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MANAGEMENT

REPORT OF A BIO-ECONOMIC MODELLING WORKSHOP AND A POLICY DIALOGUE MEETING ON THE THAI DEMERSAL FISHERIES IN THE GULF OF THAILAND

HUA HIN, THAILAND

31 MAY - 9 JUNE 2000

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

ROME, JUNE 2001

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FAO/NORWAY PROGRAMME OF ASSISTANCE TO DEVELOPING COUNTRIES FOR THE IMPLEMENTATION OF THE CODE OF CONDUCT FOR RESPONSIBLE FISHERIES

SUB-PROGRAMME F: ASSISTANCE TO DEVELOPING COUNTRIES FOR IMPROVING THE PROVISION OF SCIENTIFIC ADVICE FOR FISHERIES MANAGEMENT

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PREPARATION OF THIS DOCUMENT

This report presents a summary of the proceedings and the main findings of a bio-economic modelling workshop (31 May-8 June 2000) and a subsequent policy dialogue meeting (9 June) on the Thai demersal fisheries in the Gulf of Thailand. The meetings were held at the Melia Hua Hin Hotel, Hua Hin, Thailand.

A draft report of the workshop including the first results of the analyses was produced at the workshop for presentation at the policy dialogue meeting. However, it was realized that further adjustments would be needed in the BEAM 5 analyses and those were made after the meeting by Messrs Sparre and Willmann, in consultation with Thai scientists. Siebren Venema edited the final version of this report.

The references to all parts of the report were combined and placed in the last Appendix (F), in order to provide easy access.

ACKNOWLEDGEMENTS

A large number of people have contributed to the success of the workshop and the policy dialogue meeting, who cannot all be named here because that would reproduce the list of participants. There are several people, however, who because of their effort and dedication have made it possible to hold the workshop and the policy dialogue meeting and the high quality of their outcomes. They are Mr Pongpat Boonchuwong, Mr Somsak Chullasorn, Dr Somying Piumsombun and Dr Mala Supongpan, Thai Department of Fisheries, Dr Ruangrai Tokrisna, Kasetsart University, Mr Per Sparre, Danish Institute for Fisheries Research, Dr Mahfuzuddin Ahmed and Dr Villy Christensen, ICLARM and Messrs. Veravat Hongskul and Rolf Willmann, FAO.

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SUMMARY

Similar to many marine fish stocks in Asia and elsewhere in the world, the demersal resources in the Gulf of Thailand have been subjected to excessive levels of fishing effort since perhaps as long as two to three decades. This has resulted in a change in catch composition with a higher share of short-lived species in the catch. The influence on the value of the catch is not unambiguously negative because several short-lived species including certain cephalopods and crustaceans fetch good prices in the market. In general, fish prices showed real increases over the last decade including so-called 'trash-fish", i.e. by-catches of small fishes that are converted into fishmeal. The rapid growth in feed-intensive livestock and shrimp culture production has resulted in a rapidly growing fishmeal market. However, there is certainly concern about the impact on the Gulf of Thailand ecosystem and on bio-diversity of a continuation of the very high levels of mostly indiscriminate fishing effort, especially bottom trawling. While the immediate effect of a reduction of fishing effort could cause a decline in the quantity and value of the catch, the long-term benefit is likely to be very large. This is indicated by the findings of all three types of modelling approaches applied during this workshop, namely surplus production model (Gordon-Schaefer and Gordon-Fox), age-structured Thompson & Bell model (BEAM 5) and mass-balance eco-system model (ECOPATH).

The immediate economic benefits arise from a reduction of harvesting costs. These are comparatively much larger in the trawl and pushnet fisheries because of both higher capital cost and higher operating costs, especially fuel costs. A reduction of fishing effort in the order of forty to fifty percent would be required to realize the full resource rent potential of the Thai demersal fisheries in the Gulf of Thailand. This would necessitate a major structural adjustment in terms of creating incentives for voluntary exit from the fishery as well as in terms of putting in place a management regime that would avoid a re-occurrence of excessive fleet capacity and fishing effort. This could only be achieved in close partnership with the fishing industry and by making available considerable financial and technical assistance for the adjustment process, especially in its early stages, to compensate owners of decommissioned fishing vessels and displaced crew and to strengthen management capabilities and capacities at all levels including central and local government agencies and community organizations.

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
BEAM	Bio-Economic Analytical Model (see Appendix F)
DOF	Department of Fisheries of Thailand
E	Effort
ECOPATH	Model that describes the ecosystems and their interactions in a fishing area.
ECOSIM	ECOSIM, integrated with ECOPATH. A simulation model for evaluating the impact of different fishing regimes on the biological components of ecosystems. ECOSIM also incorporates some economic variables on fish prices, harvesting costs and discount rate that allow for the assessment of the economic performance of alternative management strategies.
ECOSPACE	Module used for spatial analyses under ECOPATH
EXCEL	Spreadsheet program produced by Microsoft
GSM	Gordon-Schaefer Model
HP	Horse Power
MCS	Monitoring, Control and Surveillance
MEY	Maximum Economic Yield
MSY	Maximum Sustainable Yield
NPV	Net Present Value
R	Recruitment (number of Recruits)
SCF	Standard Conversion Factor
SSB	Spawning Stock Biomass
TC	Total Cost
TR	Total Revenue
Q or q	Catchability coefficient
VPA	Virtual Population Analysis
Y	Yield