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UPDATE AND EXPANSION OF FIS TYPOLOGY FOR AFRICA

Prepared for

UNIDO

by

Agro-economic Services Ltd

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UPDATE AND EXPANSION OF FIS TYPOLOGY FOR AFRICA

1.0 INTRODUCTION

1.1 Background

Following the issuance by UNIDO of "Industrial Development Strategies for Fishery Systems in Developing Countries" (Sectoral Studies Series No 32 PPD.30) and subsequent follow-up activity in W Africa, the need arose for coverage to be extended to all African countries. The original (global) typology exercise covered 64 countries of which 26 were African.

It was therefore decided to invite Agro-economic Services Ltd (AeSL), whose personnel had been involved at the inception of the FIS typology exercise, to assist with the updating and expansion effort - to that end AeSL's Managing Director, Dr Terence Burley, visited Vienna on 31 October until 1 November 1989 to be briefed by concerned officials, notably Mr B Karlsson, Ms T Salazar de Buckle and Mr D Thomson.

Dr Burley's Terms of Reference (Agreement No CLT 89/377) was agreed on 1 November 1989 and he then proceeded to Rome to abstract all possiole data from FAO sources. He then returned to Vienna in the week of 13 November to compile a Draft Report on his activities and emerging research strategies as dictated by the Terms of Reference and data availability.

Dr Burley then proceeded to AeSL's offices in England where - assisted by a colleague, Mr PA Sugden (employed by UNIDO on a complementary Agreement, CLT 89/440) - he completed the tasks envisaged by his Terms of Reference and as detailed in the Draft Report.

1.2 Terms of Reference

These were designed to achieve the completion - on a "best effort" basis (bearing in mind time and cost constraints) - of basic FIS material for each African territory.

Throughout the exercise special attention has been directed to:

- adequately research all designated territories to determine the absolute and relative significance of their FIS;
- seek to address adequately, in the most up-to-date way possible, all the key variables;
- indicate how key weaknesses in the database can best be ameliorated or otherwise accommodated.

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1.3 Project Scope

Category A (covered previously under SSS No 32)

The following 26 African territories were investigated[1]:

Algeria	Madagascar	Sierra Leone
Angola	Malawi	Somalia
Cameroon	Mali	Sudan
Congo	Mauritania	Tanzania
Egypt	Morocco	Tunisia
Gabon	Mozambique	Uganda
Ghana	Namibia	Zaire
Ivory Coast	Nigeria	Zambia
Kenya	Senegal	

Category B (not covered previously under SSS No 32)

The following 25 African territories were investigated:

N Africa: Libya

W Africa:	Benin	Burkina Faso
	Cape Verde	Gambia
	Guinea	Guinea-Bissau
	Liberia	Niger
	Togo	

Central Africa:	Burundi	Central African Republic
	Chad	Equatorial Guinea
	Rwanda	Sao Tome-Principe

East Africa:	Botswana	Comoros
	Djibouti	Ethiopia
	Lesotho	Mauritius
	Seychelles	Swaziland
	Zimbabwe	

The basic FIS information was recorded by means of:

- a Fact Sheet (see Annex A for a sample sheet);
- a Standardized Data Form (see Annex B for a sample form).

NB: All the above information was presented to UNIDO by means of "master copies" for each territory that accompanied the submission of this Report.

The base data was primarily that secured from FAO sources (Annex C). The procedures involved are dealt with in the next chapter.

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[1] The opportunity also was taken to expand the global coverage to cover the following nine (9) Category C countries: S Yemen, Dominican Republic, El Salvador, Papua New Guinea, Singapore, Honduras, Nepal, Jamaica, Paraguay.

2.0 DATA COLLECTION AND ANALYSIS

2.1 Introduction

It was felt that Dr Burley's time could be used to best effect by having him repeat his 1985 efforts that focused upon FAO and UK material. The former offer the most economic route to acquire public sector data; the latter offer the best means to secure data pertaining to commercial fishing.

2.2 Data Abstraction and Recording

With respect to all documentation and statistics that were perused a prime objective was to seek out recent (post 1985) and comprehensive accounts of part or all of the FIS. Budgetary constraints did not permit exhaustive coverage so, unless a document's table of contents or general layout/emphasis promised such information, it was generally not given detailed attention. The accuracy of such judgement of course was significantly enhanced by Dr Burley's previous experience of this selective approach.

The selective approach adopted for data abstraction was relaxed whenever it was felt that the territory in question warranted more detailed attention. In simple terms this applied at both ends of the spectrum: to a territory with well developed FIS where in consequence an above average body of data was available for scrutiny, and to a territory with an embryonic FIS where all available data were needed to help build up a basic picture.

Data felt to be of relevance were recorded on individual country Fact Sheets; these were designed with reference to the twenty one key variables (Annex D). The Fact Sheets are essentially a "field record": succinct notes set out in the order in which data were acquired (unless subsequent data warranted amendments and/or re-presentation).

2.3 Data Interpretation

The twenty-one key variables requiring assessment represent the product of on-going refinement and analysis by UNIDO. They permit a relatively succinct yet meaningful portrayal of the FIS even though most variables rely on qualitative information and analysis. This letter relies very much on appropriate "key words" as specified in the final column of Annex D. Other key words of a more specific nature include:

- foreign currency availability: often the real cause of a fiscal situation, eg, credit may be freely available but only in (irrelevant) local currency:
- illegal fishing methods;
- skills: availability of management and technical expertise and (in the case of aquaculture) extension skills;
- sector monitoring: illegal fishing, competition from foreign fishery interests, etc, is usually a symptom of inadequate Government monitoring and surveillance;
- Government development policy: may have different (even opposed) impact on artisanal and commercial sectors. In like manner, higher capital investment may result in high costs, social and/or economic.

NB Certain so-called key words are not relevant, since their status is not a valid measure of the FIS, notably:

- artisanal processing (all types are relevant);
- training (a universal constraint).

In converting the Fact Sheet information to data able to be computer coded the twenty-one variables were recorded on the SDF by means of a combination of:

- actual values;
- percentage values;
- qualitative judgement (on a 1-5 scale).

Actual Totals employed relate to:

Variable 1 : MSYR: Potential value (of national resource, incl inland water) given in thousands of tonnes per annum.

Variable 3 : Extraction typology: Quantity extracted, harvested or produced from marine or inland waters in thousands of metric tonnes per annum.

Variable 9 : CONSUMPTION: The per capita apparent domestic consumption per annum in kilograms per person.

Percentage Values employed relate to:

Variable 2 : Resource Utilization: The extraction value as a percentage of the MSYR value.

RESOURCE Percentage of MSYR not yet exploited.

Variable 4 : Industrial Share: The quantity that is not caught or harvested by the artisanal sector as a percentage of the total value quantity caught or harvested annually.

EXTRACTION Presented as for variable 4.

Variable 5 : PROCESSING: The percentage of the landed catch that is processed (by artisanal and industrial means).

Variable 20 : OWNERSHIP: The percentage proportion of Government ownership of FIS components.

NB: This (usually subjective) value also seeks to reflect the extent and effectiveness of Government regulation and control.

Variable 21 : EXPORTATION: The percentage of the catch (measured in fresh fish weight equivalent) which is exported, regardless of product form.

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Qualitative judgement relates to:

Variable 6 :	Distribution Channels	) Very complex (5)
		) Complex (4)
Variable 7 :	Marketing Methods	) Intermediate (3)
		) Simple (2)
Variable 8 :	Intermediacy	) Very simple (1)

DISTRIBUTION AND MARKETING (a))

Variable 11 : Processing System

Variable 10 : Storage and Handling Efficiency

Variable 12 : Extraction Inputs

Variable 13 : Processing Inputs

Variable 14 : Extraction Services

Variable 15 : Processing Services) Very good (5)
) Good (4)
Variable 16 : Extraction Infrastructure) Average (3)
) Poor (2)
Variable 17 : Processing Infrastructure) Very poor (1)

INDUSTRIAL INPUTS

Variable 18 : Priority of FIS

Variable 19 : Assistance Provided

GOVERNMENT POLICY[b]

(a) Assumes that the greater the complexity, the greater the sophistication also.

(b) For good/poor read positive/indifferent.

It will be seen that a consistent low (1) to high (5) system of valuation was employed.

NB: In view of the subjective basis for most percentage values for Variable 20 this is perhaps better treated for coding purposes as per the 1-5 coding employed for GOVERNMENT POLICY.

3.0 GENERAL OBSERVATIONS

3.1 Introduction

Concern has been expressed - in some quarters - that the application of the FIS has been over done. Being per se an imperfect tool, it is perceived that too much is being derived from it, so that programmes and strategies arising from it could be intrinsically unsound. Such views generally fail to appreciate the "checks and balances" that both apply to FIS determination and also to subsequent FIS-based effort.

This failure to appreciate the true value of the UNIDO initiative reflects:

- the difficulty of simply and succinctly explaining the techniques involved;
- the absence of any easy to understand proofs of their accuracy.

In essence, the problem is one of "public relations" - convincing the "technician" (fisheries specialists in particular) that the "statistician" is making the right value-judgements despite the known weaknesses in the base data.

Aside from the above-mentioned difficulty of simply and succinctly presenting matters, sceptics will be difficult to convince whilst certain fundamental technical problems persist, for example:

- reliance on MSYR in calculating resource variables;
- reliance on qualitative values for all the industrial and distribution/marketing input variables (which together account for more than one half of the total);
- the growing significance of aquaculture (better treated as a technically and economically different FIS, being "farming" not "fishing"?);
- the need to allow for the impact of external factors, whether socio-cultural or techno-economic.

The best rejoinder seems to be to openly acknowledge the problems and stress the continuing refinements to the typology.

3.2 Matters Arising from the data extraction/analysis

It is vital to stress that UNIDO efforts to define FIS, identify patterns of development, and propose development actions are on-going. The essential point is that UNIDO's approach, for all its imperfections, is methodological and innovative that progressively it is being made ever more useful a tool for industrial development planners.

With that in mind, the following are placed on record.

3.2.1 Institutional Weaknesses

A serious constraint upon economic development in the majority of African countries is the lack of adequate institutional and administrative structures through which sector development can be properly planned and efficiently implemented. This weakness is particularly apparent in the fisheries sector which generally has been neglected and suffers from a lack of resources (low priority in allocations of national budgets), lack of required skills and experience. These deficiencies, which are well known if not always recognized, became freshly apparent in the FIS data analysis. At the same time, the components and variables of the Fact Sheets as presently designed do not specifically provide for a country by country evaluation of this problem. This may be a major weakness as assistance to strengthen institutional capacity could play a substantial role in promoting the rational and successful development of the sector. Indeed, a common problem encountered in African fisheries is the gap between Government intentions and the ability to implement plans and projects, which are often over ambitious. The same considerations often apply to the Government's ability to absorb bilateral or international development assistance and to sustain any progress made after the withdrawal of external technical expertise. In addition to institutional strengthening, the need for training and transfer of knowledge/technology is a common factor.

3.2.2 Information/data deficiencies

The availability and accuracy of data on many major variables leaves much to be desired. Even the FAO statistics on such basic variables as catch and trade are often estimates. This problem is particularly serious so far as information regarding processing, distribution and marketing and industrial inputs is concerned. A trawl through potential sources of supplementary information (eg, FNI, African Business, etc) proved surprisingly unrewarding. At the same time, it should be recognized that, for the most part, the fisheries of those African countries where the data deficiencies are the greatest are essentially artisanal in character with little present or potential opportunities for fishing industry development. This applies particularly to the countries being assessed for the first time.

In brief, the following important data deficiencies emerged:

Category A countries: (10 out of 26)	Namibia - data on virtually all variables lacking; basic statistics available only on catch and per caput consumption Cameroon, Sudan, Tunisia, Zambia, Zaire, Congo, Ghana, Côte d'Ivoire, Kenya - no MSY information.

Category B countries: (14 out of 25)

Libya - data on all variables lacking, except basic statistics on catch and p.c. consumption
Central African Rep - ditto, except catch, p.c. consumption, exports
Benin, Guinea, Guinea Bissau - no MSY data
Lesotho, Chad, Sao Tomé-Principe, Comoros, Niger -serious gaps in data availabilities, typically re MSY, industrial inputs, government policy and role, etc
Zimbabwe, Swaziland, Burkina Faso, Mauritius - data lacking on a number of important variables, notably industrial inputs, distribution/marketing.

NB No data was identified for W. Sahara (in view of political sensitivities surrounding this region, perhaps should be excluded from FIS)

Category C countries: (7 out of 9)

Paraguay, S. Yemen, Dominican Rep, Singapore* - data on all variables lacking, except basic catch, p.c. consumption, export information.
Honduras, Nepal - important gaps, notably MSY, industrial inputs etc
Jamaica - no indications on government policy, industrial inputs

* NB Singapore is a rather special case, ie, negligible domestic fishing sector (catch c. 15,000 tpa) but very important regional role as fish product entrepot (import/export/trading centre)

Important Notes In a number of instances the lack of information can be remedied by:

- reference to other variables, eg, if most industrial inputs are unsophisticated then it is probable that all are the same;

- guesswork/intuition based on general knowledge or the overall "feel" of available information.

However, such extrapolation generally has not been attempted in the present instance. It is felt more appropriate to allow computer analysis to arrive at similar (but perhaps more logical?) judgements based on the "basic" SDF information provided. Here, it should be noted, the "consolated categories" (Extraction = 4-5; Dist/Mktg = 6-8; Ind Inputs = 10-17; and Govt Policy = 18-19) are only completed if:

a. the fact sheet information for specific categories is absent or lacking in merit;

b. the values for specific categories are so diverse as to require a qualitative assessment of the "average".

3.2.3 Possible sources of additional data

With the exception of MSY (see below), the additional data ideally needed falls into three categories:

a. Probably exists at FAO but either presently unavailable to AeSL (ie, the GLOBEFISH data bank) or FAO lacks staff/other resources or willingness to provide. This could be obtained by UNIDO specifically requesting GLOBEFISH data and/or by AeSL staff visit to FAO for deeper, longer trawl through FAO Library files/discussions at personal level with FAO concerned staff[2].

b. Data which in fact are not collected, officially at national level. Statistical systems in many African countries are often rudimentary and data on variables such as processing, internal trade, socio-economic factors often simply do not exist.

c. The possibility might be explored of getting access to data banks/mission reports/sectoral studies on African fisheries from ODA, ORSTOM, Crown Agents, African Development Bank, UNDP, World Bank, etc. It would also be instructive to obtain personal assessments/inputs by African fisheries specialists at FAO and elsewhere of the final Fact Sheets, especially of the values given to those variables which have had to be subjectively evaluated.

3.2.4 The question of MSY (Variables 1 and 2)

As already advised by Mr Fitzpatrick of FAO to UNIDO, MSY has serious weaknesses as a measure of biological potential for industrial development. Firstly, individual development opportunities must be assessed at the level of specific species or species groups and their catch, processing and marketing possibilities; treating the MSY at the biomass level (ie, aggregating all marine or inland water species) is comparable to, say, bundling apples, pears, bananas and oranges together as "fruit". Secondly, MSY data often does not exist at the "national exploitation potential" level, fish stocks not being respecters of EEZ or other boundaries. Moreover, where such MSY data does exist, the estimates available either vary or are simply very broad orders of magnitude. Instead of attempting (Variable 2) to calculate the "% of the resource extracted", consideration should be given to the use of a range of subjectively assessed values (evaluated by full consideration of any MSY estimate available and of other indicators (eg, 5, seriously over-exploited -> 3, moderately exploited -> 1, unexploited or neglected).

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[2] UNIDO should also ask for copy of the study prepared by FAO (FIPP), "Socio-economic Data Bank on African Fisheries" (?) by Alain Bonzon.

An attempt should also be made to obtain from FAO a copy of the 1989 mission report to Namibia.

3.2.5 Fisheries Investment Project Preparation Checklist

This document (110/89 DDC - GEN 1578), produced in July 1989 by the FAO Investment Centre, merits close attention should the opportunity arise to revise/improve the FIS analytical framework. It provides a concise review of the characteristics which distinguish the fisheries sector and a comprehensive checklist of the components and data requirements. Pages 6-10 in particular set out the major constraints and positive factors underlying the industrial development prospects and the information required to establish a rationale for development projects.

3.2.6 Inland Water Fishers

Most of the countries examined pursue inland water fisheries of varying significance. In some cases, notably the land-locked countries, they are the sole basis for the nation's fisheries; in others they make an important, often quasi-subsistence contribution to domestic food supplies. With few exceptions, however, eg, Lake Tanyanika, rarely the resources present are rarely in sufficient abundance or easily accessible to provide the potential basis for industrial development. Many, especially those in the Sahel belt, are moreover highly susceptible to weather variations, in particular lengthy periods of drought. The question therefore arises whether, optimally, the inland water fisheries should be excluded from the FIS analytical system. This might be a factor to be considered in any future adaptation/revision of FIS.

3.2.7 Aquaculture

This is another sub-sector meriting special consideration. Aquaculture is an activity receiving universally increasing attention and Africa is no exception. The continent has considerable prima facie potential for an expansion of fish culture and the sub-sector has been accorded particular priority in a growing number of countries. Again, however, a considerable gap between intentions and aspirations, on the one hand, and substantive practical success in developing aquaculture, on the other, can be frequently observed. If theory and plans could be converted into practical outcomes, aquaculture could make a most valuable contribution to African economies, both as a source for domestic consumption and possibly for export earnings. A separate special study, within the FIS framework, of the potentials for promoting commercial level aquaculture in African countries might therefore be worthy of consideration. The sub-sector is already reasonably well documented and its potentials well researched, notably through the series "National reviews for aquaculture development in Africa", prepared by FAO Fish Resources Division and the FAO/UNDP.

3.2.8 Artisanal fisheries

As already noted above, a major characteristic of the African fisheries is the generally predominant role of the artisanal, as opposed to industrial, fisheries. In many cases, particularly countries being assessed for the first time, the fisheries sector is almost entirely artisanal. In a large number of other cases, the so-called industrial sector is dominated by foreign interests, either through EEZ "access/licensing" agreements or joint ventures. The artisanal sector generally is the major domestic contributor to local food supplies; the industrial sector is often directed mainly at export markets. In this respect, it is important - but not always possible or easy - to distinguish between "processing" and distribution at the artisanal level and at the commercial/industrial level. The former relates essentially to crude, traditional methods of preservation through sun-drying, smoking, simple curing - an entirely different economic and technical activity to freezing or canning. Presently, the FIS data synthesis methodology does not attempt to distinguish between these extreme ranges of processing and of distribution/marketing systems. This is a real weakness as, in most cases, the existing "traditional" systems of preservation are, in all reality, the most appropriate and efficient and the possibilities of introducing more sophisticated, modern technologies are somewhat remote or would be uneconomic - or unsuitable to local tastes/customs. How the FIS analysis can best cope with these distinctions needs serious consideration.

The foregoing suggests that a substantial number of countries might sensibly be excluded from further analysis or treatment. In the following countries, the fisheries are predominantly artisanal, and likely to remain so (primarily because of the lack of any sizeable resources capable of commercial development), ie, there are few, if any, prospects for the development of industrial fisheries:

Category A: Kenya, Malawi, Mali, Sudan, Uganda, Zaire, Zambia

Category B: Benin, Burkina Faso, Gambia, Niger, Togo, Burundi, Central African Rep, Chad, Rwanda, Botswana, Ethiopia, Lesotho, Swaziland

Category C: Dominican Rep, Nepal, Jamaica, Panama

Nearly one half of the above are also countries where serious data differences have been noted (see Section 3.3.2). The majority also are land-locked or dependent essentially upon inland water resources.

3.2.9 Harmonized development

The above considerations underly the need - now well recognized if not always acted upon - to promote the simultaneous and harmonized development of both artisanal and industrial fisheries. In particular, plans and projects for the development of industrial fisheries should take due account of their likely impact upon the artisanal sector and should mitigate or prevent gear and resource use conflicts. It must be recognized that, whatever potentials may exist for industrial fisheries development, the important role of artisanal fisheries as

providers of food, employment and earnings (often in areas where no other opportunities or sources exist) should be protected. These factors should be fully taken into account when taking practical action, through development projects, upon the fruits of the FIS analysis.

3.2.10 Import dependence in self sufficiency

An important incentive for the development of national fisheries, often specifically highlighted among planning priorities and policies, is the need to reduce the frequently heavy burden of imported fish. Notwithstanding the widespread scarcity of foreign exchange in African countries, many instances are found where - in order to maintain food supplies - recourse is necessary to substantial imports of frozen or canned fish. A prime objective of industrial fisheries development may therefore often be that of moving toward greater self sufficiency through higher levels of domestic production and consequent reduction of the import burden. The existing FIS components/variables do not provide for the identification of such situations, except by informal notation under Variable 9 (PC consumption). This should be borne in mind when the FIS characteristics are adapted or modified.

3.2.11 The private sector/entrepreneurial skills

The limited instances of relative success in developing African national fisheries are often characterized by the existence and promotion of an energetic private sector. State participation/parastatals have less frequently been the prime mover of fisheries development. In a number of cases (eg, with varying success: Senegal, S Leone, Cameroon, Nigeria, Liberia) it can be argued that private entrepreneurial skills, management experience and access to private capital have been the major factors behind development. The existence (or lack) of such entrepreneurial, private sector experience and capacities should be an important factor in the FIS exercise. Presently there is no component or specific variable to identify this (could be under "Industrial Inputs"?); again this might be taken into account in any future development of the FIS framework.

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Component	Variables	FACT SHEET - *	ANNEX A
Resource	1. Raw material	*	
	2. Resource utilization	*	
Extraction	3. Extraction throughput	*	
	4. Industrial share extraction	*	
Processing	5. Processed share of extraction	*	
Distribution and marketing	6. Sophistication of distribution channels	*	
	7. Sophistication of marketing methods	*	
	8. Degree of inter-mediation	*	
Consumption	9. Per capita consumption	*	
Industrial inputs	10. Storage and handling efficiency	*	
	11. Processing sophistication	*	
	12. Extraction inputs	*	
	13. Processing inputs	*	
	14. Extraction services	*	
	15. Processing services	*	
	16. Extraction infrastructure	*	
	17. Processing infrastructure	*	
Government	18. Priority given to FIS	*	
	19. Assistance provided	*	
Ownership	20. Role of Government	*	
Export orientation	21. Share of catch destined for foreign markets	*	

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ANNEX B

STANDARDIZED DATA FORM

Fact Sheet No: * **Country:** *

KEY VARIABLE	NOTES	CODE	VALUE
1		A	
2		B	
RESOURCE		B	
3		A	
4		B	
EXTRACTION		B	
PROCESSING (5)		B	
6		C	
7		C	
8		C	
DIST/MKTG		C	
CONSUMPTION (9)		A	
10		C	
11		C	
12		C	
13		C	
14		C	
15		C	
16		C	
17		C	
IND INPUTS		C	
18		C	
19		C	
GOVT POLICY		C	
OWNERSHIP (20)		B	
EXPORTATION (21)		B	

(a) A Actual total; B Percentage basis; C Low (1) - High (5) basis

ANNEX C

DATA SOURCES

Focal Points

Budgetary constraints decreed that the most cost-effective sources had priority. They were: - FAO

- AeSL

FAO contains the most comprehensive array of documentation, especially if there is included that to be found in the Investment Centre. The Fisheries Dept Library tends to be strong on technical aspects, thus requiring that much source material has to be sifted to abstract useful FIS data contained therein. Investment Centre documentation is more sparse for FIS purposes but individual documents can be very rewarding. Staff of the Fisheries Dept represent the best source of information and/or where to find it but to do full justice to their expertise would go well beyond the present budget (and patience of concerned staff).

AeSL, though its in-house documentation and access to commercial interests, serves as the conduit through which private sector activity is best reviewed.

FAO

Fishery Country Profiles: At the time of the original typology exercise, the value of the existing profiles was reduced by the fact that they were frequently five years or more old. In the present instance better use has been made of them as a large number have been updated in the late 1980s.

Despite their issue date, the information contained in the profiles may relate to a much earlier situation, especially as regards statistics. Nonetheless, the profile usually represents the best single comparative source of information and often serves as the yardstick against which other sources are judged. It also permits an early (though not necessarily final) judgement to be made as to the maturity of the FIS - and hence the likelihood of securing data of substance for certain of the key variables, eg, those relating to processing -and the nature of the fundamental features (ie, slow to change) of the FIS, eg, consumption, export orientation.

Fisheries Statistics: These are the basis of the following absolute values:

- maximum sustainable yield resource (MSYR) of the marine resources[3];

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3 MSYR data were collected where available but no attempt was made to persuade FAO staff to prepare specific data - the MSYR concept effectively precludes the creation of valid national data since in most cases marine resources, being migratory and seasonal ignore the existence of political boundaries.

- quantity extracted, harvested or produced from marine and inland waters including, where known, aquaculture production;
- production derived from artisanal sources;*
- quantity of landed catch which is processed (either artisanally or commercially;*
- per capita apparent domestic consumption per annum;
- quantity exported regardless of product form (measured in fresh fish equivalent.

*These are normally estimates or values derived from other information. Catch, consumption and export data are derived from the FAO Yearbook of Fisheries Statistics.

Other Sources: FAO documentation falls into the following categories:

- documents issued by FAO, including the Development Centre;
- documents issued by the concerned Government;
- documents issued by regional international bodies.

Each category is clearly differentiated within FAO documentation centres. Of special value are multi-country reports, eg, covering W African States, inland fisheries, etc, since a common standard applies, and of course the abstraction process is simplified[4]. This latter includes the language problem as such reports usually are in English: this is the overall lingua franca but a not inconsiderable body of data has to be abstracted in French, Spanish, Portuguese or Arabic (plus the odd item in Swahili and other local speech). However, since the aim is to focus on essentials, such aspects usually can be pinpointed with even very limited linguistic competence and thus require only restricted and rough and ready translation to secure the necessary information.

Perusal of the FAO documentation revealed a generally up-to-date coverage; certainly, it was superior to that encountered when the search was previously made in the mid-1980s. Significant gaps still remained, however, so a supplementary search was instituted involving discussions with available FAO personnel. Not all relevant personnel could be contacted due to their other commitments but, overall, the information they provided (verbally or via limited circulation documents) at least partially filled the major gaps in the database.

The foregoing was accomplished without reference to Globefish. This is particularly the valuable single source of factual information but it was not accessed because of the cost involved. However, it is recommended that Globefish be selectively tapped once the present analysis is complete. The database is particularly strong on matters not well covered from other FAO sources, eg, joint ventures, and represents an ideal "back stopping source" to be used if more readily available data prove deficient with regard to a specific variable in a specific territory.

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4 Certain CECAF and other regional publications, containing region-wide data but which incorporate country-specific information, have not been abstracted but remain within the "pooled" data of which the FAO Fishery YearBooks are the most prominent.

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Time also did not permit direct recourse to IFAD, although the organization's key reports were scanned at FAO's Investment Centre. IFAD was cited as being perhaps too project-oriented and concerned with the technicalities of aquaculture to be a prime source of FIS material.

AeSL

Fish Trade Publications: Attention focused upon Fishing News International and Fish Farming International. The review of these publications disclosed a very limited coverage of African territories, and also the (lesser known) Category C priorities, reflecting their generally low rating in commercial fishing terms and in technical/technological development.

African Business Publications: Attention focused upon African Business and Africa Economic Digest. Again, specific FIS data was generally absent.

African Economy Publications: Although these publications, eg, Barclay's Bank Country Reports, only dealt with national facts and issues, it was possible to abstract a useful amount of information regarding the overall state of the FIS.

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ANNEX D

THE FIS CHARACTERISTIC VARIABLES

COMPONENT	VARIABLES	DESCRIPTION	QUANTITATIVE MEASURE (BASIC DATA)	QUALITATIVE MEASURE (KEY WORDS)
Resource	1. Raw material	The maximum sustainable resource of extended economic zone (EEZ) and inland waters in thousands of metric tons per annum.	MSY.	--
	2. Resource utilization	Per cent of resource extracted. Since this is across all species, over-exploitation of certain species cannot be ruled out.		
Extraction	3. Extraction throughput	Quantity extracted, harvested or produced from EEZ and inland waters in thousands of metric tons per annum. This includes foreign catch only if landed.	Production	--
	4. Industrial share of extraction	Per cent of characteristic 3 that is caught or harvested by the industrial sector.		
Processing	5. Processed share of extraction	The percentage of the landed catch which is processed (either artisanally or commercially).	% production	--
Distribution and Marketing	6. Sophistication of distribution channels	An assessment of the sophistication of the methods of distribution, eg, road, rail, and the general level of distribution infrastructure. Also important is the flexibility and reliability of the distribution chain.	--	Sophistication of methods/ flexibility and reliability
	7. Sophistication of marketing methods	An assessment of the complexity and flexibility of marketing methods. Also important is the efficiency of marketing procedures.	--	Degree of complexity and flexibility of methods. Efficiency of procedures.
	8. Degree of intermediation	meant to measure the organizational "distance" between the producer and consumer. In particular the number of middlemen typically involved.	--	Organizational "distance" betw producer and consumer.
Consumption	9. Per capita consumption	The per capita apparent domestic consumption per annum.	Per capita data.	--

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COMPONENT	VARIABLES	DESCRIPTION	QUANTITATIVE MEASURE (BASIC DATA)	QUALITATIVE MEASURE (KEY WORDS)
Industrial inputs	10. Storage and handling efficiency	An assessment of the level of on-board and quayside fish loss and reduction in fish quality.	--	Level of on-board and loss and quayside fish reduction in fish quality.
	11. Processing sophisti-cation	Describes the processing system. This attempts to capture the proportion of the processing capacity that is high level, ie, freezing, canning, etc. The scale of operation and level of capital intensity is also considered.	--	Proportion of the processing capacity that is high level, ie, freezing, canning, etc. The scale of operation and level of capital intensity is also considered.
	12. Extraction inputs	A measure of the local availability of intermediate and capital goods and spare parts for extraction. Pertains to spare parts for vessels, engines and fishing gear. Where applicable, quality and size is also considered.	--	Local availability of intermediate & capital goods & spare parts for extraction. Pertains to spare parts for vessels, engines and fishing gear. Where applicable, quality and size is also considered.
	13. Processing inputs	A measure of the local availability of intermediate and capital goods and spare parts for processing. Pertains to the quality of packaging materials, availability of ice, etc.	--	Local avail of intermediate & capital goods & spare parts for processing. Pertains to the quality of packaging materials, availability of ice,etc.
	14. Extraction services	Quality of the workforce in extraction activities.	--	Quality of the workforce.
	15. Processing services	Quality of the workforce in processing activities. (Services also affected by availability of intermediate/capital goods and adequate infrastructure.)	--	Availability of intermediate/ capital goods and adequate infrastructure
	16. Extraction infrastructure	An assessment of the quality, size and number of ports as well as the availability of repair and maintenance facilities.	--	Quality, size & number of ports as well as the availability of of repair and maintenance facilities.

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COMPONENT	VARIABLES	DESCRIPTION	QUANTITATIVE MEASURE (BASIC DATA)	QUALITATIVE MEASURE (KEY WORDS)
	17. Processing infrastructure	An assessment of the adequacy of infrastructure in major processing areas including the reliability of public utilities, etc.	--	Adequacy of infrastructure in major processing areas including the reliability of public utilities etc.
Government Policy	18. Priority given to FIS	A subjective assessment of the relative importance accorded to the FIS by the national Govt.	--	(As stated)
	19. Assistance provided	An assessment of the importance of incentives and assistance provided directly to those working within the FIS.	--	(As stated)
Ownership	20. Role of Government	Primarily, the proportion of government ownership of the FIS components but the extent of government regulations and control is also considered.	--	(As stated)
Export Orientation	21. Share of catch destined for foreign markets	That percentage of the catch (measured in fresh fish weight equivalent) which is exported regardless of product form.	Production as % exported	--