacity reduction programmes had been implemented in 28 percent of the largest industrial fisheries and 25 percent of the largest artisanal fisheries (Table 4) although these data are incomplete. Therefore, like the measurement of fishing capacity, there does not seem to have been any progress in implementing capacity reduction programmes in additional industrial fisheries although the proportion of small-scale fisheries in which these programmes have been implemented has apparently increased.

Interestingly, fishing capacity (measured as the number of vessels) has increased during the period 2002-2005 in almost all industrial and artisanal fisheries that have been reported on, with an average increase in capacity during this period of 9.7 percent in industrial, large-scale fisheries and 14.4 percent in small-scale, artisanal fisheries. These increases, however, have been accompanied by a *decrease* in production in 73 percent of industrial fisheries and in *all* small-scale fisheries for which data was provided.

Conclusions: There has been an *apparent increase in the use of capacity reduction programmes in small-scale fisheries in countries of the region* within the past few years but not in industrial fisheries. This parallels the increase in activity related to measurement of fishing capacity in small-scale, but not industrial fisheries. The overall *effectiveness* of these programmes, however, seems to have been limited with *capacity increasing by 9.7 percent in the largest industrial fisheries*

¹³ Which is part of the UN FAO Code of Conduct for Responsible Fisheries.

of the region and 14.4 percent in the largest small-scale fisheries during the period 2002-2005 and, despite this increase in capacity, production falling in 86 percent of fisheries.

3.9 What plans do member countries have to address fishing capacity issues within the next five years?

Of the ten respondent countries, six had already implemented capacity reduction programmes (Table 6) and all these six intended to implement further programmes in other fisheries over the next five years (Table 6).

One country, although not having implemented any capacity reduction programmes in the past, intended to do so over the next five years while two countries who had not implemented any such programmes did not intend to do so in the future, citing no capacity problems in their fisheries as the reason.

Conclusions: Within the countries that provided data, all countries that have already implemented capacity reduction programmes have plans to undertake further programmes within the next five years. One country that has not previously implemented these programmes plans to do so within the next five years while two countries are not planning any capacity reduction programmes.

Table 6: Plans to address capacity issues within the next five years

	Capacity reduction programmes undertaken since 2000?	Objectives of capacity reduction met?	Plans to address capacity issues in next 5 years?	Fisheries to be addressed in next 5 years
Australia	Y	Y	Y	Not specified
Bangladesh	Y	partially	Y	Shrimp trawl
Cambodia	N	n/a	N	n/a
Indonesia	Y	partially	Y	Artisanal seine net Artisanal gill net Other fisheries as needed
Malaysia	Y	not reported	Y	Not specified
Pakistan	Y	not reported	Y	Industrial shrimp, tuna and gillnet fisheries Artisanal gill net, small pelagic and mud-crab fisheries
Philippines	N	n/a	Y	Industrial sardine, round scad and tuna fisheries Artisanal frigate tuna and round scad fishery
Sri Lanka	N	n/a	N	n/a
Thailand	Y (industrial) Y (artisanal)	Y (industrial) Y (artisanal)	Y (industrial) Y (artisanal)	Industrial demersal trawl in Gulf of Thailand Industrial Push net in Gulf of Thailand
Viet Nam	N	n/a	Y	Coastal trawl fishery

4. IUU issues in APFIC countries

IUU fishing in the region has been addressed in several recent analyses, including Morgan (2006). The general conclusions of these studies is that IUU fishing is a major problem in the region, is costing the region's countries significant amounts in lost revenue and is resulting in overexploited fisheries and adverse social issues. In updating this information, the focus has been on the various questions listed above, using information provided by the member countries themselves. However, like the fishing capacity data, only ten countries have responded to the request for information and so the tentative conclusions reached below are based on these limited data.

4.1 What are the greatest IUU fishing issues reported by member countries?

Countries were asked to report on the greatest IUU fishing issues that they were currently facing within their EEZ for both their national fleets and foreign fleets. Six countries provided information on these issues and the responses are summarized in Table 7.

Table 7: Current major IUU fishing issues reported by each country for both national and foreign fleets

Country	IUU fishing by national vessels increasing or decreasing in EEZ?	IUU fishing by foreign vessels increasing or decreasing in EEZ?	Major IUU fishing issue no. 1 for national vessels?	Major IUU fishing issue no. 2 for national vessels?	Major IUU fishing issue no. 1 for foreign vessels	Major IUU fishing issue no. 2 for foreign vessels
Bangladesh	Increasing	Decreasing	Destruction of larvae and juveniles by push nets	Not reported	Not reported	Not reported
Malaysia	Same	Decreasing	Unregistered vessels	Using prohibited gear or methods	Fishing without an access agreement	Unregistered vessels
Pakistan	Increasing	Decreasing	Using prohibited gear or methods	Fishing in closed seasons	Unregistered vessels	Fishing in prohibited areas
Philippines	Decreasing	Same	Using prohibited gear or methods	Fishing in prohibited areas	Unregistered vessels	Fishing without an access agreement
Sri Lanka	Decreasing	Same	Unregistered vessels	Using prohibited gear or methods	Fishing without an access agreement	Unregistered vessels
Viet Nam	Increasing	Increasing	Using prohibited gear or methods	Not ranked	Fishing without an access agreement	Unregistered vessels

Although the number of respondents was small, several interesting observations can be made from the data in Table 7. First, the majority of countries reported that IUU fishing by foreign vessels had remained the same or had declined since 2002, when the last FAO survey of IUU fishing was undertaken (De Young, 2006 and FAO, unpublished). However, the same conclusion was not evident for IUU fishing by national vessels where four of the six countries reported that this had increased or had remained the same. The major IUU issues identified were reasonably consistent across the six countries with using prohibited gears or methods being the clear priority identified for national IUU fishing and fishing without an access agreement and unregistered vessels being the clear problem areas for IUU fishing by foreign vessels. It is of particular interest that only two countries reported that they considered fishing by unregistered national vessels a major issue

since countries of the region also reported that a large proportion of their national fleets were not, in fact, registered (see Table 3). It is difficult to reconcile these two contradictory perceptions, given that a robust and enforceable vessel registration and licensing system is a cornerstone of any programme to measure and therefore manage fishing capacity.

Of the six respondents, all reported that the major IUU fishing issues that they identified in 2002 had remained unchanged for both national and foreign IUU fishing. Clearly, there has been little progress therefore in addressing the identified IUU fishing issues over the past five years.

Separating the IUU fishing issues into the following three categories is an important distinction because different regulatory and enforcement regimes apply to each situation. These categories are:

- national vessels in national waters,
- foreign vessels in national waters and
- vessels fishing on the high seas

Table 8 shows the estimated percentage loss of catch that respondent countries have estimated for the various combinations of IUU fishing and types of fishery, and shows that in both industrial and small-scale fisheries, IUU fishing by national vessels is estimated to lead to greater catch losses than IUU fishing by foreign vessels. This is supported by information from the ten respondent countries for a total of 42 of the largest industrial and artisanal fisheries that, within these fisheries, IUU fishing by national vessels is considered to be increasing in 52 percent of fisheries while IUU fishing by foreign vessels is considered to be increasing in only 14 percent of fisheries.

Table 8: Estimated percentage losses of catch¹⁴ for the three largest industrial fisheries and the three largest small-scale fisheries in each respondent country by the type of IUU fishing. Information is only for fisheries within each country’s EEZ and is based on the partial responses received.

	No. fisheries for which data provided	Estimated percent catch loss for major fisheries as a result of:	
		IUU fishing by national vessels in EEZ	IUU fishing by foreign vessels in EEZ
Industrial (large-scale) fisheries	12	10.5 percent	9.0 percent
Small-scale fisheries	14	6.0 percent	3.6 percent

Overall, the estimated losses from all types of IUU fishing in both industrial and artisanal fisheries is around 8 percent of total recorded landings, or about US\$2 500 million annually.

Data from Table 8 shows that IUU fishing by national vessels in both industrial and small-scale fisheries is estimated to result in greater catch losses than IUU fishing by foreign vessels. In particular, IUU fishing by foreign vessels is not perceived as a major problem in most small-scale fisheries, which, by their nature are often inshore fisheries. Industrial scale fisheries, which are generally located offshore and therefore are more difficult and expensive to monitor, are reported to be more susceptible to IUU fishing by both national and foreign vessels. The estimated average losses of US\$2.5 billion annually or 8 percent of total recorded landings are less than, but within the range of, the annual estimated loss of 16 percent of catch value as a result of IUU fishing, which was estimated by MRAG (2005) for a range of developing countries in various parts of the world.

¹⁴ Respondents provided a range of percentage of catch lost. The mid-point of the range was taken in calculating average percentage losses.

It is clear that foreign IUU fishing in the region occurs to the extent that it does because (a) *historically*, the lack of management of fishing capacity within countries EEZs (and the resulting decline in fish stocks) results in vessels looking outside EEZs for catches (Morgan, 2006). This has often been encouraged by Government policies that provide subsidies for building ‘offshore’ vessels; and (b) there are *opportunities* for IUU fishing because there are generally weak national governance structures and MCS capacity to control ‘foreign fishing’ and IUU fishing by nationals, foreign fishing access arrangements differ widely with the result that some countries are ‘easy pickings’ for illegal foreign fishing and there is a lack of a regional structure to coordinate data collection and assessments to guide regional management.

Conclusion: *IUU fishing is a major issue in the region and costs an estimated US\$2 500 million annually or eight percent of recorded landings in lost catches.* IUU fishing by national vessels is seen by most countries as a major, increasing problem whereas IUU fishing within country’s EEZs by foreign vessels is generally seen as a declining issue as the region makes advances in controlling these foreign vessels. However, it is still a major issue in specific fisheries and areas.

4.2 Where are vessels of the region that are engaged in foreign fishing operating?

There were generally insufficient responses from major foreign fishing nations to analyse this question in detail with, of the major foreign fishing countries, only Thailand providing data. However, Table 9 below provides a summary of the limited responses provided. Of the few countries that reported on foreign fishing activities by their fleets, all reported that foreign fishing occurs within the EEZs of other countries under either commercial arrangements or, less commonly, under government-to-government arrangements. This is consistent with previous conclusions (Morgan, 2006) that showed, because of the declaration of EEZs within the region, the majority of the sea area (particularly in Southeast Asia) now comes under national jurisdiction rather than being international waters. However, as Table 8 shows, IUU fishing (both by national vessels and by foreign vessels) remains a significant issue within these EEZs.

Conclusion: There is currently insufficient data to draw any definitive conclusions.

Table 9: Summary of responses regarding the areas of operations of nation’s foreign fishing fleets

Flag state	Percentage of vessels, by size range (GRT), fishing outside national EEZ			Percentage of vessels, <10 GRT, fishing in:		Percentage of vessels, 10–100 GRT, fishing in:		Percentage of vessels, >100 GRT, fishing in:	
	<10	10–100	>100	Another EEZ	High seas	Another EEZ	High seas	Another EEZ	High seas
Australia	0	0	0	0	0	0	0	0	0
Bangladesh	0	0	0	0	0	0	0	0	0
Cambodia	0	0	0	0	0	0	0	0	0
Indonesia	No data								
Malaysia	0	0.136	0	0	0	0	100	0	0
Pakistan	0	0	0	0	0	0	0	0	0
Philippines	0	0	0	0	0	0	0	0	0
Sri Lanka	10.0	0	0	0	100	0	0	0	0
Thailand	0	7.0	82.0	0	0	100	0	80.93	1.07
Viet Nam	0	0	0	0	0	0	0	0	0

4.3 Do countries of the region control IUU fishing in other countries or on the high seas by their nationals?

In a previous analysis of national fisheries and other legislation (Morgan, 2006), it was estimated that only two countries of the region make it an offence under national legislation for their vessels to fish illegally in another country's EEZ, thereby undermining regional commitment to control IUU fishing. Of the ten respondents to the current questionnaire, three reported that it is an offence for the nationals to fish illegally outside of their EEZ waters, although it should be noted that almost all of the respondent countries, except Thailand, were not major foreign fishing nations.

Conclusion: In accordance with previous analysis of legislation, *the majority of nations of the region do not make it an offence under their national legislation for their nationals to fish illegally in either another countries EEZ (where they would, presumably, be subject to the laws of the coastal state) or on the high seas. This a fundamental principle of the FAO Code of Conduct for Responsible Fisheries and the International Plan of Action to Prevent, Deter, and Eliminate IUU Fishing that clearly specify Flag State responsibilities.* The inclusion of such provisions into national legislation would send a clear message to national fleets that their government supports international initiatives to address IUU fishing.

4.4 To what extent have national plans of action been developed to address IUU fishing?

Responses from the ten member countries has confirmed previous conclusions (Morgan, 2006) that countries of the region generally have not supported international and regional multilateral initiatives to coordinate issues of management, access arrangements and monitoring control and surveillance of fisheries. Only about 12 percent of the region's countries have signed the UN Straddling Stocks Agreement, only 19 percent have signed the FAO Compliance Agreement and less than 15 percent have developed a national plan of action (NPOA) to combat IUU fishing (see Box 7 for details of NPOAs and IPOAs related to IUU fishing). This latter figure is in stark contrast with reports from the countries of the region in 2003 (FAO, 2007) where 65 percent of countries reported they *had* developed an NPOA to combat IUU fishing! This discrepancy may be related to the definition of what constitutes an NPOA.

Countries of the region therefore rely on national legislation to control IUU fishing by their national fleets and by foreign vessels within their EEZ. In addressing foreign vessel IUU, member countries' legislation to regulate access to their EEZs is also supported by the provisions of the UN Convention on the Law of the Sea although it is not coordinated regionally, thereby allowing 'cherry picking' of easy targets by foreign vessels that want to fish illegally. It is clear that foreign fishing vessels, rather than seeking prior permission, often rely on the lack of specific controls on foreign fishing and/or the lack of adequate monitoring and surveillance to fish in countries' EEZs. Under such conditions, the lack of explicit and specific regulations for foreign fishing often result in opportunities being presented for fishing, rather than specific permission being given. This distinction is important since it results in the coastal state having to show that permission for fishing has been given rather than foreign fishers having to show that permission for fishing had been denied.

In contrast to the Asian region, countries of the western Pacific¹⁵ have developed coordinating mechanisms, often through the Forum Fisheries Agency, to regulate access to their large EEZs and for managing fishing, almost all of which is undertaken by foreign fleets, of the tuna stocks within these EEZs.

¹⁵ These include Federated States of Micronesia, Kiribati, Marshall Islands, Papua New Guinea, Nauru, Palau and the Solomon Islands.

Conclusions: *Countries of the region have generally not supported international and regional multilateral initiatives to coordinate issues of management, access arrangements and monitoring control and surveillance of fisheries but have, instead, relied on national legislation, supported where appropriate by the provisions of the UN convention on the Law of the Sea.*

Box 7: Regional and National Plans of Action to combat IUU fishing

1. The 1999 FAO Ministerial Meeting agreed “States would develop a global plan of action to deal effectively with all forms of IUU fishing including fishing vessels flying “flags of convenience””
2. The International Plan of Action on IUU fishing (IPOA-IUU) was developed through broad consultative process and was endorsed by the FAO Council in 2001
3. Its purpose is to combat IUU fishing in all marine and inland capture fisheries, irrespective of their scale
4. It is a voluntary instrument, developed within the *FAO Code of Conduct for Responsible Fisheries* framework
5. A key feature is the proposed use of internationally-agreed market measures to enhance fisheries management and block IUU caught fish from entering international trade and markets
6. Regional Fisheries Management Organizations (RFMOs), through national plans of action (NPOA), have a central role in promoting regional measures to implement the IPOA-IUU
7. FAO’s role is to monitor, report and facilitate cooperation for the implementation of the IPOA-IUU. FAO does not have an implementation role, *per se*
8. Despite the importance of developing NPOAs under the framework of IPOA-IUU, there are virtually no NPOAs-IUU in the Asian region that have been notified to FAO, the only region in the world where this is the case even though many Asian Ministers participated in the Ministerial Meetings in 1999 (Code implementation) and 2005 (IUU fishing) where decisions were taken on IUU fishing
9. NPOAs involve:
 - encouraging stakeholder involvement in discussions and problem and encouraging transparency at all levels
 - reviewing and revising legislation after policy issues/inclusions are resolved and agreed: ensure there are strong sanctions, adopt long-arm control measures for nationals, etc.
 - ensuring that IUU fishing is not being supported by subsidies
 - publicizing action taken against IUU fishing
 - putting in place or enhancing MCS schemes including data storage and retrieval systems, VMS (no later than December 2008 for industrial vessels), observer programmes, boarding and inspection schemes, FAO standard markings for fishing vessels and industry education about IUU fishing

Source: *Adapted from “Regional and National Action to combat IUU fishing in the Asian region” presentation by David Doulman at the APFIC Regional consultative workshop on Managing Fishing Capacity and IUU Fishing, Phuket, June 2007.*

5. Conclusions

Based on these somewhat limited responses from the member countries, a number of trends seem to be emerging in addressing fishing capacity and IUU issues in the region and combating IUU fishing.

Increased awareness of the issue of IUU fishing

There is an increase in awareness of, and actions to address, fishing capacity issues by member countries. Nationally coordinated plans for management of fishing capacity have become much more common and, to support these plans, added attention has been paid to the measurement of fishing capacity, particularly in small-scale fisheries. Inland fisheries, however, have not been addressed to any great extent.

Over-focus on small-scale fisheries and lack of attention in the industrial fisheries

While there has been an increase in the use of capacity reduction programmes in small-scale fisheries in countries of the region within the past few years, this has not occurred to the same extent in industrial fisheries. This parallels the increase in activity related to *measurement* of fishing capacity in small-scale, but not industrial fisheries.

Despite raised awareness and planning to manage, capacity continues to increase

Although there is an increase in awareness of fishing capacity issues and increased attention to developing plans to manage fishing capacity, *actual* fishing capacity in the largest fisheries of the region has continued to increase within the period 2002-2005, particularly in small-scale fisheries. Over the same time period, there has also been a parallel reduction in landings from the vast majority of these fisheries (see Box 6), which together account for over 80 percent of total landings in the region. Clearly, the impact of capacity reduction programmes undertaken to date has been small when considered in a regional context and countries themselves have seldom reported that these programmes have rarely achieved their original objectives.

Lack of effective management tools to manage capacity

Fourthly, there is a clear lack of management tools within many countries of the region to effectively address the management of fishing capacity. Management Plans for specific fisheries that could provide the policy guidance for capacity management are still not in place for all fisheries, although there has been a great improvement since 2002. Data systems are generally not well developed, commonly-used policy tools for managing fishing capacity in the region appear inappropriate and ineffective (see Box 5), licensing and registration systems and other capacity-measuring tools are not developed and MCS capabilities could be improved significantly.

While many of the fishing capacity and IUU issues of the region are demonstrably national issues and lie within the jurisdiction and responsibility of individual states, there is a clear need for a regionally coordinated approach, particularly for IUU fishing issues.

The emergence of regional based initiatives to address IUU fishing

A welcome recent development has been the setting up by Australia and Indonesia of a Regional Plan of Action (RPOA) to promote Responsible Fishing Practices including Combating IUU Fishing in the Region.

The RPOA, which is designed to begin a coordinated approach to addressing IUU issues in the region, was agreed to in Bali in May 2007 by the Republic of Indonesia, Australia, Brunei Darussalam, Cambodia, Malaysia, Papua New Guinea, The Philippines, Singapore, Thailand, Timor-Leste and Viet Nam.

Among its various Agreements, the following are key elements of the RPOA:

- The RPOA is a voluntary instrument and takes its core principles from already established international fisheries instruments for promoting responsible fishing practices.
- Countries in the region should work together, with support from regional organizations, on compiling an overview of artisanal and industrial fishing, the current status of fish stocks, trade flows and markets.
- Countries in the region are encouraged to (a) work toward ratification, accession, and/or acceptance and full implementation, of UNCLOS and UN Fish Stocks Agreement (UNFSA), (b) work towards ratification and/or acceptance of regional fisheries management instruments, where appropriate and (c) work toward acceptance and full implementation of relevant regional and multilateral arrangements, where appropriate.
- Countries in the region should work together to improve their data collection systems and to standardise and share information about vessels, fishing effort, catch levels, fish landings and sales of fish and fish products.
- The RPOA acknowledges that countries should manage the fishing capacity of their fleets by assessing the status of their fishery resources and fishing fleet capacity and introducing management measures to help prevent fishing capacity from exceeding sustainable levels.
- All coastal States, relevant flag States and fishing entities operating in the region should actively cooperate in ensuring that fishing vessels entitled to fly their flags do not undermine the effectiveness of conservation and management measures, including engagement in or supporting illegal fishing.
- Countries should consider adopting Port State Measures, where appropriate, based on the FAO 'Model Scheme on Port State Measures to Combat IUU Fishing (FAO, 2007)¹⁶'.
- Countries should ensure that flag States from outside the region that operate in the region be urged to cooperate with, and assist technically and financially, those countries in the region in whose waters they conduct fishing operations.
- Countries should monitor and control the transshipment of fisheries resources and establish control measures such as vessel registers, mandatory notification of the intention to tranship and the application of vessel monitoring systems.

The RPOA therefore provides a template for addressing the emerging fishing capacity and IUU issues that have been identified above, particularly for the major issues of providing a cooperative regional approach to improving management, MCS and data collection systems. The question for the region is how to extend this template to include other member countries.

One of the key issues for the region in extending the template of the RPOA is the lack of any Regional Fisheries Management Organization that can provide effective coordination of these regional initiatives. While the Indian Ocean Tuna Commission (IOTC) has management responsibility for tuna stocks within its region and the Western and Central Pacific Fisheries

¹⁶ Noting recent developments in the FAO to negotiate a binding international agreement on Port State Measures, the Parties to the RPOA agreed to consider the provision of the FAO document once it is completed.

Commission (WCPFC) has responsibility for management of highly migratory species in the western and central Pacific, there is no Regional Fisheries Management Organization with responsibility for management and coordination of fisheries issues that brings together all the countries of the Asia-Pacific region. Since many (if not most) stocks are shared between countries of the region, because national fisheries management practices and capabilities are often not fully effective and because of the major issue of IUU fishing in the region, the establishment of such a management body would likely bring significant benefits.

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