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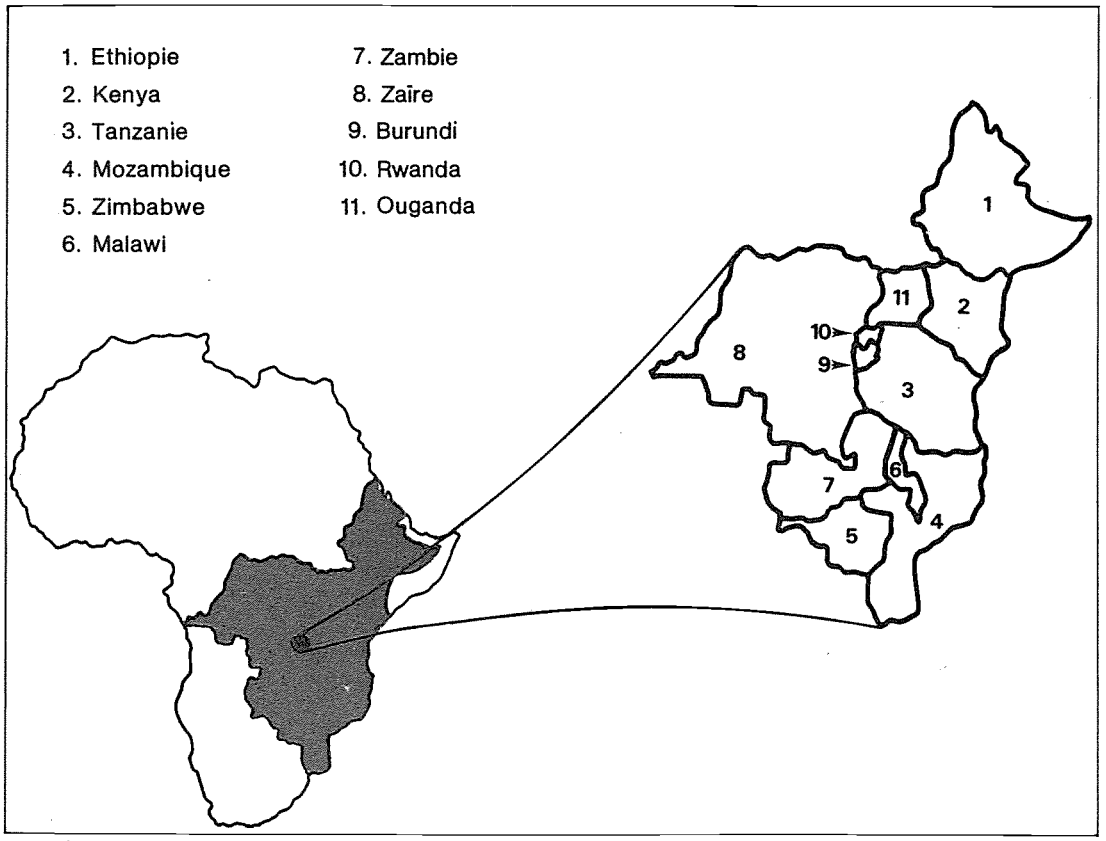
PROJET REGIONAL POUR LA PLANIFICATION, LE DEVELOPPEMENT ET L'AMENAGEMENT DES PECHES CONTINENTALES EN AFRIQUE ORIENTALE, CENTRALE ET AUSTRALE (PPEC)

PPEC

RAF/87/099-TD/01/89 (Fr) Décembre 1989

Rapport de l'étude de base (1987) sur la planification, le développement et l'aménagement des pêches continentales en Afrique Orientale/Centrale/Australe



PROGRAMME DES NATIONS UNIES POUR LE DEVELOPPEMENT

ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE

RAF/87/099-TD/01/89 (Fr) Décembre 1989

Rapport de l'étude de base (1987) sur la planification, le développement et l'aménagement des pêches continentales en Afrique Orientale/Centrale/Australe

basé sur les travaux de

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ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE
PROGRAMME DES NATIONS UNIES POUR LE DEVELOPPEMENT
Bujumbura, Décembre 1989

Les conclusions et recommendations présentées dans ce rapport et autres publications du projet PPEC sont considérées appropriées au moment de leur préparation. Celles-ci sont appelées à être modifiées au vu des connaissances acquises ultérieurement par le projet. Les appellations employées dans cette publication et la présentation des informations qui y figurent n'impliquent de la part de la FAO ou du PNUD aucune prise de position quant au statut juridique des pays, territoires, villes ou zones, ou de leurs autorités, ni quant au tracé de leurs frontières ou limites.

PREFACE

Le projet PPEC a débuté en Janvier 1989 avec pour objectif principal une meilleure exploitation des ressources piscicoles des grands lacs partagées de l'Afrique Orientale, Centrale et Australe. Le projet est excécuté par l'Organisation des Nations Unies pour l' Alimentation et l' Agriculture (FAO), et financé par le Programme des Nations Unies pour le Développement (PNUD) pour une durée de quatre ans.

Onze pays et trois organisations internationales participent à ce projet: Burundi, Ethiopie, Kenya, Malawi, Mozambique, Ouganda, Rwanda, Tanzanie, Zambie, Zaïre, Zimbabwe, la Communauté Economique des Pays des Grands Lacs (CEPGL),la Zone d'Echange Préférentielle pour l'Afrique Orientale et Australe (ZEP) et la Conférence pour la Coordination du Développement de l'Afrique Australe (SADCC).

Les objectifs immédiats de ce projet sont : (i) de renforcer la collaboration régionale pour le développement rationnel et l'aménagement des pêches continentales, et ce particulièrement pour les stocks partagés; (ii) de conseiller et assister les gouvernements dans le domaine de la planification sectorielle et de la préparation de projet; (iii) .de renforcer les capacités techniques existantes par le biais de la formation; et (iv) d'établir une base d'information régionale.

...

Le présent rapport a été préparé dans le contexte de la phase préparatoire du projet et constitue un receuil des informations de base concernant tous les pays et organisations participant au projet. Ce rapport fournit des informations générales sur les pêcheries de la région et est destiné à servir de référence générale, et de base de comparaison pour toutes évaluations régionales qui pourraient être entreprises ultérieurement. Le projet PPEC prévoit de mettre à jour ce document vers la fin de la phase actuelle du projet.

Ce document est publié en version anglaise et française. Toutefois, les profils par pays ont été préparés uniquement dans la langue officielle de chacun des pays.

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PUBLICATIONS PPEC

Les publications du projet PPEC sont regroupées en deux séries :

- Une série de documents techniques (RAF/87/099-WP) se rapportant aux séminaires, missions et recherches organisés par le projet.

- Une série de documents de travail (RAF/ 87/099-TD) se rapportant à des études thématiques ou ponctuelles éffectué dans le cadre du projet.

Pour ces deux séries, il est d'autre part fait référence au numéro du document (1), à l'année de publication (89) et la langue dans laquelle le document est publié : Anglais (En) ou Français (Fr).

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PARTIE I : RAPPORT SUCCINCT

PARTIE I

RAPPORT SUCCINCT

1. INTRODUCTION

Le présent document a été préparé dans le contexte de la phase d'assistance préparatoire du projet PNUD/FAO RAF/87/099 "Développement et aménagement des pêches continentales en Afrique orientale/centrale/australe". Il présente les résultats d'une étude initiale conduite au cours de la période septembre-novembre 1987, qui a servi de base pour la préparation du document de projet. Les informations contenues dans le document concernent donc cette période et elles seront régulièrement mises à jour par le projet.

L'étude visait à recueillir des informations de base sur les plans d'aménagement et de développement, les structures de planification et les institutions qui existent dans le secteur des pêches continentales, et à évaluer les ressources humaines disponibles pour la planification des pêches dans les pays de la région. Quoiqu'elle ait porté sur une zone géographique plus vaste, les informations présentées dans le présent document sont limitées aux pays et aux organisations intergouvernementales qui participeront probablement au projet, à savoir: Burundi, Ethiopie, Kenya, Malawi, Mozambique, Ouganda, Rwanda, Tanzanie, Zaïre, Zambie et Zimbabwe, ainsi que la Communauté économique des pays des grands lacs (CEPGL), la Zone d'échanges préférentiels pour les Etats de l'Afrique de l'Est et de l'Afrique australe (ZEP) et la Conférence de coordination du développement de l'Afrique australe (SADCC).

Les personnes suivantes se sont rendues en mission sur le terrain: M. D. Greboval, Division des politiques et de la planification de la pêche, FAO*; M. E. Chondoma, Fonctionnaire principal des pêches venant de la région de la SADCC*; et M. M. Giudicelli, Service des opérations (FIO), FAO*. M. A. Bonzon, consultant FAO*, s'est chargé à Rome des travaux préparatoires pour ces missions sur le terrain. Le présent document a été préparé sur cette base par M. Greboval, qui est maintenant le Coordonnateur du projet.

2. SITUATION DES PECHES DANS LA REGION

Les pêches continentales en Afrique orientale, centrale et australe reposent sur l'exploitation des nombreuses ressources halieutiques importantes contenues dans de nombreux lacs, réservoirs, marécages et cours d'eau, dont un grand nombre sont partagés entre deux pays ou plus. Ces pêcheries assurent une subsistance à des millions de personnes et contribuent dans une mesure notable aux disponibilités alimentaires, spécialement en tant que sources fondamentales de protéines animales.

En général, les départements des pêches et les instituts de recherche halieutique des pays concernés ne possèdent ni les compétences techniques, ni les moyens matériels et ressources financières nécessaires pour mettre sur pied des systèmes statistiques et des systèmes d'information adéquats. Les données sur les pêches fournies dans le présent résumé doivent donc être considérées comme indicatives.

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* Au moment où les missions ont eu lieu

Les pêcheries des eaux intérieures de la région ont, pense-t-on, un potentiel de production de quelque 1,5 million de tonnes, mais les estimations par pays ou par plan d'eau important varient considérablement d'une publication ou d'une évaluation à l'autre. Ce chiffre représente près de la moitié du potentiel total des pêches continentales en Afrique et quelque 20 pour cent du potentiel total des pêches continentales et maritimes pour ce continent. La quantité totale capturée dans les eaux intérieures de la région était estimée à 763 000 tonnes en 1985, c'est-à-dire à peu près la moitié du potentiel de production; les ressources halieutiques de la région sont donc encore sous-exploitées (voir tableau 1). Toutefois, ces chiffres indicatifs masquent de grandes disparités dans l'état d'exploitation de ressources particulières. Généralement, la plupart des ressources lacustres côtières qui se trouvent à proximité de zones très peuplées et/ou de marchés importants sont intensément exploitées ou déjà surexploitées. Par ailleurs, les ressources du large et celles d'autres pêcheries moins accessibles sont dans une large mesure sous-exploitées, comme par exemple les ressources pélagiques des grands lacs.

Comme l'indique le tableau 2, le gros de la production des pêches continentales provient des lacs partagés ci-après: Victoria, Tanganyika, Malawi/Nyasa, Mweru, Albert/Mobutu, Edouard, Kivu et Turkana. La capture totale dans ces lacs est estimée à quelque 400 000 tonnes, c'est-à-dire à peu près la moitié de la production totale des eaux intérieures de la région.

Cinq des pays participants, à savoir l'Ethiopie, le Kenya, le Mozambique, la Tanzanie et le Zaïre, ont également des eaux marines très étendues, mais les pêches continentales n'en assurent pas moins quelque 87 pour cent de la production nationale totale. Exception faite du Mozambique, les pêcheries des eaux intérieures de ces pays offrent des possibilités de développement supérieures à celles des pêcheries marines (voir tableau 3). Au Zaïre, au Kenya et en Tanzanie en particulier, la contribution des pêches maritimes à la production nationale de poisson n'est que de 10 pour cent environ et les possibilités de l'accroître sont extrêmement limitées.

Les pêcheries sont principalement exploitées par des communautés rurales d'artisans-pêcheurs et procurent un emploi et un revenu à quelque 250 000 pêcheurs et quelque 750 000 personnes employées dans des secteurs d'activité secondaires. Globalement, le nombre d'habitants de la région dont les moyens d'existence sont tributaires de la pêche atteint peut-être 5 millions. Ils vivent pour la plupart dans des zones rurales dont l'économie dépend au plus haut point des activités liées à la pêche, même si la contribution globale du secteur de la pêche au produit national brut est très limitée dans la majorité des pays. Les activités dans l'ensemble du secteur des pêches - capture proprement dite, transformation et commercialisation du poisson, et construction de bateaux - sont essentiellement de type artisanal et de petite envergure, avec une nette évolution au détriment des activités de subsistance et en faveur d'activités commerciales sur une petite échelle. Les pêches plus fortement capitalisées, semi-industrielles ou industrielles, en sont encore à un stade tout à fait initial quoiqu'elles aient été développées avec succès dans certains grands lacs tels que le Kariba et le Tanganyika pour l'exploitation de ressources pélagiques, et dans le lac Malawi pour l'exploitation de ressources démersales.

Les données disponibles indiquent qu'au cours des quinze dernières années la production totale des pêches continentales a progressé d'à peu près 2 pour cent par an. Pendant les cinq dernières années, la croissance a été un peu plus rapide (environ 3 pour cent). Cela tient à un accroissement notable de la capture totale dans le lac Victoria suite à l'accroissement explosif du stock de capitaine d'eau douce depuis 1979; toutefois, la majorité des biologistes pensent que les niveaux de production élevés observés depuis deux ans ne pourront être maintenus. Dans certains pays, par exemple en Ouganda, en Tanzanie et au Zaïre, les captures ont notablement augmenté après avoir accusé une chute spectaculaire à la fin des années 70 et au début des années 80 en conséquence de la situation économique défavorable, de politiques inappropriées et d'un état de guerre. Toutefois, la production a généralement marqué un palier dans la plupart des pays.

La contribution des produits de la pêche à la consommation alimentaire est importante, puisque l'apport moyen par habitant est estimé à 5 kg pour l'ensemble de la région. Comme le montre le tableau 4, les disponibilités de poisson par habitant sont extrêmement variables, puisque quelques pays (Ouganda, Tanzanie, Zambie et Malawi) se rapprochent de la moyenne africaine de 12 kg, tandis que d'autres (Ethiopie et Rwanda) consomment très peu de poisson, soit parce que le potentiel de production est limité, soit parce que les pêcheries sont encore peu exploitées. Le commerce extérieur est peu important et porte essentiellement sur des produits marins. Toutefois, les statistiques officielles ne rendent pas compte de l'importante contribution du secteur "officieux" à un commerce interrégional croissant, intéressant principalement des poissons pélagiques de petite taille vendus sous forme séchée au soleil.

3. POLITIQUES NATIONALES ET SOUS-REGIONALES ET PROGRAMMES DE DEVELOPPEMENT

3.1 Politiques et priorités nationales

Depuis le milieu des années 70, la majorité des pays participants ont fait état du secteur des pêches dans leurs plans de développement économique. Toutefois, jusqu'à une époque récente, ce secteur était considéré comme secondaire, avec un rôle complémentaire de celui des politiques agricoles pour accroître la production alimentaire. En général, l'attention portée aux pêches au cours des deux dernières décennies n'a pas été proportionnée à leur contribution potentielle à la production alimentaire et à la création d'emplois et de revenus. Néanmoins, les plans actuels de développement économique tendent à donner une certaine autonomie au secteur des pêches et reconnaissent sa contribution directe à la réalisation d'objectifs nationaux spécifiques tels que l'approvisionnement alimentaire et l'apport de protéines animales, et le développement rural et régional. Les objectifs sectoriels communs qui ont été identifiés sont les suivants:

- accroître la production de poisson en vue de contribuer à l'autosuffisance alimentaire;

- accroître les disponibilités de protéines animales en vue d'améliorer les normes nutritionnelles;

- créer des emplois et procurer un revenu aux communautés de pêcheurs;

- décentraliser la production de poisson et accroître les disponibilités de poisson dans les zones insuffisamment approvisionnées par la pêche de capture en développant la pisciculture sur une petite échelle.

Une analyse des programmes de développement passés et présents fait apparaître quelques tendances importantes. En premier lieu, on observe que l'aide apportée par le secteur public au secteur des pêches a nettement évolué au détriment de l'intervention directe par l'intermédiaire d'organismes para-étatiques dans les domaines suivants: pêche proprement dite, transformation et distribution du poisson; fourniture d'engins et d'équipement de pêche; construction de bateaux. Les pays ont donc tablé de plus en plus sur le secteur privé, mais il est rare que l'on ait élaboré et exécuté des programmes visant spécifiquement à accroître la productivité de ce secteur par le moyen de politiques adéquates, de l'amélioration des techniques, de la fourniture de services de crédit, de la mise en place ou de l'amélioration de l'infrastructure, etc. Autre tendance notable: on reconnaît de plus en plus l'importance du secteur de la pêche artisanale et on accorde donc une moindre priorité au développement des pêches semi-industrielles ou industrielles. En effet, les tentatives pour développer les opérations de ce genre se sont heurtées à des difficultés dans la majorité des pays et on s'est de mieux en mieux rendu compte de la contribution que les pêches artisanales apportent à la réalisation d'objectifs nationaux autres que la production de poisson, par exemple l'emploi, le développement rural et l'autosuffisance. Enfin, les pays qui ont des ressources marines sont de plus en plus conscients du rôle potentiel des pêches continentales, et l'aquaculture et la pisciculture rurale en particulier suscitent un intérêt croissant en tant que moyen de décentraliser la production de poisson et d'améliorer l'accès des consommateurs aux produits de la pêche.

Dans l'ensemble de la région, on n'a pas encore veillé comme il convient à quelques aspects importants du développement et de l'aménagement des pêches. Les systèmes d'information sur l'état actuel et l'évolution du secteur des pêches et des principales pêcheries restent extrêmement insuffisants, ce qui empêche de nombreux pays d'entreprendre des évaluations convenables, et d'élaborer et exécuter des programmes appropriés. Quelques pays seulement, par exemple le Malawi et la Zambie, ont pris des mesures pour mettre en place et améliorer progressivement leurs systèmes d'information. Si l'on reconnaît de plus en plus la nécessité d'aménager convenablement des pêcheries importantes en vue d'éviter leur épuisement et des pertes pour l'économie, par contre l'élaboration et la mise en application des mesures d'aménagement nécessaires n'ont guère retenu l'attention jusqu'à maintenant. Enfin, d'autres problèmes, tels que la conduite de recherches multidisciplinaires et une planification sectorielle convenable, la réduction des pertes après capture, le rôle des femmes dans le secteur des pêches et le rôle potentiel des incitations économiques dans le développement et l'aménagement des pêches, n'ont pas encore retenu l'intérêt comme ils le méritent.

3.2 Collaboration sous-régionale

A l'échelle sous-régionale, les pays participants sont manifestement favorables à l'élaboration et à l'adoption de politiques communes pour le développement et l'aménagement des ressources halieutiques partagées, et à l'intensification de la collaboration sous-régionale dans les domaines technique et économique. En effet, les pays participants sont de plus en plus enclins à examiner les problèmes communs de développement et d'aménagement des pêches sous les auspices d'organismes régionaux spécialisés ou à vocation

économique tels que le Comité FAO des pêches continentales pour l'Afrique (CPCA), la Conférence de coordination du développement de l'Afrique australe (SADCC), la Zone d'échanges préférentiels des Etats de l'Afrique de l'Est et de l'Afrique australe (ZEP) et la Communauté économique des pays des Grands Lacs (CEPGL).

Le CPCA est un organe subsidiaire de la FAO qui a été créé en 1971. Son mandat prévoit une large gamme d'activités, notamment la coordination à l'échelle nationale et régionale dans les domaines suivants: recherche, mesures de conservation, protection de l'environnement aquatique, techniques de pêche, transformation et commercialisation des produits de la pêche, formation, données statistiques, ainsi que formulation de programmes nationaux et régionaux axés sur les objectifs à atteindre dans les domaines précités.

A la demande de ses pays membres, à savoir tous les pays participant au projet sauf le Mozambique, le CPCA a récemment commencé à s'occuper davantage des questions de politique et de planification. A sa cinquième session en 1983, il a été recommandé de mettre en place un projet régional pour l'Afrique de l'Est qui non seulement permettrait d'organiser des activités de formation, mais apporterait aussi une aide pour l'identification de projets, la planification conjointe et le soutien aux projets nationaux dans la région. Lors de sa sixième session en 1985, un Symposium sur la planification et l'exécution des programmes d'aménagement et de développement des pêches a été tenu à Lusaka (Zambie). Ce dernier a principalement recommandé, entre autres, de veiller de plus près aux aspects suivants: planification du perfectionnement du personnel, organisation de séminaires nationaux consacrés à la planification, et amélioration de la collaboration régionale en matière de recherche halieutique et de développement et aménagement des pêcheries des grands plans d'eau internationaux. Lors de sa septième session tenue en décembre 1987, un Symposium sur le développement et l'aménagement des pêches dans les petits plans d'eau a été organisé à Accra (Ghana).

Respectivement en 1977 et en 1980, le CPCA a créé deux sous-comités pour s'occuper du développement et de l'aménagement des principaux plans d'eau intérieurs de la région, à savoir le lac Tanganyika et le lac Victoria; tous les Etats riverains concernés en sont membres. Les sous-comités sont habilités, entre autres, à donner des avis techniques et coordonner les activités de leurs membres pour l'exécution de projets régionaux, et à promouvoir le développement et l'aménagement intégrés à long terme des pêcheries qui se trouvent dans leur zone de compétence. Les activités du Sous-Comité pour le lac Victoria ont bénéficié de deux projets PNUD/FAO d'évaluation des stocks entrepris à la fin des années 60 et au début des années 70. Par la suite, aucun financement n'a pu être trouvé pour la conduite d'activités à l'échelle régionale. En 1983, le Secrétariat a présenté une proposition en vue de mettre en place un projet régional CEE/FAO d'évaluation des stocks, qui serait considéré comme un programme de base pour la coordination des activités à l'échelle régionale. La CEE a plus tard reformulé cette proposition en collaboration avec les trois pays concernés. Le document de projet était en cours d'approbation au moment de l'enquête. Une initiative analogue a été prise par la FAO en 1987 pour le lac Tanganyika, avec un financement initial de la Finlande et d'AGFUND.

La SADCC a été créée en 1980 par neuf pays de la sous-région et le Gouvernement du Malawi a été désigné comme coordonnateur pour les questions intéressant le secteur des pêches. La SADCC et son Sous-Comité des pêches et de la faune sauvage semblent être particulièrement dynamiques et créateurs, et

formulent notamment un grand nombre de projets (voir II.12) conçus dans le cadre d'un programme spécifiquement consacré aux pêches.

LA ZEP est également une organisation économique de création croissante (voir II.13). Sur ses 16 membres, huit sont intéressés par le projet actuel. En 1985, la ZEP a adopté un programme d'action pour le secteur des pêches, en portant une attention particulière à la création de services régionaux de recherche et de formation. Une proposition de projet a été formulée et soumise en vue d'un financement.

La CEPGL, créée en 1976 par le Burundi, le Rwanda et le Zaïre, n'a porté jusqu'ici qu'un intérêt limité au secteur des pêches (voir II.14). Récemment, une mission a été organisée par la CEA (NU) pour identifier des possibilités de développement des pêches au sein de la Communauté. Le Comité de l'agriculture de la CEPGL étudie actuellement des propositions de projets.

D'autres organisations sous-régionales qui s'intéressent aux pêches sont l'Organisation of the Kagera Basin (OKB) et l'Office intergouvernemental pour la lutte contre la sécheresse et pour le développement en Afrique de l'Est (IGADD) nouvellement créé, mais, jusqu'à maintenant, leurs activités dans ce secteur sont restées peu importantes.

En conclusion, des politiques régionales en vue de renforcer la collaboration en matière d'aménagement et de développement des pêches sont progressivement élaborées par l'intermédiaire de diverses organisations. Toutefois, cette évolution ne se reflète pas encore dans des programmes concrets, malgré les nombreuses recherches et études de faisabilité qui ont récemment été entreprises au niveau sous-régional, en particulier par la SADCC.

3.3 Principales orientations des projets en cours

La plupart des grands programmes et projets en faveur des pêches actuellement entrepris dans la région bénéficient d'une aide extérieure. Ils sont essentiellement nationaux et financés au titre de l'aide bilatérale et multilatérale, mais ils ne sont guère coordonnés et la collaboration est limitée. Dans les pays qui ont des ressources marines, les projets en faveur des pêches maritimes continuent à prédominer, sauf au Kenya. Il existe toutefois quelque dix projets importants concernant le développement de l'aquaculture et vingt et un concernant les pêches continentales, quoique la distinction entre aquaculture et pêches continentales ne soit pas toujours facile à faire. Le tableau 5 donne une liste des principaux projets actuels en faveur des pêches continentales; en sont exclus les études de faisabilité, les petits dons pour la recherche et la formation, et d'autres projets de petite envergure. Sur les vingt et un projets en faveur des pêches continentales qui ont été identifiés, dix sont axés sur le développement des pêches artisanales, deux sur la fourniture d'un soutien à la construction de bateaux et à la fabrication de filets, quatre sur la recherche - y compris l'évaluation des stocks, deux sur la création et le renforcement d'institutions, et un sur la formation.

Il n'y a aucun projet régional en cours d'exécution pour ce qui concerne le développement et l'aménagement des pêches. Toutefois, les recherches et études de faisabilité ci-après sont en cours ou ont récemment été achevées:

A) Dans le cadre de la SADCC:

- Recherches conjointes sur les ressources halieutiques pélagiques du lac Malawi/Nyasa; étude de faisabilité entreprise par l'APD.

- Recherches sur les pêcheries du lac Kariba et développement de ces pêcheries; étude de faisabilité entreprise par le NORAD/DANIDA.

- Autres études et évaluations en vue d'une coopération possible dans les domaines de la commercialisation, de la transformation et de la formation (CEE, USAID).

- L'USAID apporte aussi un soutien financier général aux activités du Sous-Comité SADCC sur les pêches et la faune sauvage.

B) Hors du cadre de la SADCC:

- CEPGL: il n'y a pas de projet en cours d'exécution, mais une étude a récemment été achevée par la CEA (NU).

- Sous-Comité CPCA pour la lac Victoria: le financement par la CEE d'un projet régional d'évaluation des stocks est à l'examen depuis le début des années 80. La CEE a fourni une assistance préparatoire en 1983.

- Sous-Comité CPCA pour le lac Tanganyika: la FAO recherche depuis le début des années 80 un financement pour un projet régional d'évaluation des stocks. Une assistance préparatoire, financée par la Finlande et AGFUND, a été fournie en 1987.

4. PROCEDURES DE PLANIFICATION, PERSONNEL ET FORMATION

4.1 Procédures de planification

Tous les pays participants ont une structure centrale de planification et des procédures de planification d'ensemble à l'échelle nationale. Toutefois, dans certains d'entre eux, par exemple le Zaïre et le Zimbabwe, cette planification économique nationale n'a été que récemment introduite et, dans la majorité des pays, il n'a pas encore été mis au point de mécanismes et procédures de planification sectorielle et sous-sectorielle. Des structures ou unités spécifiquement chargées de la planification du secteur des pêches opèrent actuellement dans moins du tiers des pays concernés et trop souvent avec de maigres résultats.

La majorité des pays formulent des plans économiques indicatifs à moyen terme pour une période de cinq ans, dans lesquels la contribution escomptée du secteur des pêches et les éléments fondamentaux des programmes de développement et d'aménagement des pêches sont généralement indiqués. Toutefois, dans la plupart des cas, les plans et programmes concernant les pêches ressemblent davantage à un catalogue de projets qu'à un ensemble de programmes coordonnés et intégrés, liés à des politiques et stratégies claires.

A quelques exceptions près, le défaut de systèmes d'information est un obstacle majeur à la bonne planification du secteur des pêches. Comme ce secteur a relativement peu d'importance pour l'économie des pays concernés, et étant donné la nature des ressources halieutiques et les caractéristiques de leur exploitation (variabilité, incertitudes naturelles, etc.), la mise en

place de structures complexes et procédures perfectionnées de planification ne peut que rarement se justifier. Toutefois, il est absolument indispensable de mettre sur pied une petite unité de planification des pêches, composée d'une équipe pluridisciplinaire disposant d'un système d'information à l'appui du processus de prise de décisions et employant des procédures de planification simples mais précises pour l'élaboration, la surveillance et l'évaluation des programmes - ce que la plupart des pays de la région n'ont pas encore fait.

La nécessité d'une bonne planification du secteur des pêches est de mieux en mieux reconnue, comme il ressort du fait que de nombreux pays, par exemple le Burundi, le Kenya, le Malawi, la Tanzanie, la Zambie et le Zaïre, ont récemment demandé une aide extérieure pour la préparation d'études sectorielles ou de plans de développement sectoriels. En outre, quelques pays, en particulier le Malawi, le Mozambique, l'Ouganda et la Zambie, ont pris des mesures pour améliorer leurs capacités dans ce domaine.

La faible priorité que les gouvernements accordaient il y a peu de temps encore au secteur des pêches est un important problème connexe, comme d'ailleurs dans le secteur agricole en général. Une conséquence en est qu'il n'a pas été alloué de fonds de développement au budget des départements des pêches et les activités de développement sont devenues fortement tributaires d'un financement extérieur. Cette dépendance signifie que les programmes et projets sont souvent basés sur les priorités des organismes donateurs plutôt que sur les priorités sectorielles déterminées par les responsables nationaux des pêches.

Dans la région en général, l'absence de planification convenable, le manque de capacités techniques et divers autres obstacles à la bonne exécution de nombreux projets ont fait que ceux-ci ont été relativement inefficaces. Le défaut de coordination entre ces projets, et le fait qu'il aurait fallu collaborer plus étroitement pour faire face aux problèmes communs et confronter les expériences, ont certainement contribué à la médiocrité relative des résultats.

4.2 Personnel et formation

Les compétences techniques du personnel des départements des pêches et autres institutions s'occupant de ce secteur varient considérablement d'un pays à l'autre et d'un domaine d'activité à l'autre. Quelques pays, en particulier le Malawi, le Kenya, la Zambie et l'Ouganda, ont pris des dispositions pour améliorer les capacités de leur personnel des pêches à tous les niveaux. Toutefois, même dans ces pays, les compétences en matière de planification font encore défaut. L'importance de la recherche écononique et de la planification, et celle de la surveillance et de l'évaluation au niveau sectoriel et à celui des programmes n'ont en effet été reconnues que récemment lorsque l'on a commencé à encourager certains pays à recruter des économistes et à commencer à organiser une unité de planification centrale. Toutefois, ces économistes sont encore inexpérimentés et la plupart d'entre eux pourraient bénéficier d'une formation pratique complémentaire et de services consultatifs. Dans la majorité des pays, ce sont les experts scientifiques des pêches qui sont actuellement chargés des activités liées à la planification. Ils sont généralement bien entraînés dans leur propre domaine spécialisé et ont une ample expérience dans le secteur des pêches. Toutefois, ils pourraient aussi bénéficier considérablement d'une formation complémentaire en matière de procédures et techniques de planification au niveau sectoriel et à celui des projets.

Dans presque tous les pays participants, de nombreux membres du personnel des départements des pêches et instituts connexes ont de solides connaissances de base en biologie et dans d'autres domaines fondamentaux de la science halieutique. Toutefois, il y a un manque général de connaissances et d'expérience pratique en ce qui concerne l'aménagement des pêches. Les connaissances théoriques acquises à l'étranger sont rarement applicables à la région et, jusqu'à maintenant, les pays participants ont pris très peu de mesures pour aménager leurs ressources halieutiques, limitant ainsi les possibilités d'acquisition d'une expérience en cours d'emploi.

Une tendance générale à recruter trop de personnel de niveau inférieur dans les institutions responsables du secteur des pêches a été observée. Dans de nombreux pays, cela se traduit souvent par de médiocres performances, car le personnel - qui est généralement occupé à des activités de vulgarisation et à la collecte de statistiques des pêches - est généralement mal entraîné et insuffisamment supervisé. En outre, très rares sont les pays qui ont un programme de perfectionnement du personnel; une formation complémentaire au niveau national ou à l'étranger n'est souvent décidée qu'en fonction des besoins.

Les services de formation existant dans la plupart des pays sont principalement destinés aux pêcheurs et au personnel de niveau inférieur à moyen employé dans les institutions nationales. Au niveau universitaire, quelques départements spécialisés décernent des diplômes en sciences halieutiques aux niveaux du B.Sc. et du M.Sc. Une étude a été récemment entreprise sous les auspices de la SADCC pour évaluer les possibilités de collaboration régionale en vue d'une utilisation meilleure et plus complète des moyens de formation existants. L'Université du Zimbabwe et l'Université du Malawi ont été sélectionnées pour dispenser une formation, respectivement en matière de recherches sur les pêcheries d'eau douce et en matière de planification du développement des pêches. Le projet régional envisagé pourrait fournir une assistance technique à ces établissements de formation si et au moment où ils seront officiellement choisis par la SADCC.

En attendant, il convient de noter qu'il n'existe actuellement aucun établissement de haut niveau dispensant une formation spécialisée en matière de planification du développement des pêches et d'aménagement des pêches. Quoiqu'une formation dans ces domaines soit possible à l'étranger, elle n'est pas facilement accessible, soit en raison du manque de fonds soit parce que ces sujets sont généralement étudiés dans le cadre de programmes de formation de longue durée et sous une optique qui n'est pas forcément adaptée aux problèmes et aspects particuliers qui intéressent les pays participants.

5. PERSPECTIVES DE DEVELOPPEMENT ET FACTEURS LIMITANTS

5.1 Perspectives de développement

Les perspectives de développement du secteur des pêches dans la région étudiée sont bonnes. Comme l'indique le tableau 1, il y a encore dans la majorité des pays d'importantes ressources qui sont en grande partie sous-exploitées. Il semblerait que le volume actuel de la production puisse être doublé. Il convient néanmoins de souligner la fiabilité très limitée des estimations de la production et des besoins potentiels. En outre, l'expérience suggère que les comparaisons de ce genre ont tendance à surestimer les perspectives réelles de développement. Il y a deux raisons à cela. En premier

lieu, de nombreuses pêcheries côtières, et spécialement celles qui sont proches des principaux marchés, sont déjà soit intensément exploitées soit exploitées à un niveau excédant le rendement à long terme, ce qui signifie qu'un nouvel accroissement de l'effort de pêche serait contreproductif. En deuxième lieu, la mise en valeur de pêcheries restées dans une large mesure sous-exploitées exige souvant des innovations techniques ou une amélioration des méthodes existantes de capture, de transformation et de distribution, et en général de gros investissements supplémentaires, dont la viabilité technique et économique reste à démontrer.

Toutefois, il serait manifestement possible d'accroître la production, notamment celle des ressources pélagiques de lacs tels que les lacs Tanganyika, Kivu, Mweru, Malawi/Nyasa, Mweru Wantipa et Bangweulu. De même pour la production d'un certain nombre de petits plans d'eau et de petites pêcheries, dont l'isolement a jusqu'à maintenant beaucoup limité l'exploitation, et pour celle de nombreux petits lacs, réservoirs et barrages dont la productivité pourrait être accrue par des opérations de peuplement et/ou de repeuplement. On pourrait aussi accroître notablement les disponibilités en réduisant les pertes après capture et en valorisant les produits de la pêche grâce à l'utilisation de techniques plus efficaces de transformation et de manutention du poisson et à l'amélioration des services de commercialisation et de distribution.

L'analyse ci-dessus montre que deux types principaux d'interventions sont nécessaires pour accroître la production de poisson, à savoir l'élaboration et l'application de plans d'aménagement des pêches visant à contrôler l'effort de pêche appliqué à certaines ressources, et celle de programmes visant à diversifier l'effort de pêche pour promouvoir une exploitation plus rationnelle des ressources et/ou permettre aux pêcheurs de mieux accéder à des pêcheries encore sous-exploitées et aux marchés qu'elles permettraient d'alimenter.

5.2 Obstacles au développement

Les principaux obstacles identifiés par les pays concernés peuvent se résumer comme suit:

- Politiques et planification: absence de politiques, stratégies et plans detaillés; défaut de ressources humaines spécialisées et expérimentées; information insuffisante; forte dépendance à l'égard d'un financement extérieur; manque de procédures opérationnelles pour l'élaboration, la surveillance et l'évaluation des projets.

- Institutions: faiblesse des institutions nationales et sous-régionales due à l'insuffiance des crédits budgétaires et au manque de personnel qualifié dans certains domaines fondamentaux; manque de coordination entre les institutions chargées du secteur des pêches et entre les projets; législation des pêches inappropriée.

- Aménagement des pêches: la surveillance des ressources halieutiques et du secteur des pêches est jugée insuffisante dans la plupart des pays où le manque d'information et de compétences empêche d'élaborer et d'appliquer des mesures d'aménagement; on fait également ressortir l'absence de mécanismes convenables de coopération sous-régionale pour la surveillance et l'aménagement des ressources halieutiques partagées.

- Les services de vulgarisation et de crédit ne sont pas suffisants pour faciliter l'introduction de techniques et méthodes nouvelles ou améliorées pour la pêche proprement dite et les activités de transformation du poisson.

- Le manque de moyens de production pour la pêche est un problème auquel se heurtent la plupart des pays concernés; il est souvent lié à l'allocation insuffisante de devises étrangères au secteur des pêches et à l'absence de politiques bien définies en la matière.

- L'insuffisance des infrastructures et des services est un problème dont se ressentent spécialement la transformation et la distribution du poisson, et qui résulte souvent d'une mauvaise conception et/ou gestion des infrastructures existantes.

Ces obstacles sont d'autant plus importants qu'un nouvel accroissement de la production exigera l'application simultanée de mesures d'aménagement et de développement, en vue à la fois de mettre en valeur de nouvelles pêcheries et d'éviter d'en épuiser d'autres. Jusqu'à maintenant, rares sont les pays concernés qui ont pris des dispositions pour répondre à la nécessité d'aménager convenablement les pêcheries, même si les gouvernements se rendent de mieux en mieux compte qu'il est urgent d'adopter et d'appliquer des mesures d'aménagement. Leur hésitation s'explique par le manque de compétences techniques et d'expérience, par la difficulté de réglementer le secteur de la pêche artisanale et par les diverses incidences socio-économiques de la réglementation du secteur des pêches. La collaboration régionale, non seulement pour l'aménagement des ressources halieutiques partagées mais aussi pour la recherche de solutions aux problèmes communs et la confrontation des expériences, devient d'autant plus importante que quelques pays ont récemment pris des dispositions en vue d'aménager leurs pêcheries.

6. AVIS DES GOUVERNEMENTS SUR LES PRIORITES DU PROJET

Tous les pays participants ont exprimé beaucoup d'intérêt pour le projet, en particulier ceux qui pratiquent la pêche dans les grands lacs partagés de l'Afrique de l'Est. Le Burundi a indiqué qu'il est disposé à accueillir le projet à Bujumbura dont la situation géographique est très appropriée et centrale.

Les principaux domaines d'intérêt et priorités des pays susceptibles de participer au projet sont les suivants:

- Fourniture de services consultatifs et organisation d'une formation complémentaire en matière de planification du développement des pêches, au niveau sectoriel et à celui des projets.

- Assistance technique et soutien financier partiel à la création de mécanismes sous-régionaux pour le développement et l'aménagement des plans d'eau partagés et leur exploitation efficace. De tels mécanismes ont déjà été mis en place pour le lac Tanganyika et le lac Victoria par l'intermédiaire du CPCA qui fournit également un cadre pour la coordination des recherches et la collaboration sous-régionale en matière de développement et d'aménagement des pêches. La création et le fonctionnement efficace de mécanismes analogues pour les autres grands lacs partagés de la région sont jugés nettement prioritaires par les pays concernés.

- Fourniture de services consultatifs et organisation d'une formation complémentaire dans les domaines des statistiques des pêches et de l'information socio-économique.

- Formation aux techniques et méthodes d'aménagement des pêches, et assistance technique pour l'élaboration et l'exécution de plans d'aménagement.

- Possibilités de bénéficier de l'expérience d'autres pays en matière de développement et d'aménagement des pêches, par le moyen de programmes d'échanges, de consultations techniques et ateliers en vue d'examiner et discuter les questions et problèmes communs, et de la diffusion d'informations.

Quelques pays ont fait savoir qu'ils souhaiteraient recevoir une aide consultative ad hoc dans les domaines suivants: révision de leur législation des pêches; participation à des études spécifiques et/ou à des consultations techniques et séminaires ou ateliers de formation qui seraient organisés par les pays eux-mêmes au niveau national ou sous-régional; préparation de projets et recherche de sources extérieures de financement; évaluations et formulation de recommandations en vue d'améliorer ou réorganiser les institutions nationales s'occupant du secteur des pêches.

Au niveau sous-régional, les institutions dont le mandat inclut le développement des pêches ont aussi vivement souhaité recevoir un soutien technique d'un tel projet, spécialement pour ce qui concerne la planification sous-régionale au niveau sectoriel et à celui des projets, la collaboration sous-régionale en matière de développement et d'aménagement des plans d'eau partagés, et la formation dans des domaines essentiels tels que la planification, les statistiques des pêches, l'évaluation des stocks et l'aménagement des pêcheries.

TABLEAU 1

Production et potentiel de production des pêches continentales (*)

PAYS	PRODUCTION[1]				POTENTIEL[2]
	1970	1975	1980	1985	
1. Burundi	13 000	15 000	15 000	15 000	19 000
2. Ethiopie	900	1 500	3 000	4 000	87 000
3. Kenya	26 000	23 000	42 000	100 000	70 000
4. Malawi	66 000	71 000	66 000	62 000	150 000
5. Mozambique	5 000	5 000	5 000	5 000	55 000
6. Rwanda	1 500	1 200	1 200	800	13 000
7. Tanzanie	166 000	160 000	190 000	230 000	297 000
8. Ouganda	130 000	190 000	160 000	160 000	200 000
9. Zaïre	122 000	110 000	102 000	101 000	324 000
10. Zambie	52 000	57 000	51 000	68 000	208 000
11. Zimbabwe	2 000	3 600	13 300	17 300	22 000
TOTAL	584 400	637 300	654 500	763 100	1 445 000

1/ SOURCE: FAO et informations recueillies par les missions

2/ SOURCE: Bernacsek. Sourcebook for the inland fishery resources of Africa, FAO (en cours de préparation)

(*) NOTE: Les estimations sont extrêmement variables d'une publication à l'autre.

TABLEAU 2

Principaux lacs internationaux de la région de l'Afrique de l'Est/Centre

Lacs	Etats riverains	Surface (km^2)	Production annuelle[1] (1985) (tonnes)	Potentiel annuel[2] (tonnes)
Victoria	Tanzanie, Ouganda, Kenya	68 000	154 000*	250 000[3]
Tanganyika	Burundi, Tanzanie, Zaïre	33 000	80 000	250 000
Malawi/Nyasa	Malawi, Mozambique, Tanzanie	30 800	57 800[6]	120 000
Turkana (Rudolf)	Kenya, Ethiopie	7 600	11 000	15 000[4]
Albert (Mobutu)	Ouganda, Zaïre	5 600	15 000*	34 000
Kariba (réservoir)	Zambie, Zimbabwe	5 500	19 000**	19 300
Mweru	Zambie, Zaïre	4 600	11 000*	27 000
Chilwa	Malawi, Mozambique	2 600	25 800[4]	39 400
Edouard (Amin)	Ouganda, Zaïre	2 300	10 400	13 000
Kivu	Rwanda, Zaïre	2 700	800	17 000
Natron	Tanzanie, Kenya	1 000	nul	nul
Chiuta	Malawi, Mozambique	200	1 800[5]	1 200
Rugwero	Burundi, Rwanda	100	230[7]	1 300
Cohoha Sud	Rwanda, Burundi	80	100[7]	1 100
Jipe	Tanzanie, Kenya	50	150	640
TOTAL		164 130	387 080	865 940

1/ Source FAO: *1982, **1983
2/ Indicatif (extrêmement variable d'une publication à l'autre)
3/ Potentiel estimé sur la base de la situation antérieure à l'augmentation explosive du stock de capitaine d'eau douce
4/ Estimations du potentiel extrêmement variables selon le niveau de l'eau
5/ Malawi seulement
6/ Non compris le Mozambique
7/ Rwanda seulement

TABLEAU 3

Pays côtiers: Potentiel* et production nationale (1970-75-80-85)

Pays	Pêches maritimes					Pêches continentales				
	Potentiel	1970	1975	1980	1985	Potentiel	1970	1975	1980	1985
Ethiopie	15 000	16 300	2 430	330	1 000	87 000	900	1 500	3 100	4 000
Kenya	15 000	8 000	4 500	5 400	6 000	72 000	25 800	22 800	42 170	100 000
Mozambique	175 000	17 600	22 500	30 300	32 700	55 000	5 000	5 000	5 000	5 000
Tanzanie	69 000	18 300	51 100	40 000	40 850	297 000	166 400	160 000	190 000	230 000
Zaïre	5 000	14 700	13 300	600	1 000	325 000	122 000	110 000	102 000	101 000
TOTAL	264 000	**74 900**	**93 830**	**76 630**	**81 550**	**836 000**	**320 100**	**299 300**	**342 270**	**440 000**

* SOURCE DES DONNEES SUR LE POTENTIEL: Bernacsek, Sourcebook for the inland fisheries resources of Africa, FAO (en cours de préparation)

TABLEAU 4

Disponibilités alimentaires et disponibilités par habitant de poisson et autres produits de la pêche (Moyennes pour 1982-84)

Pays	Importations (tonnes)	Exportations (tonnes)	Disponibilités alimentaires (tonnes)	Population (en milliers d'habitants)	Disponibilités par habitant (kg/an)	Evolution de l'offre
Burundi	1 093	9	13 050	4 463	2.2	-2.4
Ethiopie	34	4	3 880	41 476	.1	-.5
Kenya	858	2 047	88 303	18 972	4.7	2.1
Malawi	439	4 206	59 723	6 530	9.2	-3.5
Mozambique	16 735	5 033	53 222	13 198	4.0	2.2
Rwanda	0	0	1 069	5 683	.2	-.1
Tanzanie	406	592	241 834	20 965	11.4	-3.9
Ouganda	0	0	184 745	14 486	12.8	-2.0
Zaïre	79 721	0	180 954	28 237	6.4	.2
Zambie	4 730	7	67 278	6 235	10.8	-1.5
Zimbabwe	1 651	0	17 495	8 187	2.1	-.7
TOTAL	**105 667**	**11 898**	**911 553**	**168 432**	**5.41**	

TABLEAU 5

Principaux projets en cours en faveur des pêches continentales (à l'exclusion de l'aquaculture)

Burundi	- Développement des pêches dans le lac Tanganyika et de pisciculture rurale (renforcement des institutions) (BDI/86/006)
Ethiopie	- Formation en vue de recherches en coopération sur les pêcheries d'eau douce (CIDA/Université Waterloo)
Kenya	- Développement de la pêche artisanale dans le lac Turkana (NORAD)
	- Développement des installations de conservation et de transformation du poisson sur le lac Victoria (Italie)
Malawi	- Création de centres de pêche sur une base économique (BAFD)
	- Projet d'évaluation des pêches traditionnelles (APD)
Mozambique	- Développement des pêches continentales et côtières - MONAP (Aide nordique/FAO)
Rwanda	- Développement des pêches dans le lac Kivu (RWA/87/012)
Tanzanie	- Intégration de l'assistance technique et du crédit en faveur des pêcheries artisanales du lac Tanganyika (GCP/URT/066/NET)
	- Centre de formation de Mbegani: assistance financière et technique (NORAD)
	- Assistance financière aux fabriques de filets (Pays-Bas/Norvège)
	- Assistance financière et technique au chantier de construction de bateaux de Pasiansi, lac Victoria (Pays-Bas)
Ouganda	- Réorganisation de la pêche artisanale (CEE)
	- Mise en place d'une infrastructure pour la transformation et la distribution du poisson (Italie)
	- Recherche sur les pêcheries du lac Kyoga (FIDA/Banque mondiale)
	- Chalutage dans le lac Victoria - entreprise mixte (République populaire de Chine)

Zambie	- Projet de développement des pêches dans la région nord: crédit aux pêcheurs et amélioration du système de transformation et de distribution (IDA/Banque mondiale)
	- Recherche sur la pêcherie de "chisense" du lac Mweru-Luapula (Etats-Unis)
	- Projet de développement des pêches dans le lac Kariba (DANIDA/NORAD)
Zaïre	- Développement des pêches dans le lac Mobutu (France)
	- Assistance pour la planification du secteur des pêches (renforcement des institutions) (ZAI/84/013)

PARTIE II : PROFIL DE LA PECHE

B U R U N D I [1/]

1. PRINCIPALES CARACTERISTIQUES DE L'INDUSTRIE DE LA PECHE

1.1 Pêche maritime

N/A

1.2 Pêche intérieure

La quasi totalité des captures réalisées dans les eaux burundaises provient du lac Tanganyika, dont 8 % sont sous juridiction burundaise. Le lac Tanganyika, avec une profondeur moyenne de 700 m, diffère de la plupart des lacs africains dans la mesure où les principales ressources halieutiques qu'il supporte proviennent de la zone pélagique. Les espèces principales sont le "Ndagala" (Stolothrissa tanganicae et Limnothrissa miodon), et plusieurs espèces de Lates dont Lates (Luciolates) Stappersii ou "mukeke" est la plus importante. Une relation prédateur-proie existe entre les deux principaux groupes d'espèces (ndagala et mukeke), qui, ajoutée aux effets multiples de l'environnement, implique des fluctuations importantes d'abondance avec une périodicité de 6 à 8 ans.

La pêche s'effectue essentiellement au lamparo, une distinction étant faite entre pêche industrielle, pêche artisanale et pêche coutumière. La pêche industrielle est le fait d'une flottille de 17 senneurs de type grec. Chaque unité comprend un senneur de 12 à 15 mètres, une barge porte-filet et 3 à 6 embarcations porte-feux pour l'attraction lumineuse. Les captures annuelles moyennes par unité ont diminué depuis le milieu des années 1970 et sont aujourd'hui de 300 à 350 tonnes. Les captures de la pêche industrielle sont estimées à 5 500 tonnes pour 1986

La pêche artisanale est constituée de plus de 1 000 unités de pêche, opérant au lamparo avec des filets soulevés. Les captures annuelles par unité varient entre 9 et 20 tonnes. Elles étaient de 10 tonnes environ en 1986 pour une capture annuelle de près de 10 000 tonnes.

La pêche coutumière est composée de quelques 50 pirogues monoxyles utilisant des petits filets soulevés coniques (Lusenga) et des lignes. Ces unités sont de moins en moins nombreuses et progressivement remplacées par des unités catamarans de la pêche artisanale.

La pêche coutumière est également pratiquée sur les lacs mineurs de l'intérieur du pays où des filets maillants, des trappes et pièges sont utilisés pour l'exploitation de petites pêcheries (Tilapia et Clarias essentiellement). Les deux principaux lacs du nord du pays (Rweru et Cohoha) sont également frontaliers avec le Rwanda et produisent environ 400 tonnes annuellement.

1/ Profil préparé par D. Gréboval

1.3 Aquaculture

La pisciculture rurale en étang s'est développée depuis 1983. Celle-ci est basée sur l'élevage de Tilapia niloticus. La production progresse rapidement et se situe à environ 12 tonnes par an.

1.4 Utilisation des captures

Les captures de la pêche industrielle sont commercialisées au marché central de Bujumbura, comme stipulé par la loi. Une partie importante des captures de la pêche artisanale est également commercialisée à Bujumbura. Le ndagala est vendu frais ou séché sur sable ou claies, ce qui permet une préservation de 2 à 3 mois. Le mukeke est essentiellement vendu frais; une faible proportion étant fumée par les détaillantes. En général, la transformation du poisson est rudimentaire et implique des pertes après captures importantes, surtout en saison des pluies. La commercialisation du poisson frais à l'intérieur du pays est limitée par les difficultés de transport et la dispersion de la population. Les échanges informels avec les pays voisins sont importants et concernent essentiellement le ndagala séché: exportation vers le Zaïre et le Rwanda; importation de Tanzanie en provenance du lac Victoria; transit de produits de la partie tanzanienne du lac vers le Rwanda et le Zaïre.

1.5 Etat de l'industrie

Les rendements sont en général en stagnation pour l'ensemble des pêcheries après avoir diminué fortement vers la fin des années 1970. Le nombre de senneurs est en diminution: 22 unités en 1980. La flottille de catamarans est en constante augmentation depuis 1978, date où de nombreux pêcheurs opérant au Zaïre ont été rapatriés. Elle est passée de 442 unités en 1979 à environ 1 000 unités en 1986. Cette progression s'est effectuée au détriment de la pêche coutumière qui a chuté d'environ 700 unités à 50 unités au cours de la même période. La chute relative des captures depuis la fin des années soixante-dix a entraîné une augmentation importante des prix et peut-être des importations.

1.6 Rôle économique du secteur

Le secteur représente une importante source de nourriture et de protéines pour le pays (33 % environ). Il emploie quelques 7 000 pêcheurs à plein temps et supporte au moins autant d'emplois annexes. Sa contribution à l'économie de la zone littorale du lac est très importante.

2. POLITIQUES ET PLANS DE DEVELOPPEMENT

2.1 Objectifs principaux et priorités

Au Burundi, l'auto-suffisance alimentaire reste la priorité absolue, comme proclamé par le Gouvernement pour la préparation du nouveau plan quinquennal 1988/92, en cours d'élaboration. Le plan quinquennal 1983/87 se limite à faire des prévisions assez vagues sur le secteur pêche et pisciculture, sans tracer des orientations techniques et économiques précises. Dans ce plan et son exécution, la pêche et la pisciculture n'ont reçu aucune attention particulière.

2.2 Caractéristiques du système de planification

Le secteur des pêches n'a aujourd'hui ni programmes ni structures. Le Gouvernement n'a pas au cours des dernières années défini une politique claire de développement à long terme pour le secteur. Les actions du service des pêches et de la pisciculture sont définies à court terme et limitées par une enveloppe budgetaire très réduite. Un effort de planification est actuellement entrepris dans le cadre de la phase préparatoire du projet BDI/86/006 qui devrait élaborer les grandes lignes d'un plan sectoriel pour la période 1988/92.

2.3 Orientations principales du plan en cours

Les actions inscrites dans le plan quinquennal 1983/87 se limitent aux activités administratives courantes du Service des pêches et de la pisciculture, à savoir: l'application des règlements sur la pêche et la collecte des statistiques de pêche. On note toutefois une plus grande priorité donnée au développement de la pisciculture rurale dans le cadre de grandes orientations de développement du pays: auto-suffisance alimentaire et développement rural. Les activités spécifiques qui seront entreprises dans le cadre du nouveau plan quinquennal ne sont pas encore précisées. Toutefois, les travaux préliminaires du projet BDI/86/006 font ressortir les orientations suivantes:

- Renforcement des capacités institutionnelles pour une meilleure administration du secteur et une gestion rationnelle des principales pêcheries;

- Diversification des techniques de pêche artisanale pour permettre une meilleure exploitation des ressources;

- Intensification des efforts de développement de la pisciculture rurale.

2.4 Politique en matière de stocks partagés

La politique du Burundi vis-à-vis de l'exploitation et de la gestion des ressources partagées du lac Tanganyika met l'accent sur l'intensification de la coopération en matière de recherche, l'adoption après études d'une législation commune aux quatre pays riverains, et l'organisation de négociations bilatérales ou multilatérales de droits d'accès aux ressources halieutiques des pays voisins. Ces points seront à l'ordre du jour de la prochaine réunion du Sous-Comité du CPCA pour le développement et l'aménagement des pêches du Lac Tanganyika, à la demande expresse du Burundi. La volonté du Burundi d'intensifier la coopération sous-régionale existante en matière de stocks partagés a également été soulignée lors de la dernière réunion inter-ministérielle de la CEPGL.

3. PRINCIPAUX PROGRAMMES ET PROJETS

3.1 Programmes et projets déjà exécutés

Plusieurs projets de recherche et d'assistance au développement de la pêche artisanale ont été entrepris entre 1968 et 1979 par le PNUD et la FAO:

- 1968: FH-BRD/1, création de trois centres de pêche (US$ 83 000)

- 1971-73: BDI/70/508, Recherche halieutique et commercialisation du poisson (US$ 150,000)

- 1974-76: BDI/73/007, Recherche halieutique (activité poursuivie jusqu'en 1979) et développement de la pêche artisanale.

Sur cette base, la Société d'usinage du poisson du Burundi (SUPOBU) est créée en 1976. Entre 1976 et 1983, la SUPOBU reçoit une aide de la Banque mondiale (IDA) et du Fond Abu Dhabi pour le développement des pêches artisanales et la commercialisation pour un total de US$ 7 millions. La SUPOBU a été dissoute en 1987 après avoir subi des déficits annuels successifs importants. Si la SUPOBU a été un échec certain en tant que société censée s'autofinancer, elle a néanmoins contribué de façon majeure au développement de la pêche artisanale.

Depuis 1983 plusieurs agences de développement ont financé des études de courte durée sur la pêche et la pisciculture et des stages de formation (PNUD, CTFT/France, FAO, CEE/FED en particulier).

3.2 Programmes et projets en cours

Les programmes et projets en cours sont de petite envergure et concernent surtout la pisciculture. On note:

- le programme pisciculture du Corps de la Paix américain (partiellement financé par l'USAID) démarré en 1985 dans quatre provinces et actuellement en cours de renégociation. Le programme vise à développer la pisciculture rurale en étang sur la base de l'élevage du Tilapia nilotica.

- Divers micro projets à objectifs similaires entrepris par des ONG dans le cadre de projets de développement rural intégré (PADC/Suisse; CECI/Canada; CISV/Italie en particulier).

Dans le domaine de la pêche on note le démarrage du projet PNUD/FAO pour le développement de la pêche artisanale sur le lac Tanganyika et de la pisciculture rurale (BDI/86/006) pour lequel un financement de US$ 1,7 million est prévu (phase préparatoire en cours).

3.3 Programmes et projets proposés

Les projets actuellement à l'étude ou pour lesquels un financement est à présent recherché sont à caractère régional. Il s'agit des projets suivants:

- Projet d'évaluation des stocks et d'aménagement des pêcheries du lac Tanganyika: projet élaboré en 1987 par la FAO sous financement de la Finlande (RAF/229/FIN). Un financement partiel est assuré par la Finlande et par AGFUND; financement complémentaire recherché. Coût total estimé à US$ 3,3 millions sur 4-5 ans.

- Projet complémentaire de développement des pêcheries du lac Tanganyika: projet élaboré en 1987 par la CEE/FED en conjonction avec la mission RAF/229/FIN sus-mentionnée et mettant l'accent sur l'amélioration des techniques de pêche et de transformation. Coût total estimé à US$ 5,2 millions sur 5 ans.

- Projets élaborés par la CEA pour la CEPGL dont: (a) la création d'un institut halieutique sous-régional, (b) la mise en place d'un fond communautaire d'encouragement à la pêche, (c) la création d'un centre sous-régional de vulgarisation et de promotion des activités du système pêche.

- Projet CEPGL de recherche hydrobiologique pour les lacs partagés (Kivu, Tanganyika, Rweru et Cohoha). Projet préparé par l'Institut de Recherche agronomique et zootechnique (IRAZ, Institut de la CEPGL) en 1987 pour un financement éventuel de la Belgique.

4. STRUCTURES ADMINISTRATIVES ET INSTITUTIONNELLES

Le Service des pêches relève de la Sous-Direction des pêches et de la Pisciculture du Département des eaux et forêts, lequel relève du Ministère de l'Agriculture et de l'élevage. Dans les faits, le Service des pêches et la Sous-Direction des pêches et de la pisciculture ne font qu'un. De plus, les fonctions pêche et pisciculture ne sont pas différenciées au sein du Service. Ces fonctions sont l'application des réglementations, la coordination et la mise en oeuvre des activités de recherches et de développement et la collecte des statistiques.

4.1 Institution de crédit

Pas d'institution ni de programmes propres au secteur.

4.2 Recherche et formation

Les capacités de recherche et de formation existant au Burundi sont très limitées. L'IRAZ et le Département de biologie de l'Université du Burundi effectuent épisodiquement des recherches dans le domaine de l'hydrobiologie. La formation des cadres supérieurs et moyens s'effectue à l'étranger.

4.3 Institutions régionales

Le Burundi est membre du CIFA et de son Sous-Comité pour le développement et l'aménagement du lac Tanganyika, de la CEPGL, du PTA et de l'OKB.

5. PROCEDURES DE PLANIFICATION

5.1 Procédures

Il n'y a pas de planification sectorielle propre au secteur pêche. Un effort de planification est à présent entrepris par le projet BDI/86/006 en collaboration avec l'administration des pêches et de la pisciculture, la Division de la planification agricole du Ministère de l'agriculture et de l'élevage, et le Ministère du Plan. Un séminaire national de planification est prévu début 1988.

5.2 Personnel

Le personnel du Service des pêches et de la pisciculture est constitué de cinq cadres supérieurs, cinq biologistes/statisticiens et d'observateurs chargés de la collecte des statistiques de pêche. Le service est en cours de réorganisation suite à l'absorption partielle du personnel de la SUPOBU. L'effectif total du Service est d'environ cinquante personnes.

6. PERSPECTIVES DE DEVELOPPEMENT ET CONTRAINTES

6.1 Perspectives de développement

Le potentiel piscicole moyen du lac Tanganyika a été évalué à quelques 250.000 tonnes pour la totalité du lac et à environ 20.000 tonnes pour la partie burundaise du lac. Les captures annuelles des flottes se situant à

présent autour de 15.600 tonnes, le potentiel de développement est limité. Toutefois une meilleure exploitation des stocks est possible ce qui nécessiterait le développement de techniques de pêche artisanale permettant d'exploiter non seulement le ndagala, comme c'est le cas actuellement, mais aussi les autres espèces dont le mukeke en particulier. Les lacs de l'intérieur du pays semblent être pleinement exploités voire surexploités pour certains. Plusieurs lacs mineurs et barrages pourraient bénéficier d'un programme systématique d'empoissonnement. Les pertes après capture sont importantes et pourraient facilement être réduites par l'amélioration des techniques de transformation et de commercialisation. Les perspectives de développement de la pisciculture rurale sont également importantes dans certaines parties du pays.

6.2 Contraintes

Le manque d'encadrement technique des pêcheurs et pisciculteurs constitue à présent la principale contrainte au développement du secteur. Le Service des pêches manque de moyens financiers et de capacités techniques pour appuyer le développement qui nécessite aujourd'hui des modifications technologiques.

Il faut noter également que la réglementation des pêches, qui date de 1954, est devenue inappropriée aux besoins d'aménagement des principales pêcheries. La demande de poisson est importante et dépassera rapidement le potentiel des eaux burundaises. Le Burundi est à ce titre favorable à la négociation d'accords de pêche avec le Zaïre et la Tanzanie dont les ressources sont largement sous-exploitées (lac Tanganyika).

7. INTERETS MAJEURS DANS LA PARTICIPATION DU PROJET

Le Burundi a exprimé un très vif intérêt pour le projet RAF/87/099 et espère en particulier qu'il contribuera à:

- renforcer la coopération entre les pays riverains du lac Tanganyika pour une exploitation accrue et plus rationnelle des ressources halieutiques;

- proposer et contribuer à la mise en oeuvre d'une politique commune d'exploitation et de gestion de ces ressources;

- élaborer une législation commune pour le lac Tanganyika ainsi qu'une législation nationale plus appropriée pour l'ensemble du secteur pêche et pisciculture du Burundi;

- apporter un appui technique et contribuer à la formation des cadres dans le domaine de la planification, de l'aménagement des pêches et du traitement des statistiques de pêche;

- permettre un échange d'expériences et d'idées au niveau sous-régional, en particulier en ce qui concerne les techniques et méthodes de développement et d'aménagement.

2. E T H I O P I A[1]

1. MAJOR CHARACTERISTICS OF THE FISHING INDUSTRY

1.1 Marine Fisheries

The marine resources are located in the Red Sea waters of Ethiopia, which extend about 1 000 km north to south. The continental shelf encompassed in this area averages about 90 km in width, providing 90 000 km² of potential fishing ground.

The main commercial catch consists of sardines, anchovies and some demersal fish.

The number of fishing vessels is estimated at 300 canoes, 6.7% of which are motorized and about 20 boats.

1.2 Inland Fisheries

The inland water fisheries of commercial value are mainly located in the freshwater lakes of the Rift Valley system (area 3 200 km²), Lake Tana in the north (area 3 600 km²) and at least 7 000 km of rivers (among which are the Blue Nile, Awash and Tekeze).

1.3 Aquaculture

Some research in fish culture has been carried out but no commercial activity exists at present.

1.4 Utilization of the Catch

Inland water fish is generally consumed fresh. The consumption is rather low due to eating habits of the population. In recent years, demand for fish has shown an increase, particularly on fasting days.

Fish consumption concentrates at production sites and the major market centres, such as Addis Ababa and Asmara.

The Fish Production and Marketing Corporation (FPMC), a semi-autonomous Government corporation, has an effective monopoly of the distribution and marketing of fish in Ethiopia. Presently there are no imports and exports of fish.

1.5 State of the Industry

Since 1980, annual production of fish has fluctuated between 3 500 and 4 000 tons. About 90% of this production is supported by the inland waters, principally Lakes Langano and Zwai. During the same period of time, fishermen's strength has not changed, with approximately 1 000 of them operating in inland waters and 500 in the Red Sea. The number of fishing vessels on the coast is now estimated at about 100, of which 7% are motorized.

1/ Country review prepared by M. Giudicelli

On Ethiopian lakes and rivers about 200 fishing boats are operating. The fishing gear consists mainly of hand-made beach-seines and gillnets.

No extensive commercial fishing exists, fishing being mainly at a subsistence level. Fishing techniques are rudimentary; basic infrastructure for storage, processing and distribution are now being set up. At present, the producer price value of landings is of the order of US$ 3.5 to 4.0 million.

1.6 Economic Role of the Industry

The fishing industry has almost no impact on the Ethiopian economy. Contribution of fisheries to national GDP and employment is almost non-existent. With a population of some 42 million in 1987, the annual *per caput* fish supply is about 0.09 kg, versus 0.1 kg in 1983. In other words, the supply is rapidly decreasing and, if landings do not increase with an average population growth of 2.5% per year, it could mean that *per caput* supply would be only some 0.07 kg by the year 2000. However, in the fish-producing areas, subsistence fisheries have a higher impact on nutrition than expressed in this national average.

2. NATIONAL POLICIES AND PRIORITIES

2.1 Major Objectives and Priorities

Economic sectoral objectives are the traditional ones: increase food supply, produce surplus for export (particularly for the Red Sea products), and improve socio-economic conditions of fishermen and related operators, first priority being assigned to the development of transportation, storage and distribution facilities.

2.2 Major Characteristics of the Planning System

The planning process is primarily the responsibility of the Council of Ministers through the Central Planning Supreme Council (CPSC). Its Livestock and Fisheries Division coordinates the activities at national, regional and provincial levels. Directives can be implemented at all levels but more generally through the Ministry of Agriculture to the head of the FRDD.

2.3 Major Orientation of Ongoing Plan

The Government has formulated a Ten-Year Perspective Plan divided into two short-term plans of two years (1983-85) and three years (1985-88), and one medium plan of five years (1988-93).

The general objectives, targets, strategies and priorities of this Plan which have a direct interest for the fishery sub-sector are: (a) to conserve and develop the natural resources of the country; (b) to create job opportunities; (c) to achieve a more equitable distribution of the benefits of development; (d) to strengthen and expand the foreign exchange earning capacity of the country; (e) to promote the establishment of cooperatives in peasant agriculture as well as in the handicraft and cottage industries; (f) to employ, as far as feasible, labour-intensive techniques of production, particularly in agriculture; (g) to enlarge and diversify exports through investment in export commodities.

Main priorities are: (a) to improve and expand agriculture, and soil and water conservation; (b) to promote the handicraft and small-scale industries sub-sectors; (c) to develop industries and mineral resource utilization.

A Five-Year Fisheries Development Plan is under preparation including the following provisory targets: 250 staff to be placed in eight agriculture zones and receive job training; 40 new fishermen associations (2 000 members) to be organized and trained; 3 fisheries research centres to be established; 20 000 tons of fish are expected to be produced; 620 boats, 35 cold stores, 4 ice factories, 10 boat shelters, 10 jetties and 30 fish shops to be built.

2.4 Policies Regarding Shared Stocks

Not applicable; Ethiopia is not sharing any important waterbody.

3. MAJOR PROGRAMMES AND PROJECTS

3.1 Past Programmes and Projects

Since 1975 the fishery sector has benefitted from six major aid projects for a total amount of US$ 4.4 million. Three of these projects, for an amount of US$ 2.7 million, have been attributed to inland fisheries, the major one being the EEC project which equipped the FPMC with cold storage and marketing facilities (US$ 1.9 million).

In its successive development plan, the Government of Ethiopia has repeatedly confirmed its willingness to increase fish production. Its current Ten-Year Perspective Plan (1983-93), for example, for inland waters only is aiming at 7 000 tons in 1987. In practice, this policy has been supported by projects which, for inland fisheries alone and since 1979, have represented an investment of about US$ 2.7 million. It is difficult to evaluate the exact impact of these projects. However, the continuing decrease of production would seem to indicate that it has been minimal. The main reason why the EEC project did not get very important results is mainly that a State-owned corporation such as the FPMC does not possess sufficient motivation to run efficiently a fish-marketing business.

3.2 Ongoing Programmes and Projects

Current programmes have been described in 2.3. There are a few important ongoing projects related to the development and management of fisheries.

3.3 Pipeline Programmes and Projects

At present there are many project proposals in the pipeline. However, the fact that some of them have been in this situation for more than five years would seem to confirm the lack of dynamism and political weight of the FRDD. Only one of these proposals could be financed soon - the second phase of the EEC marketing project. This phase will extend the operations of FPMC to several lakes, including Lake Tana. It will also provide for fishing equipment aquaculture inputs, technical assistance and training. Its target is to increase yearly production by 2 000 tons in year five. This project will amount to about US$ 8 million.

4. ADMINISTRATION STRUCTURES AND INSTITUTIONS

4.1 Administration

Fisheries pertain to the Ministry of Agriculture which itself is controlled by the Council of Ministers through the Central Planning Supreme Council (CPSC). This is a straightforward design which, in principle, could be efficient.

The FRDD is responsible for all aspects of fisheries promotion and development but, indeed, is far too weak in human and material means to be capable of carrying out this task properly. The FPMC, a semi-autonomous government corporation, is better provided with some 150 staff and relatively important material means: trucks, cold storage facilities, retail shops, etc. It is greatly hindered, however, by the insufficient involvement of its personnel in commercial operations requiring a high degree of motivation.

The FRDD suffers from four major weaknesses which make it vastly inefficient:

(a) an extremely weak personnel strength at head office: only three members with M.Sc. degrees in biology, which makes it unable to take advantage of its good position for formulating development and management planning policies (at least nine M.Sc. graduates are required in this office);

(b) the weak staff of the Fish Culture and Research Division (Bebeta), with six members (2 M.Sc.; 2 B.Sc. and 2 certificate level);

(c) a weak staff in the field, 46 members for the entire country, of which 2 M.Sc. and 13 B.Sc.; and

(d) a budget which, since 1985, has increased by some 50% but which, in 1987, is still too low to permit any major improvements: about US$ 830 000 of which 48% is for equipment and construction, 32% for operations and 20% for personnel.

4.2 Research and Training

The Fisheries Resources Development Department has a fishery research station located at Bebeta. It contains a complete laboratory, experimental and study rooms, as well as 15 experimental fish ponds. The main research objectives are fish culture experimentation, fish transplants and distribution of fingerlings to lakes and rivers.

The Asmara University has begun a training programme and is still studying the Red Sea Fishery. A Department of Marine Biology is being considered. The Biology Department of Addis Ababa University is training research workers to develop the lakes with the assistance of a CIDA-funded project and Waterloo University.

4.3 Regional Institutions and Linkages

Ethiopia is a member of CIFA, PTA and IGAAD.

5. DEVELOPMENT PROSPECTS AND CONSTRAINTS

5.1 Development Prospects

Fish potentials available for development are unknown. Estimated MSY, for inland waters only, is currently estimated at about 90 000 tons, of which 30% is in Lake Tana and 23% in the Sobat River. Therefore, it is clear that, even if this estimate is not exact, the potentials available for development are important. They could indeed be in the vicinity of 80 000 tons, i.e., more than 20 times the present production.

Fish resources are therefore available for a drastic increase in production. On the other hand, in spite of their traditional preference for meat, consumers are increasingly attracted by fish which, compared to meat, is fetching prices two to four times lower. Consequently, two of the principal factors for fisheries development exist in the country. Policies of the Government of Ethiopia (GOE) should represent another asset for this growth.

Pelagic fisheries could support small canneries. Foodfish such as red snapper and grouper could be exploited for both export and local markets. The potential of sharks is estimated at 2 000 tons, which could be exploited for the production of shark fins, flesh, skin and liver for export markets. About a 500 tonne potential of high-valued lobsters, shrimps and crabs could be exploited for export.

The inland fisheries could make substantial contributions to fish supplies, but are dependent upon the further development of fish marketing facilities.

The beginning of a real effort in this direction could, however, be in the making, if one considers that the Government is envisaging to liberalize producer and consumer fish prices through the FPMC.

5.2 Constraints

However, visible indicators show that in 1987 inland fish production will be roughly the same as in previous years, i.e., about 3 500 to 4 000 tons and, therefore, some 50% under the target. This state of affairs is obviously linked to a set of negative factors which, in their majority, originate from the considerable economic difficulties facing Ethiopia. In such a situation, with a constant piling up of urgent priorities, it cannot be expected that existing sectoral constraints will be rapidly removed.

These constraints are principally the following:

(a) lack of detailed policies formulating effective tactics for the pursuance of strategic objectives fixed by the Ten-Year Perspective Plan;

(b) insufficient institutional means for applying such policies, in particular the level of the Fishery Resources Development Department (FRDD) (see 4.1);

(c) inefficiency of the Fish Production and Marketing Corporation (FPMC);

(d) restrictions imposed on private marketing enterprises; and

(e) non existence of efficient supply systems for improved production inputs.

The dilemma is that, for many years now FRDD's extreme weakness and FPMC's inefficiency have persisted and that, according to the mission's findings, no action is presently envisaged for improving this situation.

6. PRIORITY INTEREST IN PROJECT RAF/87/099

The Director of the FRDD expressed a strong interest in this project but indicated that the final decision regarding Ethiopia's participation was the responsibility of the CPSC. He also stressed that, in its present situation of extreme weakness in terms of personnel, the FRDD will find it difficult to take full advantage of the training input provided by this project.

The FRDD also indicated that, in addition to its objectives, this project should consider responding to other priorities, particularly: (a) planning and policy formulation including strengthening of fisheries planning capabilities through association of staff in training courses and seminars; (b) support to member countries in identifying external sources of funding for medium/long-term financing of activities to improve the operational capabilities of the fisheries institutions; (c) promotion of sub-regional fisheries development and management plans for the resources of lakes.

3. K E N Y A[1]

1. MAJOR CHARACTERISTICS OF THE FISHING INDUSTRY

1.1 Marine Fisheries

The contribution of marine fisheries to the total fish production in Kenya is still rather small with operations largely at artisanal level and confined to the shelf area close inshore along the coral reef. Bottom trawling is very much limited due to a rapidly falling continental shelf and coral outcroppings. The fisheries are essentially exploited by small-scale fishermen using about 2 000 fishing crafts like sailing dhows, dugout canoes, and outrigger canoes. The main fishing gear used are gillnets, handlines, tanglenets, fixed traps and beach-seines. Only a few fishing units are motorized. About half of the catch is composed of demersal species such as sea breams, snappers, sharks and barracuda. Sport fishing is important, representing about 15% of total catch. A few trawlers fish the shallow waters of Ungara Bay for shrimp. Total marine catch has varied around 7 000 tons in recent years and has been estimated at 6 000 tons in 1986.

1.2 Inland Fisheries

Inland fisheries currently account for over 90% of total production. Kenya has extensive inland waters covering an area of about 10 000 km^2. The Kenya part of Lake Victoria and Lake Turkana support the major inland fisheries and together account for 97% of all inland catches, with about 103 000 tons from Lake Victoria (1986) and 7 300 tons from Lake Turkana (1986). The remaining 3% comes from the smaller lakes including Naivasha and Baringo and the major rivers: Tana, Nzoia, Kuja and Yala. Fishing is mostly an artisanal activity involving some 22 000 fishermen using planked canoes in connection with gillnets, beach seines, "dagaa" nets and traps. The use of outboard engines is increasing but remains very limited.

Dramatic changes in the total catch and catch composition have occurred in Kenyan waters of Lake Victoria in recent years. Total catch increased from 18 700 tons in 1976 to 60 900 tons in 1982 to 103 100 tons in 1986. This spectacular increase in total catch is due to the rapid expansion of the Lates fishery (from 94 t in 1976 to 56 900 t in 1986), the Rastrineobola fishery (from 5 600 t in 1976 to 34 500 t in 1986), as well as Tilapia fishery (from 1 000 t in 1976 to 9 100 in 1986). The catch of other species like Haplochromis, Bagrus, Protopterus, Clarias and Barbus, which represented nearly 60% of total catch in 1976, has declined as dramatically and now contributes less that 3% of total catch. Species from Lake Turkana include Tilapia, Lates, Hydrocynus and Labeo. Production has dropped from about 17 000 t in 1976 to about 10 000 t in recent years and 7 300 t in 1986. The decrease in production is mostly related to environmental factors which have adversely affected the Tilapia fishery of Ferguson's Gulf in particular. As most of the catch is marketed outside of the Lake area, dependency on fish processing and marketing infrastructure is important.

1/ Country review prepared by D. Gréboval

1.3 Aquaculture

Fish culture is mostly practised at artisanal level although there exists a few large-scale fish farms. Some mariculture development has also been initiated on the coast (shrimp farming in particular) but production remains mostly experimental. Total aquaculture production is estimated at 980 t for 1986. Tilapia constitutes about 50% of total production, followed by trout (30%) and carp (20%).

1.4 Utilization of the Catch

At present about 35% of the catch is consumed fresh. This is far less than the percentage observed in the 1970s due to increasing long distance marketing of Nile perch and Rastrineobola from Lake Victoria. The production of frozen fish is rapidly increasing for marketing in distant urban centres and for export. However, the largest part of the processed fish is still preserved by smoking, sun-drying and salting. Fish consumption varies greatly among population groups in Kenya. It is higher in the vicinity of the main water bodies and in the major towns. A small but growing export trade involves Nile perch, skillfish, trout and bêche-de-mer. In 1986, exports amounted to 1 300 t of fish and fishery products valued at K.Sh. 50 million. Imports are less important, representing 300 t in 1976 and consisting mostly of canned fish, smoked and sun-dried fish from Uganda and Tanzania.

1.5 State of the industry

Production increased steadily during the 1970's from 34 000 t in 1970 to 51 000 t in 1979, maintaining a yearly growth rate of about 5%. More recently, much greater increases have been experienced with annual production reaching 119 800 t in 1986. The dramatic increase of the Nile perch stock of Lake Victoria is at the origin of this spectacular expansion and has very much transformed the fishing industry at all levels. Freezing and cold storage capacities as well as the use of refrigerated lorries are very much on the increase, further expanding marketing possibilities on local and export markets. Production from the rest of the inland and marine fisheries has remained stable over the years.

1.6 Economic role of the industry

The fishing industry plays an important socio-economic role locally, although its contribution to the national economy remains marginal. It is estimated that about 60 000 people derive their livelihood solely through employment in the industry. Furthermore, sport fishing is an important facet of the tourist industry and earns the country valuable foreign exchange. Fish is a very important source of protein food for those living in the vicinity of major water bodies and in urban areas. Per caput consumption is now about 6 kg/year. If one considers that about a third of Kenyans do not eat fish for historical and cultural reasons, per caput consumption for those relying mostly on fish as a staple food item and source of animal protein is about 9 kg/year.

2. NATIONAL POLICIES AND DEVELOPMENT PLANS

2.1 Major objectives and priorities

In the context of the Fifth National Development Plan (1984-88), the overall priority in food policies is to achieve self-sufficiency by 1989.

The overall guiding policy of the Ministry of Wildlife and Tourism includes: (a) contributing to the growth of the GDR, foreign exchange, employment and public revenues, and (b) promoting viable commercial investment in the sector. Within the framework of the Ministry's guiding policy, the major objectives of the Fisheries Department are to:

- increase fish production on a sustainable basis and from the inland waters in particular;

- provide employment opportunities and thereby improve the standard of living of the people;

- generate foreign exchange through the export of fish and fishery products;

- supply fish protein to a wider cross section of people.

Target levels are indicated for fish production (120 000 t) and for employment to be created in the sector (50 000) by 1989.

2.2 Characteristics of planning system

Planning and implementation are conducted within the context of the priorities, strategies and programmes of the 5-year National Development Plan. In the fisheries sector various institutions are involved at different levels:

- at the national level, the Department of Fisheries (DOF) is involved with global planning, administration, monitoring and management, fish culture and fisheries development;

- at the regional level, development authorities have responsibility for planning and implementation of development and conservation programmes in specific geographic areas: the Lake Basin Development Authority (LBDA) for the Western and Nyanza Provinces and the Western part of Rift Valley Province; and the Tana and Athi River Development Authority (TARDA) in Eastern Kenya;

- at the Division and District levels, Development Committees have similar responsibilities although the fisheries staff working at either levels remains under the authority of the DOF.

Although each level functions in a rather autonomous way, coordination is ensured by the DOF.

3.3 Major orientation of ongoing plan

The strategies and programmes developed by the DOF, in collaboration with the District Development Committee, and by the LBDA and TARDA are focused on:

- the expansion of fish culture and rural fish farming in particular;

- the strengthening of extension services in fisheries and fish culture;

- the introduction of new fishing gear and improvement of transport and cold storage facilities to increase inland water production;

- restocking of Lake Victoria, Lake Turkana and Lake Naivasha;

- more intensive use of vessels belonging to the Kenya Fishing Industries Ltd (KFI) and improvement in boat design and boat building facilities;

- encouragement in the establishment of a fish canning plant (Mombasa) and ice making plants at Makue (North coast), Shimoni (South coast), Kisumu and Homa Bay (Lake Victoria);

- the creation of a Fish Development Authority to develop and exploit fish resources including processing, marketing and distribution of fish and fishery products.

As far as the LBDA is concerned, emphasis is placed on the rehabilitation of fish ponds (15 000 ha); the development of commercial fish farms (5 000 ha); the establishment of fry production centres; training and research in fisheries and fish farming; the reduction of post-harvest losses (Lake Victoria). TARDA's programme is, on the other hand, focused on mariculture development through construction of hatcheries, survey of suitable sites, and extension work; stocking of Tana River reservoirs; and the establishment of rural fish farms.

These orientations constitute a continuation of some of the programmes undertaken in the previous National Development Plan (1979-1983) such as the provision of onshore facilities for fishermen and fish traders, the rehabilitation of fish ponds and the promotion of rural fish culture. With respect to previous Plans, a definite emphasis is, nevertheless, part of fish culture. The Fifth Plan also constitutes a departure from programmes which had previously been emphasized, such as: the development of mechanized trawling in marine waters and in Lake Victoria; the provision of motorized canoes and fishing gear to fishermen and cooperatives.

2.4 Policies with regard to shared stocks

Kenya is a member of CIFA as well as its Sub-Committee for the Development and Management of the Fisheries of Lake Victoria, to which it contributes actively. Kenya is also a member of the IOFC Committee for the Development and Management of Fisheries in the Southwest Indian Ocean and participates in the UNDP/FAO Regional Fisheries Development and Management Project for the Southwest Indian Ocean. Kenya does not conduct any fishing outside of its EEZ and territorial inland waters. Foreign participation in the exploitation of Kenya's fisheries resources is limited to a few joint-ventures. Collaboration in the development and management of shared stocks is now limited to the sharing of information.

3. MAJOR RELATED PROGRAMMES AND PROJECTS

3.1 Past programmes and projects

The major recently completed projects have focused on:

- Training, with the development of the Naivasha Wildlife and Fisheries Training Institute (assistance from the World Bank with funding of US$ 2.2 million)

- Research, with the development of research capabilities in the area of fish culture especially (NORAD assistance to KMFRI with funding of

US$ 1.7 million); other research and surveys being undertaken by the DOF, LBDA, Nairobi University and KMFRI with assistance from NORAD, IDRC and Belgium in particular

- Experimental offshore trawling to demonstrate the feasibility of commercial marine fisheries (assistance from UNDP/FAO with funding of about US$ 1.4 million)

- Extension services and assistance to small-scale fishermen for Lake Victoria (with assistance from Nordic Aid and funding of over US$ 1.0 million)

- Infrastructure development and assistance to small-scale fisheries for Lake Turkana (with assistance from NORAD of about US$ 1.3 million).

3.2 On-going programmes and projects

Major on-going programmes are described in paragraph 2.3; these are supported by the following projects:

- IDA/World Bank: Development of shore facilities (coast and Lake Victoria), a fish farming development centre at Kabouyo, training and research programmes. The project was funded for US$ 10.0 million (1980-1987). It is nearly completed and was reported to have had limited success.

- NORAD: Development of infrastructure including a fish processing plant and assistance to small-scale fishermen of Lake Turkana. The project, funded for US$ 3.5 million over the period 1980-1987, has been adversely affected by changing environmental conditions and their impact on the fisheries of Lake Turkana.

- UNDP/FAO: Development of coastal aquaculture: pilot studies, farm construction and extension work. The project, funded for US$ 0.9 million over the period 1982-1987, experienced operational difficulties but demonstrated technical feasibility of shrimp farming.

- UNDP/FAO and Belgium/LBDA: Rural fish farming development in the Lake Victoria Basin region with focus on fry production, training and extension services. The Project funding was approx. US$ 1.4 million (1983-1987). The objective of rehabilitation or development of a total pond area of 40 ha has been achieved in 1986 with close to 3 000 ponds having been rehabilitated or constructed. The project has overall been rather successful.

- Italy: Development of a fish processing plant in Kisumu and three ice plants on the Lake Victoria shore to be constructed in 1987-88 on the basis of a US$ 3 million grant.

Other projects focused on ecological studies for aquaculture (with assistance from Belgium); extension work in fish farming and fisheries (USAID, Peace Corps, Japan); training of fish culture extension workers and fish processing technology applied to Lates (FAO-TCP).

3.3 Pipeline programmes and projects

Some of the above mentioned projects which are coming to an end are being renegotiated. New programmes are being elaborated but it is still too

early in the preparatory phase of the next five-year plan for these programmes to be well specified. According to DOF, it is likely that fish culture will continue to receive priority attention, along with programmes aimed at improving the general performance of the industry rather than increasing production. The management issues which the transformation of the fisheries resource and industry on Lake Victoria is raising will be addressed. Kenya is expecting financial support for a regional programme for stock assessment of fisheries resources of Lake Victoria as well as for a socio-economic survey of the Kenyan fisheries of this lake.

4. ADMINISTRATIVE STRUCTURES AND INSTITUTIONS

4.1 Administration

The Department of Fisheries is responsible at national level for global planning, administration, monitoring and management. Development activities are shared with LBDA and TARDA for the areas they cover, and coordinated by the DOF for activities to be undertaken at divisional and district levels. The DOF has about 2 000 employees, of which many are contractual. It operates 20 stations throughout the country, some having dual functions as fisheries and fish culture stations. The DOF also operates the Naivasha Wildlife and Fisheries Training Institute.

The Government is directly involved in Fishing and fish processing activities through the parastatal Kenya Fishing Industries Ltd. (in the process of being disbanded) and through participation in the capital of Kenya Fishnet Company Ltd. and a number of fishing cooperatives and joint ventures. Numerous fishing cooperatives have been created, the largest being the Turkana Fishermen's Cooperative Society with about 3 000 members. These are under the authority of the Ministry of Cooperative Development.

4.2 Credit Institutions

Credit is available to the industry from the Agricultural Finance Corporation, KENCON Finance Ltd. (for fish farming in particular) and from other commercial banks. A number of sources of credit are also available to small-scale fisheries and fish farmers in the content of grants for self-help groups, community projects and externally-financed loan schemes. The interested parties have, however, received little financial assistance under the available schemes which are seldom designed to cater for such needs.

4.3 Research and training

After the collapse of the East African Community in 1977, the DOF stations have undertaken local research until the creation of a separate autonomous body, the Kenya Marine and Fisheries Research Institute (KMFRI) in 1979. While some research activities are still undertaken by DOF, LBDA and TARDA, KMFRI are responsible for scientific studies on aquatic sciences, mainly fisheries, oceanography and, more recently, aquaculture. KMFRI has three main research stations in Mombasa, Kisumu and Kalokol.

Training and research are also conducted by the Zoology Department of the University of Nairobi which offers an aquatic ecology degree. The newly-created Naivasha Wildlife and Fisheries Training Institute trains lower and medium level cadres, offering three-year diplomas in fisheries management and fish-gear technology as well as a two-year certificate in boat building. Some training in fish culture is also provided.

4.4 Regional institutions and linkages

Participation in regional fisheries institutions are indicated in 3.4. Kenya is also a member of P.T.A. and IGAAD. Regional cooperation in the area of training is very limited but encouraged.

5. PLANNING PROCEDURES AND MANPOWER

5.1 Planning procedures

Several administrations and ministries are involved in the fisheries sector: the Fisheries Department attached to the Ministry of Tourism and Wildlife; the LBDA and TARDA attached to the Ministry of Energy and Regional Development; KMFRI attached to the Ministry of Research, Sciences and Technologies; fisheries cooperatives attached to the Ministry of Cooperative Development, etc. Moreover, under the prevailing decentralisation scheme, these institutions interact with divisional and district level development committees. All these institutions contribute to the planning process and the implementation of the Plan under the guidance of the DOF and the control of the Treasury and Ministry of Planning and Economic Development. Various missions reported the lack of coordination at planning and implementation levels to be a major constraint to development. In the opinion of the DOF, this is not, however, a major constraint to the development of the fisheries sector. There exists a Planning Unit in the Ministry of Wildlife and Tourism and a Food and Nutrition Planning Unit in the Ministry of Planning and Economic Development.

Planning mostly involves the elaboration of strategies, programmes and projects and their implementation following national and sectoral objectives and priorities as determined in the five-year National Development Plan. An interesting characteristic of Kenya's planning system is that it is rather binding and thus limits the number of activities and projects undertaken outside of the strategies and programmes included in the Plan. Guidance for long-term planning has recently been provided (Sessional Paper No 1 of 1986 on Economic Management for Renewed Growth) which unfortunately does not include anything on fisheries. The development strategy outlined in this paper puts considerable stress, however, on the rural economy as a way to balance the contribution of rural and urban sectors as well as the industrial and informal sectors.

5.2 Manpower

Considering the number of institutions involved in the fisheries sector, it was difficult to assess total manpower and academic levels. Total manpower was nevertheless estimated to be about 3 000, of which 2 000 were employees of the Fisheries Department. It is expected that the Naivasha NWTI will contribute significantly to the training and re-training of lower and middle cadres. Planning mostly involves the most senior staff at headquarters with feedback from the field at divisional and district levels. There are no specialized planning units in the Fisheries Department and other specialized institutions. Economic inputs at the DOF level are very limited with junior economists and collaboration with the Planning Unit of the Ministry of Wildlife and Tourism.

6. DEVELOPMENT PROSPECTS AND CONSTRAINTS

The potential maximum sustainable yield of the marine fisheries has been estimated at about 15 000 tons, i.e. about twice the present

production level. Increasing catches beyond present levels would, however, require further development of commercial offshore fishing, itself limited by financial constraints (profitability). Inland waters used to offer the best prospects for development. However, recent development of fishing activities in Lake Victoria might already have led to the exploitation of the new fisheries. It appears doubtful that present catch levels (if these are correct) can be sustained. However, scientists are not in a position to correctly assess standing stocks and estimate maximum sustainable yields considering the drastic changes which have affected the resources. Environmental changes on Lake Turkana have led to a much reduced estimate of potential catch (about 10 000 tons compared with present catch levels of about 7 000 tons).

For these reasons it is felt that emphasis should now be put on the rational management of both marine and inland fisheries. Controlled and selected development in the small-scale fisheries sector could continue to be encouraged while avoiding over-capitalization and the necessary development of industrial fisheries. Development prospects are still important in the area of fish handling, processing and distribution, both to reduce post-harvest losses and to improve the value of fish and fisheries products.

There are definite prospects in the development of rural and commercial fish culture and mariculture. As further development of capture fisheries is limited, it is expected that aquaculture will benefit from increasing fish prices.

6.1 Development constraints

The main development constraint is now the lack of important and still largely underexploited fisheries resources and there is now a need to introduce and apply effective management measures to prevent the severe over-exploitation of the fisheries now becoming fully exploited. As such, further development would involve controlling the amount and forms of fishing effort and redirecting effort towards certain fisheries if necessary. Kenya still lacks some of the resources and capabilities required to elaborate and implement such management plans and, in general, to intervene in the development and management of fisheries at a far more specific level.

In general, various experts have identified the lack of collaboration and coordination between the different institutions involved in the fisheries and aquaculture sectors as being a major impediment to effective planning and implementation. The lack of properly trained personnel, at both cadres and extension levels, is also a constraint affecting further development in the sector, especially with respect to fish culture and fisheries management. Monitoring of the fisheries and, in general, the information gathered at field level were further reported by the Fisheries Department's Director to be inadequate and insufficient for proper planning and implementation. General planning capabilities are also limited and may prove to be insufficient for proper planning and implementation of the more specific programmes which are now required.

7. PRIORITY INTEREST IN PROJECT RAF/87/099

The Fisheries Department has indicated a strong interest in the project. Among the specific areas of direct interest to Kenya, the following were stressed:

- Assistance to and strengthening of the work of the CIFA Sub-Committee for Lake Victoria with emphasis on statistics, socio-economic research and management advice;

- The conduct of comparative analysis of development and management policies for Lake Victoria and other major water bodies in general;

- The conduct of similar comparative studies for fish culture and other thematic issues (technology, statistics, etc.);

- The training of extension workers in specific areas covered by the Project;

- Exchange programmes among the countries covered by the Project in the context of on-the-job training;

- Direct contribution or funding of high level experts to contribute to national seminars and research investigations undertaken in Kenya;

- Assistance to and strengthening of regional collaboration for the development and management of Lake Turkana;

- Ad hoc advisory services in the area, data collection and analysis; fisheries management and the elaboration of information systems adapted to the need of the Fisheries Department for proper planning and implementation;

- Contribution of the Project to documentation or key issues related to shared water bodies and inland fisheries development and management.

4. MALAWI[1/]

1. MAJOR CHARACTERISTICS OF THE FISHERIES INDUSTRY

1.1 Marine Fisheries

Not applicable; Malawi is landlocked.

1.2 Inland Fisheries

Malawi's inland waters account for about 25 000 km^2 or 20 percent of the total area of the country. The main source of fish production is Lake Malawi which covers an area of 30 800 km^2, although nearly 25 percent of its area belongs to Mozambique. Other Malawian water bodies include Lake Chilwa (2 500 km^2), Lake Chiuta (200 km^2) and Lake Malombe (390 km^2), as well as the Shire River (520 km) and its flood plains. Lake Chilwa is an endorheic lake. Some years it dries out almost totally but, on refilling, becomes exceptionally productive, occasionally accounting for as much fish as Lake Malawi itself. Lake Chiuta and Lake Malombe are not so productive, though locally important.

One of the critical characteristics of the inland water resources of Malawi is the extent to which they are given to fluctuation. These fluctuations are primarily influenced by climatic and other factors related to substantial variations in lake levels. Lake Malawi is much more productive in the south than in the north. The northern part is very deep at over 700 m; the southern part, however, is relatively shallow. This great depth, coupled with the poor nutrient supply from the northern rivers, accounts for the lower productivity in the north. Between the years 1970 to 1982 production from Lake Malawi ranged between 22 000 and 57 000 tons. Production from other inland waters also fluctuated. Over the same period, production in Lake Chilwa ranged between 2 000 and 26 000 tons, Lake Malombe between 2 000 and 12 000 and Lake Chiuta between 1 000 and 1 500 tons. The flood plains of the Shire River range from 480 km^2 to 1 030 km^2. In 1972 the river fishery yielded over 17 000 tons but only 4 000 to 5 000 tons in recent years. Total annual fish production in recent years has ranged between 60 000 and 84 000 tons. Estimated potential yield varies between 80 000 and 150 000 tons per year.

The fishing industry is labour intensive, with an estimated 20 000 full-time artisanal fishermen and about 1 000 employed in the commercial fisheries sector. A further 200 000 people are estimated to be working ashore as fish traders, boat builders, net makers and in other support industries. In 1984 there were 5 952 canoes, 1 419 plank boats without engines and 475 with engines. Commercial fishermen use larger boats with inboard engines and over 85 percent of the commercial fishing units are pair trawlers. Almost all commercial fishermen fish for demersal 'shisawasawa' (Lethrinops spp.) stocks which are not exploited by artisanal fishermen. Very few fish for chambo, utaka and usipa. The commercial fishery has not been very profitable.

On Lake Malawi, where operations are still predominantly confined to the shallow waters inshore and around islands, the major fish groups presently exploited are Tilapia and Haplochromis, whereas the Lake Chilwa catch includes Barbus and Clarias, as well as Tilapia.

1/ Country review prepared by E. Chondoma

1.3 Aquaculture

Aquaculture is still at an early stage of development in Malawi and a number of projects for its development are being prepared. Unfortunately, the altitude of many areas mitigates against high yields from well-known species such as Tilapia. However, experiments are now being carried out to identify indigenous species suitable for cooler high altitude temperatures. It is estimated that there are between 370 to 500 small holder fish ponds with a total area of 72 ha, producing 96 to 104 tons per year. There are also 700 to 800 reservoirs with a total area of 1 000 ha which have been stocked for extensive aquaculture and are producing between 105 to 192 tons per year. Thus, total fish production from aquaculture is about 300 tons.

1.4 Utilization of the Catch

Almost all the Malawian catch is used for domestic consumption in a variety of forms, in particular fresh, sun-dried and smoked; only a small proportion is exported to the neighbouring countries. Generally the processing is elementary and is carried out by fishermen themselves and fish traders who later transport their products to towns. Considerable achievements have been made in preservation and distribution of fresh fish as a result of improved road communication and the wider use of motorized transport. Fish markets have been built at Malembo, Namiasi and at MALDECO (a parastatal body involved in fishing, processing and wholesale distribution) in Mangochi. Ice and coldroom services are available at Namiasi, Salima and through MALDECO. MALDECO also owns refrigerated trucks for delivering fresh fish to the cities. Ice is also available in Blantyre and Lilongwe from the Cold Storage Company. Through the Central Lake Fisheries Development Project in Salima, a successful technique of controlling fish spoilage by blow fly attack was developed using actellic; this method is now widely used by fishermen. Besides all these achievements, marketing still remains mainly in the hands of itinerant fish mongers, many continuing to deliver their goods by bicyle.

1.5 State of the Fisheries Industry

Fish production in Malawi is a significant industry, having demonstrated remarkable growth and success during the sixties and seventies. More recently, production has levelled off, to some extent due to the climatic fluctuations already mentioned but also to some heavy exploitation of nearshore and demersal stocks in the south of Lake Malawi itself. The offshore pelagic stocks of Lake Malawi are underutilized and would seem to hold prospects for increased production.

1.6 Economic Role of the Industry

For most Malawians, fish represents the principal source of animal protein, accounting on average for more than 60 percent of animal protein intake. Because the staple food consists mainly of ground maize, protein deficiency is a serious problem and protein calorie malnutrition is believed to be an underlying cause of very high infant mortality levels. The Government is making considerable efforts to increase protein availability to the rural communities and, hence, the maximum sustainable production of fish from all sources is a very high priority.

Imports of fish are very small and linked mainly to the tourist industry. In 1984 Malawi imported 200 tons worth MK 302 300. Exports are also small, mainly to neighbouring Zambia and Zimbabwe, although there is a significant foreign currency earning trade in tropical ornamental fish.

2. NATIONAL POLICIES AND DEVELOPMENT PLAN

2.1 Major Objectives and Priorities

Malawi, with technical assistance from the EEC, is finalizing a 10 year Fisheries Development Strategy which will take fisheries development to the year 2 000. The development strategy has defined the policy goals and identified priority areas and development programmes. The policy of the Fisheries Department aims:

- to maximize, in a sustainable manner, the yield of those fish stocks which can be exploited commercially from national waters;
- to improve the efficiency of exploitation, processing and marketing;
- to vigorously promote viable rural fish farming units;
- to exploit all available opportunities for expanding existing and developing new fish products to meet local demand and for export;
- to expand and develop the supply of crocodile products for export;
- to protect endemic fish fauna as a scientific and educational asset.

Under the current updated Five Year Development Plan, 1984-1989, the priorities of the fisheries plan include:

- collection of data and assessment of the state of the stocks;
- introduction of fishing regulations;
- experimental fishing with new and improved methods;
- extension services to fishermen;
- improved processing and handling;
- promote aquaculture development particularly in the central and northern regions.

2.2 Characteristics of the Planning System

Malawi has a five year planning system. The current Five Year Development Plan, 1982-1987, was updated in 1984 to cover 1984-1989. By and large, the plan is dependent on a large external financial input. The plan is reviewed annually and priority areas are allocated funds as they become available, so the plan is indicative and could change depending on the financial resources.

Fisheries development planning is the responsibility of the Department of Fisheries (DOF) under the Ministry of Forestry, Fisheries and Natural Resources. The DOF prepares the Five Year Development Plan which is sent to the Ministry for review. However, the Ministry of Forestry, Fisheries and Natural Resources does not have a well organized planning unit as in other ministries. There is one senior economist who acts as the planner and his role is to review the departmental plans and assist the departments in plan improvement. From the Ministry of Forestry, Fisheries and Natural Resources the plan is sent to the Economic Planning Department in the Office of the President and Cabinet. Here all

ministerial plans are reviewed, priorities determined and then compiled into the National Development Plan. Fisheries represents currently about 0.49 percent of total Government expenditure.

Activities pertaining to rural development are coordinated through the National Rural Development Programme (NRDP). Its objectives are to boost agriculture production.

2.3 Major Orientation of the Ongoing Programme

(a) Stock assessment studies to identify underutilized stocks and re-assess the situation of the stocks exploited by the trawl fishery in the southern part of Lake Malawi.

(b) Promotion of aquaculture to bridge the gap between demand and supply from the capture fishery and develop fish production and consumption in areas far from the capture fishery.

(c) Developing institutional capacity of the Fisheries Department.

(d) Improving fish processing and handling to reduce post-harvest losses.

(e) Extension services to fishermen and fish farmers.

(f) Construction of landing sites for fishermen and improving marketing infrastructure.

2.4 Policies with Regard to Shared Stocks

Three countries, Malawi, Mozambique and Tanzania, exploit the fishery resources of Lake Malawi. Malawi's policy with regard to shared stocks is to promote interterritorial cooperation, covering all shared waters initially through collaboration research, leading to the establishment of joint fishery management machinery to obviate any risk of over-exploitation. The current SADCC Project on the Joint Research of Pelagic Fishery Resources of the Lake Malawi/Nyasa for Malawi, Mozambique and Tanzania, to be funded by ODA, will initiate joint activities.

3. MAJOR RELATED PROGRAMMES AND PROJECTS

3.1 Past Programmes and Projects

Malawi has been a beneficiary of a number of bilateral and multilateral aid projects in fisheries development. The following were the major projects:

(a) Lake Malawi Fisheries Development, UNDP/FAO, 1969-1982. Offered training and infrastructure development in the south, trawling and purse seining in Nkhota Bay.

(b) Fisheries Expansion Project, UNDP/FAO, 1977-1982. The purpose of the project was to expand pelagic stock assessment studies and fishery development activities. Provided boat-building training, a commercial venture and a research laboratory at Nkata Bay.

(c) Central Lake Fisheries Development Project, EEC, 1980-1985. Multi-purpose fisheries project on Lake Malawi. It was instrumental in popularizing the use of actellic for fish preservation.

(d) Lake Malawi Research, UK, 1977-1981. Cormorants on Lake Malawi and their influence on commercial fisheries.

3.2 Ongoing Programmes and Projects

(a) Development of Fisheries Economic Centres - Mangochi District: The project is to construct eight centralized fish landing sites, two centres at Malindi and Chapola already constructed. Funded by the African Development Bank through LWADD.

(b) Traditional Fisheries Assessment Project: The project aims at making an assessment of the traditional fisheries of Lake Malawi and Lake Malombe. The project will estimate fishing effort, review the statistical collection system and train data collecting and analyzing staff. Funded by ODA, the project started in 1986 for three years.

(c) SADCC Regional Fisheries Development Project: This is a project to support DOF in its duties of coordinating fisheries activities in the SADCC Region. Funded by USAID.

(d) Fisheries Development Strategy Study: The project aims at reviewing the development work and proposing a development strategy for fisheries for the next 15-20 years. Five specialist consultants have finished the studies and the Government is awaiting the final report. Funded by EEC.

(e) Development of National Fisheries Training Programme Study: This study is to identify national training requirements and prepare a National Fisheries Training Project. The study is completed and Government is awaiting the final report. Funded by UNDP.

3.3 Pipeline Programmes and Projects

(a) Development of National Fisheries Training Programme: this project is now under preparation, see study above (3.2 (e)).

(b) Management of Chambo (Tilapia) Fisheries in the Southeast arm of Lake Malawi, Lake Malombe and the Upper Shire River. FAO/UNDP, US$ 877 550.

(c) Lakes Chilwa and Chiuta Study and Development Project: surveys including boat building, infrastructure, fish culture potential, limnology. GTZ has shown interest.

(d) Central Lakeshore Fisheries Expansion Project: follow-up of project mentioned above under 3.1(c).

(e) Demersal Fisheries Reassessment Project: research project to review the standing stock estimates of demersal fish commercially fished in the southern end of Lake Malawi.

(f) Northern Region Fisheries Development Project: stock assessment of various demersal and deep water resources of the northern end of Lake Malawi. EEC may fund it depending on the recommendation of the Strategy Study.

(g) Cyprinid Aquaculture Research Project (CARP). FAO/UNDP, US$ 750 000.

(h) Central and Northern Regions Fish Farming, Development, Extension, Training and Research Project: the project aims at establishing four major fish farming stations in the central and northern regions. To be funded by EEC.

(i) SADCC Pilot Integrated Fish/Pig Farming Development and Research at Kasinthula. Negotiations ongoing with French Cooperation.

(j) Mulanje Fish Farming Development Project: will develop a fish farming station and extension programme.

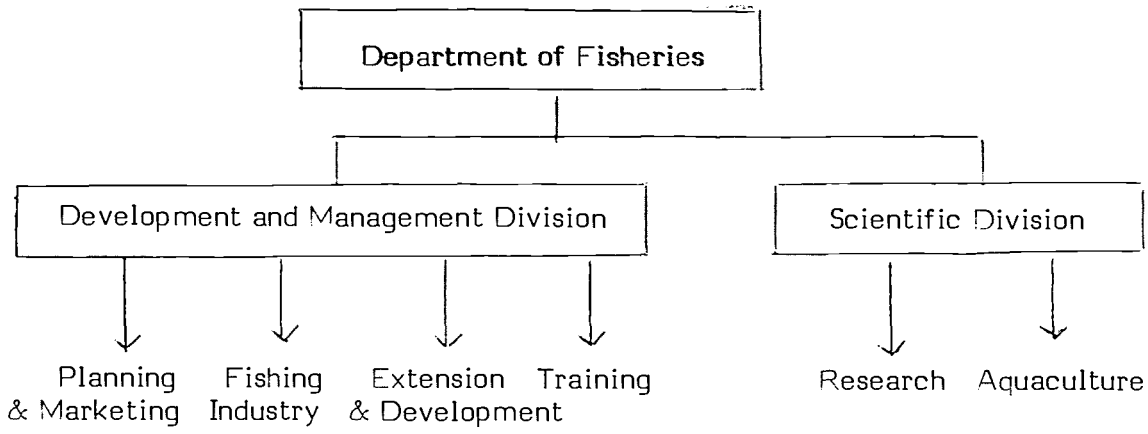
(k) Training in Fishery Statistics and Establishment of a National Fishery Data Centre: project was withheld awaiting results of a SADCC Regional Information Project funded by USAID which is now completed. Earmarked for FAO/TCP funding.

(l) Joint Research of Pelagic Fishery Resources of Lake Malawi/Nyasa. SADCC initiated project to be implemented jointly with Mozambique and Tanzania, to be funded by ODA for US$ 3.85 million.

4. ADMINSTRATION STRUCTURES AND INSTITUTION

4.1 Administration

The Department of Fisheries (DOF) is part of the Ministry of Forestry, Fisheries and Natural Resources. It was created in 1965. Currently the Department is divided into four Divisions: Training, Marketing and Statistics, Extension and Development, and Research. Recently the Department has proposed to the Ministry changes in the administrative structure which will introduce a planning and marketing section and the new structure will look as follows:



The National Rural Development Programme (NRDP) under the Ministry of Agriculture usually cooperates with DOF on fish farming extension programmes.

4.2 Credit Institution

There is no specialized institution offering credit to small-scale artisanal fishermen.

4.3 Research and Training

Research stations exist at Monkey Bay and Nkata Bay and a further research laboratory at Namiasi. Research work concentrates on stock assessment, taxonomy, limnology and fish processing technology. Aquaculture research is carried out at Domasi and Kasinthula fish farms. The University of Malawi, Chancellor College, carried out fisheries research in the past.

Malawi has three fisheries training institutions and two of them have been incorporated in the proposed SADCC Regional Training Programme.

(a) University of Malawi, Bunda College of Agriculture: Chosen under the SADCC Regional Training Programme to offer degree training in fisheries biology and management and specialized programmes in fisheries development planning and project management. The Department of Animal Science is reviewing their fisheries training curriculum to cater for this at both diploma and degree levels.

(b) Natural Resources College: The college trains personnel in the natural resources sector at a lower technical level. Fisheries training is provided for along with courses in agriculture, forestry, water supply and wildlife. Fisheries students complete their training with one year practical training at Mpwepwe and become fisheries technical assistants. The college is under the Ministry of Agriculture.

(c) Mpwepwe Fisheries Training School: This school and the boat building yard next to it are under the Department of Fisheries. The school has been chosen under the SADCC Regional Training Programme to offer fisheries technical training and extension. Currently the school offers technical training in gear technology, boat building, engine maintenance, seamanship, fish handling and processing, etc. Students entering fisheries from the Natural Resources College do their final practical year at Mpwepwe. The school is also used for fishermen's training.

4.4 Regional Institutions and Linkages

Malawi is the coordinator for fisheries activities in the SADCC region and it has also been recommended that the Regional Fisheries Documentation Centre for SADCC be situated in Malawi. Two training institutions, Bunda College of Agriculture and Mpwepwe Fisheries Training School, have also been chosen to be incorporated in the SADCC Regional Fisheries Training Programme (see Section 4.3 above). Malawi is a member of SADCC, PTA and CIFA.

5. PLANNING PROCEDURES AND MANPOWER

5.1 Procedures (See also 2.2)

The Malawi Department of Fisheries does not have within its current structure a planning unit. Planning is carried out by the senior fisheries staff at the Headquarters in Lilongwe. The group is composed of the Chief Fisheries Officer who is the Head of the Department, Assistant Chief Fisheries Officer, Principal Fisheries Officer and one fisheries officer. The Principal Fisheries Officer and the fisheries officer have the direct responsibility of preparing plans and projects. The role of the senior staff at headquarters in the planning process is at the higher levels of planning, i.e., developing the policy, setting overall targets and selection of strategy. The determination of detailed tactics (tactical planning) is done by the Regional Fisheries Officers, and the Senior Fisheries Research Officers at Monkey Bay and Domasi, the former for capture fishery research and the latter for fish farming.

Fishermen are involved in fisheries planning at two levels. First through the fisheries assistants who are the extension agents at the grass-roots level. They discuss with fishermen their problems and ideas for improvements; these are then passed to fisheries headquarters through regional fisheries officers. The second level is through Mpwepwe Training School during fishermen's courses. Here problems and proposals from fishermen are discussed and passed to headquarters for discussions during senior staff meetings which include those from the regions and field stations.

Once the fisheries plan has been prepared, it follows the process described under 2.2.

5.2 Manpower

Malawi's Department of Fisheries had a substantial cadre of professional and senior staff trained to a degree level and with over 800 technical and supporting staff. UNDP has just completed a training study to identify DOF staff training needs but the study was not available to this mission.

With regard to fisheries development planning manpower, DOF has proposed the establishment of the Planning and Marketing Section (See Section 4.1). The Section is to be headed by a Principal Fisheries Planning Officer and assisted by Senior Fisheries Planning Officers. The Section will also have a fisheries economist and fisheries statistician. All these officers will need training. It is planned that the Principal and Senior Fisheries Planning Officers will be senior fisheries officers already in the establishment who will need specialized short-term courses or attachments in fisheries development planning, project design, evaluation and monitoring, and could also benefit from on-the-job training with an experienced fisheries planner. The fisheries economist and statistician will be new recruits from Chancellor College and will need a further degree in fisheries economics and statistics. One of the fisheries officers at headquarters, who was involved with fisheries planning, has already left for the UK for a six months course in fisheries development planning and management.

6. DEVELOPMENT PROSPECTS AND CONSTRAINTS

6.1 Development Prospects

For mainly climatic reasons, Malawi's fish catches may be expected to continue to fluctuate in a manner which will make it difficult to discern longer-term trends. However, there are three major areas which hold prospects for development and increasing fishing production:

(a) Although commercial trawling of demersal stocks in the south of Lake Malawi is at or near maximum sustainable yield, there appears to be some pockets of underutilized trawlable stocks such as in Domira Bay. Also it is believed that some unexploited stocks exist off the Karonga coast in the north. Thus it is important that the demersal fishery reassessment project is implemented to map the underutilized stocks.

(b) There are substantial stocks of pelagic fish which are currently not exploited due to fishing craft limitations and lack of suitable gear. It is hoped that the SADCC Lake Malawi Pelagic Resource Joint Research Project with Tanzania and Mozambique will develop practical solutions for the exploitation of this resource.

(c) There is opportunity, though limited, for the development of aquaculture. With the involvement of ICLARM in aquaculture research and training, some of the major problems like high altitude fish culture should be investigated and rapid technology transfer expediated.

6.2 Constraints

(a) Limited range of dugout canoes which are forced to fish nearshore waters and concentrate fishing effort on the inshore stock.

(b) Lack of suitable fishing vessels and gear for the pelagic resources which are dispersed in offshore waters.

(c) Inadequate credit facilities which are suitable for artisanal fishermen and fish farmers.

(d) Inadequate recurrent and capital budgets for the Department of Fisheries in order to carry out its activites.

(e) Lack of trained manpower, especially in fisheries development planning and aquaculture.

(f) Lack of suitable fish culture species for the high altitutde, lower temperature zones of the country.

(g) Problems of enforcing fishing regulations.

(h) The questionable profitability of commercial trawl fishing in Lake Malawi.

7. PRIORITY INTEREST IN THE PROJECT

Malawi indicated a strong interest in the project, both from a national point of view and as SADCC coordinator for fisheries. From a national point of view, priority interest was expressed for training and advisory services in the areas of sectoral planning, programmes/projects design and monitoring, improvement of the national information base and data processing. Various training approaches were discussed and found appropriate and complementary: thematic regional workshop, national workshops involving elements of on-the-job training, and regional exchange and assignment programme.

Malawi also expressed a strong interest in receiving technical assistance and general support for the organization of regular consultations with Mozambique and Tanzania for increased cooperation in the management and development of the fisheries of Lake Malawi/Nyasa. It was suggested that the first consultation could review the recent evolution and current status of the fisheries with the view to sharing existing information and determining priorities for joint or coordinated research and activities. Subsequent consultations would focus on more narrowly defined themes as determined by the countries.

Malawi also stressed the importance of Technical Cooperation among Developing Countries (TCDC) and suggested that the project promotes such cooperation. Full use of the capabilities which exist in the region covered hy the Project was therefore recommended which could involve exchange programmes and giving priority to using consultants from the region.

5. MOZAMBIQUE [1/]

1. MAJOR CHARACTERISTICS OF THE FISHING INDUSTRY

1.1 Marine Fisheries

With 2 500 km of coastline and about 70 000 km^2 of shelf area, Mozambique has a marine fisheries sector accounting for 90 percent of total production. Most of the marine industrial fishing activities are carried out in the central part of the country (Sofala Bay) while the north of the country has a low productivity from this fisheries sector. The shrimp fishing industry based in Beira, created for exports, is operating about 60 shirmp freezer trawlers belonging to the governmental enterprise EMOPESCA and to various joint-ventures with foreign partners.

In addition to the industrial fisheries sector, artisanal fishermen are carrying out inshore fishing activities, mostly at a subsistence level. The fishing boats are 3-8 m long, most of them unmechanized but often equipped with sails. Handlines seines are the major fishing gear for a total production of not more than 20 000 tons of fish. Semi-industrial fishermen are also operating using larger (10-20 m) motorized boats.

1.2 Inland Fisheries

In Mozambique - as in most African countries - the inland fisheries is a small-scale activity. Though the country has a vast area of river and lakes with an estimated potential of 34 000 tons of fish, the fisheries has an annual production of about 7 000 tons of which Lake Nyasa, the man-made Lake Cahora Bassa and Massingir reservoir represent 95 percent. The boats are mostly dugout boats; the fishing gear used are mainly handlines, traps, gillnets and chilimila nets.

1.3 Aquaculture

Aquaculture is actually a marginal activity in Mozambique. However, the introduction of fresh and brackishwater aquaculture is a priority in the government's fisheries policy and rural development plans.

1.4 Utilization of the Catch

The shrimp catch is frozen directly on the trawlers and exported. The pelagic species caught by the Mozambique/Soviet Union joint venture MOSOPESCA and by the semi-industrial fisheries are consumed domestically, mainly in the coastal areas, as the lack of infrastructures and the food habits of the inland population prevent the distribution of fish to internal areas. The marine and inland catch is consumed fresh or smoked/dried using traditional methods. The governmental bodies involved in fishing activities are introducing fish smoking as a conservation method and setting up plants for small-scale fish processing.

1.5 State and Economic Role of the Industry

A migration of skilled Portuguese labour at the time of Independence, a vicious internal war since this event and numerous natural disasters in recent years has left Mozambique facing a dramatic economic situation. Total production and GDP have therefore declined steadily. However, compared with the rest of the economy, the fisheries sector has remained relatively strong.

1/ Country review prepared by M. Giudicelli

The shrimp industry is in continuous expansion. In 1985 shrimp was exported at a value of around US$ 30 million, i.e., some 30 percent of the total national export value. Shrimps were therefore the first export product in front of cashew nuts, which made only 10 percent of the total export value. This situation has been roughly the

same in 1986. At current producer prices, the value of the rest of the production can be put at some US$ 40 million, this giving an approximate gross value of about US$ 60 million to the entire sectoral output.

The Government of Mozambique is trying to develop the artisanal fisheries, both marine and inland, by installing fishing centres "Combinados Pesqueiros", which are primarily production units and secondarily channel support to the small-scale fishermen. However, the small-scale fisheries which provides protein to the local population is in an initial phase of development and is therefore unable to meet the local demand for fish.

In 1985 fish imports were 11 000 tons, a decrease of 65 percent compared with 1980 when these imports amounted to 31 000 tons. Total fish supply was therefore of some 61 000 tons, and per caput yearly supply of 4.5 kg.

The sector employs about 60 000 fishermen and related labourers of which 45 000 are involved in artisanal operations. Production, from an estimated 55 000 tons in 1980, had increased to about 61 000 tons in 1985 and apparently followed this trend in 1986. In 1985 roughly 40 000 tons were landed by the artisanal fisheries and 20 000 tons, of which 10 500 were of shrimp, by the industrial fleets. Participation of inland fisheries to these outputs is not precisely known but is generally put at 7 000 tons, with 4 000 tons from Cahora Bassa Reservoir.

2. SECTORAL DEVELOPMENT STRATEGIES AND PRIORITIES

2.1 Major Objectives and Priorities

Economic targets for the sector are the traditional ones: increase food supply, produce surplus for export and improve socio-economic conditions of fishermen and related labourers.

As demonstrated by the increasing fish production, Mozambique, in spite of all its difficulties, is slowly moving towards attainment of these goals. This trend should normally continue as the Government is giving priority to:

(a) the development of artisanal fisheries by applying simple technologies with low capital intensity, i.e., with relatively small needs in terms of imported production inputs;

(b) the improvement of production and productivity of industrial fleets which turn out an annual net earning in foreign currencies of about US$ 20 million; and

(c) the training of an important number of technicians for the sector.

2.3 Major Orientation of the Ongoing Plan

To attain the above goals, the strategy for the sector focusses on:

(a) improvement of production rates within the small-scale fisheries;
(b) increased supply of goals as incentive to increase production;

(c) training and introduction of new fishing methods and technologies;
(d) strengthening of fisheries research.

Target groups are: small-scale fishermen (inland and coastal), urban people to increase protein supply.

3. MAJOR RELATED PROGRAMMES AND PROJECTS

3.1 Past Programmes and Projects

Mozambique has received important external aid for the sector. A consistent part is channelled through FAO and has been funded by UNDP and the Nordic fund. The projects aimed at helping the local small-scale fisheries, increasing the research activities especially for the inland waters, introducing aquaculture activities, training of skippers and motorists and establishing a Quality Control and Inspection Service. The Swedish International Development Agency (SIDA) has provided equipment for a fibreglass boat building factory. The Netherlands assisted the rehabilitation of a cold store and ice factory in Maputo. Denmark provided some assistance to the Matola Fishery Training School near Maputo. The European Community financed a canning plant in Beira.

3.2 Ongoing Programmes and Projects

Point 2.3 refers. In 1986 and 1987 alone the situation of operational projects was the following:

Fishery	No. of Projects	Amount (million US$)
Industrial	6	21.3
Artisanal	10	38.0
	16	59.3

3.3 Pipeline Programmes and Projects

In addition, about 12 other major projects are in the pipeline; one of them for fresh water fish farming (MOA) at a cost of US$ 1,5 million.

4. ADMINISTRATIVE STRUCTURES AND INSTITUTION

4.1 Administration

Until 1984 fisheries pertained to a centralized structure, the Secretaria de Estado das Pescas (SEP), which was a branch within the Ministry of Industry and Energy. In this organization the SEP, in addition to planning and overall organization of the sector, also was directly responsible for production activities at provincial level.

In 1985, the SEP become directly responsible to the Government, with its secretary being a member of the Cabinet. At the same time a process of reorganization was undertaken with the aim of separating planning and administration from the management of production enterprises, the latter being incorporated into the provincial structure. At the same time there was a strengthening and expansion of the non-production activities within the SEP itself, in particular with the creation of four directions: Economy, External Relations, Human Resources and Technical Direction. At the same time fish farming activities were transferred to the Ministry of Agriculture.

4.2 Research and Training

Mozambique has established the "Instituto Investigacao Pesqueira" (I.I.P.) which is in charge of the conducting and coordinating research in the fields of marine and fisheries sciences. A large part of the staff is foreign and several consultants have provided assistance in stock assessment, oceanography and research planning. Several Mozambican biologists have received specialised training through courses organized by FAO in cooperation with DANIDA and Norway.

3. Regional Institutions and Linkage

Mozambique is member of SADCC.

5. PLANNING PROCEDURE AND MANPOWER

As referred in 4.1, planning activities for the sector pertains to the SEP. At the level of the whole economy, planning activities are coordinated within the National Planning Committee.

In 1986, SEP staff was the following:

	Nationals	Foreigners	Total
- Planning, administration, research:	284	45	929
- Production:	9 614	505	4 119
	9 898	550	5 048

Among national staff, 27 are of superior level and 125 of medium level. In addition, 100 fishermen, skippers and mechanics are being trained at the national fishing school, 77 technicians of high and medium level being trained abroad.

6. DEVELOPMENT PROSPECTS AND CONSTRAINTS

6.1 Development Prospects

Fish potentials available for increased catches are not well known. They are currently estimated at about 150 000 - 200 000 tons for marine fish, mainly demersal by-catch of the shrimp operation and small pelagics. For inland waters they can be tentatively estimated to be around 30 000 tons per year, split up as follows (t):

	Km^2	Kg/ha	MSY	Production	Available
Cahora Bassa	2 700	50	13 500	4 000	9 500
Lake Nyasa	6 400	20	13 000	2 000	11 000
Others	5 000 (?)	20	10 000	1 000	9 000
			36 500	7 000	29 500

Fish resources are therefore available for an important increase in production. On the other hand, Mozambicans are good fish consumers and the scarcity of other animal products can only further encourage this tendency.

The major asset for this development is, however, the policies of the Government of Mozambique which constantly emphasizes its willingness to develop the fisheries sector and which is in a strong position to translate it into reality, thanks to an important and well organized institutional system.

6.2 Constraints

It remains however that considerable constraints, linked to the political and economic problems, are facing this growth - lack of security, difficulties in transport and communications, scarce hard currencies for importation of production inputs, etc. This situation is particularly acute for the exploitation of inland waters which, in most instances, are located in areas plagued by the internal war.

It should be remembered, however, that in the case of inland fisheries the present situation makes it extremely difficult to expect any spectacular change. This is the reason why, in the particular case of this activity, the Government of Mozambique is restricting its intervention to the coastal lagoons and estuaries, with particular emphasis on rural aquaculture.

In conclusion, it appears that, even if Mozambique is still lacking sufficient qualified personnel, its situation in this field is not so bad, and certainly good if compared with the rest of the region. Indeed, institutional main weaknesses are related to the orderly planning and coordination of development and aid projects, to business managerial skills at production level and to technical skills for commanding industrial ships at sea.

7. PRIORITY INTEREST IN PROJECT RAF/87/099

The Director of External Relations reported that the SEP was interested in participating in this project, particularly for its capacities in training, in developing regional cooperation and in promoting fisheries agreements between countries sharing the same resources.

He pointed out that SEP had two major concerns, however:

(a) The risk of a lessening of project impact, due to the considerable number of participating countries which will surely lead to a dispersion of its efforts; and

(b) The absence of an aquaculture component, which could lead to bad planning for the utilization of some bodies of water.

6. R W A N D A[1]

1. PRINCIPALES CARACTERISTIQUES DE L'INDUSTRIE DE LA PECHE

1.1 Pêche maritime

N/A

1.2 Pêches intérieures

La pêche au Rwanda est pratiquée uniquement au niveau artisanal. A l'exception du lac Ikana, les lacs se trouvant à l'intérieur du parc national de l'Akagera ne sont pas exploités. Les nombreux lacs du Rwanda couvrent une superficie de 124 230 ha, dont environ 100 000 ha pour la partie rwandaise du lac Kivu que le Rwanda partage avec le Zaïre.

L'essentiel de la production provient du lac Kivu (1 000 t) et du lac Ikana (400 t) pour une production totale estimée à 1 800 t (1986). La production totale est en constante augmentation depuis 1980 suite au développement de la pêche sur le lac Kivu. Limnothrissa miodon a été introduit dans ce lac en 1959-60 et constitue maintenant une ressource importante qui supporte une pêcherie d'environ 100 unités de pêche. La pêche est essentiellement pratiquée par des catamarans et des trimarans utilisant des filets soulevés (Kivu) et des pirogues en planches utilisant des filets maillants (Ikana). Les pirogues monoxyles sont également utilisées sur l'ensemble des lacs en conjonction avec divers engins de pêche: lignes, nasses, seines de plage, filets maillants.

La pêcherie du lac Ikena représentait la principale pêcherie du pays jusqu'en 1983 environ. Celle-ci est gérée par l'Office rwandais du tourisme et des parcs nationaux (ORTPN) qui fournit le matériel de pêche aux pêcheurs et achète leur production. Les principales espèces exploitées sont communes à celles du lac Victoria avec lequel le lac Ikana communique par l'intermédiaire de la rivière Kagera: Tilapia, Clarias, Bagrus, Labeo, Haplochromis. Les lacs Bulera, Ruhondo, Mugesera, Bihira et Rugwero supportent également de petites pêcheries de Tilapia.

1.3 Aquaculture

La pisciculture a été introduite au Rwanda en 1949-52 avec la construction d'environ 3 000 étangs. Ceux-ci ont été réhabilités depuis 1981 avec l'assistance de l'USAID et du Peace Corps. L'accent est mis sur la petite pisciculture rurale en étang, basée sur la culture de Oreochromis niloticus. La station de Kigembe (10 ha) et les petites stations préfectorales (2 ha) servent de centre de production et de distribution d'alevins. La production reste limitée à quelques tonnes.

1.4 Utilisation des captures

L'essentiel de la production est consommé frais. Une partie du Limnothrissa produit est commercialisée séchée; le fumage étant également

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1/ Profil préparé par D. Gréboval

courant pour certaines espèces comme le Clarias. Les circuits de distribution sont peu organisés, même si certaines coopératives d'approvisionnement comme TRAFIPRO ont récemment commencé à commercialiser du poisson. La production est essentiellement consommée au Rwanda, les échanges avec les pays voisins demeurant limités.

1.5 Etat de l'industrie

Résultat des efforts déployés par plusieurs projets, la production de poisson augmente progressivement depuis la fin des années soixante-dix. Depuis 1986, on note un développement spectaculaire de la pêche sur le lac Kivu où le nombre d'unités est passé de 64 à 97 en moins d'un an. L'essentiel de cet accroissement est dû au développement de trimarans performants. On note, en général, un intérêt accru pour la pêche et pour le poisson. Des projets sont actuellement à l'étude pour développer la pêche sur les lacs mineurs du Rwanda.

1.6 Rôle économique de l'industrie

Le rôle du secteur au niveau national reste limité mais il devient de plus en plus important dans l'économie de la région du lac Kivu. L'industrie de la pêche emploie environ 4 000 personnes dont plus de la moitié dans le secteur primaire. La production per capita était d'environ 0,25 kg en 1984 et doit avoir augmenté depuis. Dans un pays où la production de protéines animales est limitée, la contribution de la pêche à l'alimentation est importante et peut être substantiellement augmentée.

2. POLITIQUE NATIONALE ET PLAN DE DEVELOPPEMENT

2.1 Objectifs principaux et priorités

Les priorités du troisième plan quinquennal de développement économique et social (1982-1986) étaient l'autosuffisance alimentaire et l'optimisation des ressources naturelles. Les efforts de développement de la pêche artisanale et de la pisciculture se sont inscrits dans ce contexte. Le quatrième plan (1987-1991), qui est encore en préparation, accordera de nouveau la plus grande priorité à l'autosuffisance alimentaire ainsi qu'au développement rural.

2.2 Caractéristiques du système de planification

La planification s'inscrit dans le cadre du Plan quinquennal de développement économique et social. Pour l'élaboration du quatrième plan, l'accent a été mis sur la participation effective des populations à la planification, par le biais des structures institutionnelles décentralisées. La Direction de l'élevage du Ministère de l'agriculture, de l'élevage et des forêts, dont dépend le secteur pêche, collaborera avec le Bureau national d'étude des projets (BUNEP) pour l'élaboration des actions à entreprendre dans le secteur pêche. A ce jour, il n'existe pas de plan de développement du secteur pêche, les interventions du Ministère dans ce secteur étant exclusivement basées sur des projets partiellement financés par l'aide extérieure.

2.3 Orientations principales du Plan actuel

Celles-ci sont essentiellement reflétées par les projets en cours. On note à ce sujet que le programme de développement est orienté sur:

- L'intensification de l'exploitation des principaux lacs par le biais d'une assistance à l'approvisionnement en matériel de pêche,

l'amélioration des techniques de pêche et de transformation, et la formation des pêcheurs;

- La promotion de la distribution et de la consommation du poisson;

- Le ré-empoissonnement de certains lacs comme le lac Muhazi;

- Le développement de la pisciculture rurale.

2.4 Politique en matière de stocks partagés

Le Rwanda partage plusieurs plans d'eau avec les pays limitrophes, dont le lac Kivu en particulier. Pour ce lac, une collaboration technique a été instituée avec le Zaïre dans le cadre des activités du Projet PNUD/Pays-Bas/FAO. Le Rwanda souhaite que cette collaboration soit renforcée. Des études et projets ont récemment été élaborés pour le renforcement de la collaboration entre les pays de la CEPGL pour l'aménagement et le développement des plans d'eau partagés entre les trois pays concernés (lacs Kivu, Tanganyika et Rweru - Cohoha en particulier). Le Rwanda est également membre de l'Organisation pour l'aménagement et le développement du Bassin de la rivière Kagera.

3. PRINCIPAUX PROGRAMMES ET PROJETS

3.1 Programmes et projets antérieurs

Les principaux projets exécutés au cours des années antérieures concernent:

(a) Le développement des pêches sur le lac Ihéna; projet financé par la Belgique pour la période 1979-1982 pour un montant de US$ 435 000; la gestion du projet est assurée depuis 1982 par l'ORTPN.

(b) La réhabilitation de la station piscicole de Kigemba et des étangs de pisciculture hérités de la période coloniale; projet financé par l'USAID, exécuté par Auburn University et bénéficiant de l'assistance du Peace Corps (première phase 1981-1986, US$ 2,4 millions).

(c) Le développement de la pêche au lac Kivu; première phase 1979-1983; projet PNUD/FAO portant sur l'évaluation des stocks et le développement de techniques de pêche appropriées pour l'exploitation des ressources de Limnothrissa.

Deuxième phase: 1983-1987, co-financée par les Pays-Bas et le PNUD pour un montant de US$ 2,4 millions et exécutée par la FAO pour le développement de la pêcherie par le biais d'activités diverses: approvisionnement en matériel de pêche, crédit, centres de pêche, amélioration des techniques de pêche et de transformation, distribution, etc.

3.2 Programmes et projets en cours

(a) Développement de la pisciculture rurale: continuation intérimaire du projet 3.2(b) pour 1987; la suite du projet est en cours de négociation. Cette seconde phase mettrait l'accent sur la poursuite des activités de vulgarisation et l'intensification des techniques de pisciculture afin d'augmenter les rendements.

(b) Développement de la pêche sur le lac Kivu: troisième phase PNUD/Pays-Bas/FAO financée pour US$ 2,1 millions et donnant priorité à la consolidation des acquis, l'organisation d'une structure d'appui auto-suffisante et l'augmentation de la capacité d'absorption du marché.

(c) Etude et aménagement du lac Muhazi: projet bénéficiant de l'aide de la Belgique pour le ré-empoissonnement du lac Muhazi (O. nilotica) et la conduite de recherche propre à définir la base d'une exploitation rationnelle du lac (1985-1987). Une nouvelle phase devrait démarrer en 1987: développement de la pêcherie.

(d) Développement de la pêche dans la zone sud du Parc national de l'Akagera: projet démarré en 1987 avec l'assistance d'une Organisation non gouvernementale (ONG) de la République Fédérale d'Allemagne (Rhénanie Palatinat) pour le développement de pêcheries par l'encadrement et la fourniture de matériel pour les lacs Rwanpanga et Nasho en particulier.

3.3 Programmes et projets proposés

(a) Ré-empoissonnement et développement de la pêche pour les lacs mineurs de la zone nord du Rwanda. Projet actuellement préparé par le BUNEP.

(b) Projet de recherche hydrologique et ichthyologique pour les lacs partagés de la CEPGL; exécution: Institut de la recherche agronomique et zootechnique (IRAZ) avec financement éventuel de la Belgique.

(c) Projets identifiés par la mission CEA/JEFAD dans le cadre de la CEPGL et intéressant directement le Rwanda:

- projet sous-régional d'aménagement et de développement des pêches dans le lac Kivu;
- création d'un institut halieutique sous-régional;
- mise en place d'un fonds communautaire d'encouragement à la pêche et à ses activités annexes;
- centre sous-régional de vulgarisation et de promotion des activités du secteur de la pêche;
- projet de sous-régionalisation d'un centre existant de recherche et de formation en matière de pisciculture.

4. STRUCTURES ADMINISTRATIVE ET INSTITUTIONNELLE

4.1 Administration

L'administration des pêches est la responsabilité de la Direction générale de l'élevage, Ministère de l'agriculture, de l'élevage et des forêts. Certaines fonctions (contrôle, surveillance, statistique) sont entreprises par des moniteurs et gardes-chasse dépendant de la Direction des services vétérinaires. La Division de la pêche et de la pisciculture coordonne les programmes de développement entrepris dans le secteur.

4.2 Institutions de crédit

Des systèmes de crédit aux pêcheurs et pisciculteurs ont été établis dans le cadre des projets antérieurs et en cours. Récemment, un fonds de garantie

pour les petits agriculteurs, pêcheurs et pisciculteurs a été établi par le Gouvernement. Il sera géré par les banques populaires. La Banque rwandaise de développement (BRD) étudie également la possibilité d'offrir des crédits en secteur pêche/pisciculture.

4.3 Recherche et formation

Au Rwanda il n'existe aucune institution ou autres programmes de recherche et formation spécialisés dans les sciences halieutiques et pisciculture. A noter toutefois que l'université nationale de la recherche scientifique de Butaré offre des cours spécialisés en biologie des pêches et en pisciculture. L'Institut national de la recherche scientifique de Butaré collabore également avec le Musée royal de l'Afrique centrale (Belgique) en matière de recherche ichthyologique. Dans le domaine de l'hydrologie, le Rwanda contribue aux recherches entreprises à l'IRAZ (Burundi) dans le cadre de la CEPGL. De nombreux chercheurs et agronomes du Ministère de l'agriculture ont reçu des formations spécialisées à l'étranger dans le cadre des projets précités (voir 3.1 et 3.2). Six agronomes sont actuellement en formation en URSS (technologie des pêches, pisciculture, biologie des pêches, économie des pêches).

4.4 Institutions régionales

Le Rwanda est membre du CIFA, de la CEPGL, de la ZEP et de l'OADBRK. La création d'institutions de recherche et de développement propres au secteur pêche/pisciculture a été proposée pour la CEPGL, en renforcement de la coopération déjà établie au sein d'organismes tels que l'IRAZ.

5. PROCEDURES DE PLANIFICATION ET ENCADREMENT

5.1 Procédures de planification

Il n'existe pas de procédure formalisée en matière de planification pour le développement du secteur pêche. Toutefois, sur la base des directives et priorités, nationales et sectorielles (agriculture en général), la Division des pêches et de la pisciculture s'efforce de promouvoir certaines activités en collaboration avec les donateurs potentiels. Le BUNEP joue à ce niveau un rôle important.

5.2 Encadrement et personnel

La Division des pêches et de la pisciculture implique deux cadres s'occupant respectivement des deux sous-secteurs. Un troisième poste est aujourd'hui vacant. Sur le terrain, environ 22 cadres sont attachés aux divers projets dont neuf pour la pêche et treize pour la pisciculture. Les moniteurs et gardes-chasse représentent un effectif d'environ cinquante personnes. Aucun des cadres n'a reçu de formation spécialisée en matière de sciences sociales et de planification.

6. PERSPECTIVES DE DEVELOPPEMENT ET CONTRAINTES

6.1 Perspectives de développement

Les principales perspectives de développement se trouvent dans l'exploitation accrue des ressources des lacs Kivu et Ihéna ainsi que dans l'aménagement (ré-empoissonnement, exploitation contrôlée) des lacs mineurs. Même si la pêcherie du lac Kivu connaît un développement important depuis 1986, la production actuelle (environ 1 000 tonnes) reste faible par rapport au potentiel. Celui-ci a été estimé à environ 5 000 tonnes pour la partie

rwandaise du lac. De même, le potentiel du lac Ihéna (1 200 tonnes) reste nettement supérieur à la production actuelle (300 à 400 tonnes). Parmi les lacs mineurs, beaucoup pourraient être exploités plus intensément et bénéficier d'un programme systématique d'empoissonnement dans la mesure où très peu d'espèces y sont généralement présentes. L'accroissement de la demande, en particulier pour le Tilapia et le Limnothrissa est très favorable au développement du secteur.

6.2 Contraintes au développement

Les principales contraintes identifiées par les responsables du secteur sont:

- L'insuffisance de cadres en général et de cadres dûment formés en particulier;
- Le manque d'équipement et de matériel de pêche;
- L'inadaptation de la législation actuelle, celle-ci datant de 1938;
- L'insuffisance des techniques/équipement de transformation de poisson et du réseau de distribution du poisson, en particulier pour les lacs mineurs;
- L'absence d'un plan de développement du secteur pêche et pisciculture;
- Le manque de coordination des efforts de développement de la pêche entre le Rwanda et le Zaïre pour le lac Kivu.

7. INTERVENTIONS PRIORITAIRES ATTENDUES DU PROJET RAF/87/099

Les domaines suivants ont été identifiés comme prioritaires:

- Assistance en matière de planification sectorielle pour l'élaboration d'un plan de développement à moyen et long termes;
- Appui et coordination pour l'aménagement et le développement du lac Kivu;
- Révision de la législation des pêches;
- Organisation d'un système de recueil systématique de statistiques de pêche et d'information sur le secteur;
- Formation en matière de planification, d'élaboration et de gestion de projet, d'aménagement des pêches et des statistiques;
- Réflexion régionale et études sur la promotion de la demande de poisson.

7. TANZANIA [1]

1. MAJOR CHARACTERISTICS OF THE FISHING INDUSTRY

1.2 Marine Fisheries

The coastline of Tanzania's mainland is approximately 800 km and characterized by a sharply falling continental shelf representing about 12 000 km². Trawlable areas are further limited by coral formations, by mud from the Rufiji River and the deep areas between the mainland and Zanzibar. At depths ranging from 20 m to 60 m, about 3 500 km² are available for trawling. Hydrobiological studies have shown Tanzanian waters to be characterized by limited plankton growth and low productivity. The main commercial catch is made of demersal fish, especially lethrinids; pelagic fish such as kingfish, tuna and sardine; and shrimp, for which comparatively rich fishing grounds exist in the Rufiji Delta, the Mafia channel and around Pangani. Fishing activities are concentrated inshore and around the islands of Zanzibar and Mafia. The coastal fishery is exploited by about 8 000 fishermen using 4 000 boats, primarily outriggers or small dhow-type planked canoes. These are almost entirely powered by sail, with less than 2 percent of the fleet being motorized. Total yield from the marine sector is about 40 000 tons annually, with over 95 percent of total catch being landed by small-scale fishermen.

Commercial fishing is still very limited and is mostly carried out by the Tanzanian Fisheries Corporation (TAFICO). This parastatal body was established in 1984 and experienced severe management and financial problems for a number of years (FAO/EEZ Mission, 1984). TAFICO is now operating two freezer trawlers and eight ice trawlers, and producing about 550 tons of fish for the local market, and 145 tons of shrimps for the export market. The intended role of TAFICO in the promotion of small-scale fisheries development has remained very limited. The private commercial fishing sector is progressively emerging and now involves three shrimp trawlers and two purse-seiners.

1.2 Inland Fisheries

Tanzania has very important inland fisheries resources in the territorial waters of Lake Tanganyika (45 percent), Lake Victoria (49 percent), Lake Nyasa, as well as numerous minor lakes, reservoirs, dams, swamps and rivers. These represent an area of over 50 000 km². Government statistics estimate current annual fish production to be around 240 000 tons; the inland fisheries, thus, providing over 85 percent of Tanzania's fish production. Most of the catch is now coming from Lake Tanganyika and Lake Victoria with each lake contributing about 100 000 tons to the total catch (although the data pertaining to Lake Tanganyika are believed to be largely over-estimated). Other important water bodies are Lake Nyasa (18 000 tons), Lake Rukwa (4 600 tons), the Kilambera River and floodplains, Lake Kitangiri, the Nyamba Ya Mungo reservoir and the Malagarasi swamp. The recently completed Mtera reservoir is now heavily exploited, producing about 3 500 tons of fish annually. In the absence of proper management measures, these reservoirs tend, however, to be rapidly overexploited as observed in the case of the Nyamba Ya Mungo reservoir.

Inland fisheries provide employment for about 50 000 full-time fishermen and possibly twice as many occasional fishermen. These fisheries are almost

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1/ Country review prepared by D. Gréboval

entirely exploited by small-scale fishermen using about 16 000 traditional small-scale crafts (dug-out or planked canoes, catamarans). Less than one percent of these fishing units are motorized. Boats are operated close to shore using mostly gillnets, beach seines, "dagaa nets", lines and traps. The main species include dagaa (Limnothrissa and Stolothrissa on Lake Tanganyika, Rastrineobola on Lake Victoria); Lates, which has now become the main fishery on Lake Victoria; tilapias, Bagrus, Clarias, Haplochromis and Protopterus. Total catch has increased significantly in recent years from an estimated 160 000 tons for the period 1977-1984 to 240 000 tons in 1986. This is mostly due to increased gear availability which has led to more effective fishing on Lake Tanganyika and to the development of the Nile perch fishery on Lake Victoria. Commercial fishing remains marginal but is rapidly expanding, especially on Lake Victoria where the number of small trawlers increased from seven in 1980 to 20 in 1987. Previously fishing for Haplochromis for fish meal production, these trawlers are now operating in the lucrative Nile perch fishery. The efficiency of the commercial fleet is nevertheless limited by poor management and difficulties in securing inputs and spare parts, especially on Lake Tanganyika. In spite of heavy investment in boat building by TAFICO and the Department of Fisheries (DOF), boat construction remains almost entirely in the hands of local boatbuilders, using traditional designs. Fishing nets are increasingly available from factories in Mwanza and Dar-es-Salaam, although these only supply about 30 percent of national requirements.

1.3 Aquaculture

Various attempts have been made to develop fish farming but so far with very little success. Of the estimated 10 000 existing ponds, about 800 were functional in 1985 producing about 15 tons of fish (Balarin, FAO, 1985). This number was reported to be rapidly increasing under the ongoing Peace Corps assisted DOF programme. The increased construction of reservoirs will provide water resources for fish pond development. Raising fish prices have made fish farming commercially more attractive in recent years and have renewed interest in its development.

1.4 Utilization of the catch

Most of the national fish production is consumed on the domestic market. The sale of fresh fish is restricted to areas close to the coast or lake shores. A small but increasing amount of frozen Nile perch and Tilapia from Lake Victoria is marketed in Dar-es-Salaam and other centres where there are limited cold storage facilities. This was previously handled by the National Cold Storage Operations Ltd (NCCO), a recently dismantled parastatal, and is now done by private traders whose trade could be greatly expanded if the use of refrigerated wagons was more reliable. Traditionally, smoked and sun-dried fish (mostly freshwater species) are consumed over a wide area of the country with significant unrecorded quantitites also being exported to neighbouring countries. Among these products, sun-dried dagaa is the most widely traded product, selling throughout the country and being exported in large quantities to neighbouring countries from Lake Tanganyika and increasingly from Lake Victoria. Official exports consist mostly of shrimps (about 500 tons) and shellfish. Fish meal production by the parastatal Nyanza Fishing and Processing Company has been more or less discontinued following the collapse of the Haplochromis stocks of Lake Victoria. The four trawlers operated by the company are now fishing for Nile perch.

1.5 State of the Industry

The industry is globally recovering from the economic crisis which affected the country throughout the late seventies and the early eighties. The

lack of foreign exchange had, during that period, severely affected the imports of fishing gear and equipment, further reducing the production of the fishnet factories and affecting the logistical support of fish trade. This situation had a very detrimental impact on fish production and fish trade, with fish production declining in most fisheries and fish prices increasing about five fold over the last five years. Over the last three years, the industry has generally benefitted from the general improvement of the economy and from a relatively greater availability of foreign exchange. Better access to fishing gear has led to a definite recovery in the industry and to actual expansion in many fisheries. The industry remains, however, under-supplied with essential inputs and mostly based on small-scale fishermen using relatively static technologies and seldom in a position to expand their activities to under-exploited species and to offshore fishing grounds. The same applies to fish processing and fish trade. The promotion of commercial fishing through parastatal body has proved a costly and quite unsuccessful experience. Increased reliance on the private sector may now lead to increased technological innovation in the small-scale sector and further development in the commercial sector as long as their development is not constrained by the general lack of infrastructures and the persisting lack of inputs. The DOF intends to promote such a development but does not, at present, have the means to do so, mostly because available human and financial resources are not at all commensurate with the importance of the sector and with the size and wide distribution of Tanzania's water bodies.

1.6 Economic Role of the Industry

The fisheries industry is Tanzania's largest producer of animal protein, fish contributing on average to about 30 percent of direct protein supply. Annual per caput consumption of fish and fish products is about 12 kg. The gross value of fisheries production at ex-vessel price is about US$ 100 million. The primary and secondary sectors involve about 200 000 people on a full time basis and maybe as many people on a part-time basis. Fisheries activities generally play a major role in the communities and regions concerned.

2. NATIONAL POLICIES AND DEVELOPMENT PLANS

2.1 Major Objectives and Priorities

The national fisheries policy as indicated by the Ministry of Land, Natural Resources and Tourism for the last five year plan (1982-1986) was "to develop, expand, consolidate, conserve and rationalize the exploitation of the fisheries and other aquatic resources within territorial waters to provide much needed animal protein, with the surplus being exported to earn foreign exchange". More precise objectives were given as follows: (a) to expand the exploitation of the fisheries resources available to increase per caput fish consumption from the present 10 kg/ind./year to 20 kg/ind./year by the year 2000; (b) to ensure that small-scale fishermen have a good income from fishing; (c) to ensure that the nation realizes foreign exchange from export of surplus fish and other aquatic resources; (d) to consolidate socialism and self-reliance in the fields of fishing, fish production, and fish distribution and marketing; (e) to increase the operational efficiency of national training institutions, the Tanzania Fisheries Research Institute (TAFIRI), the Tanzanian Fishing Corporation and fishing companies; (f) to promote and consolidate cooperation with neighbouring countries with the purpose of laying down joint strategies for the national exploitation of fish resources in shared water bodies such as Lakes Victoria, Tanganyika and Nyasa, and the Indian Ocean; (g) to raise the national capability to exploit fish resources

in the Exclusive Economic Zone (EEZ), through the establishment of joint ventures with developed countries which have the technology and expertise in fishing; (h) to strengthen, promote and consolidate environmental conservation activities, especially curbing dynamite fishing and water pollution; (i) to pursue efforts to provide adequate fishing gear, (MNRT, 1983).

Following an interim phase, the next five year plan is now being prepared for 1988-1992. Priorities have already been defined tentatively as being:

- the development of small-scale fisheries based on important infrastructures, better access to credit and extension work;
- improvement of fishing craft based on boatyards rehabilitation and on the promotion of motorization;
- encouragement of semi-industrial fishing through boat building and initiative measures;
- strengthening of the information base for fisheries resources and for the fisheries sector in general;
- training at fisheries administration and industry levels;
- development of rural fish culture;
- improvement of monitoring, surveillance and management of fisheries.

2.2 Characteristics of the Planning System

Planning is conducted at three levels: the district level, the regional level and the national level, with little consultation and interference between the three levels. At the national level the five year plan is prepared directly by the DOF under guidance, ceilings and priorities as provided by the Ministry of Land, Natural Resources and Tourism. The plan is then transmitted to the planning unit of the Ministry for review and harmonization. The procedure was reported to be flexible. Main activities are outlined with financing requirements and expected sources of funding. Ceilings are generally agreed to with little negotiation at ministerial level. The same procedure is used at district and regional levels under the control of the Prime Minister's Office. Planning is more coordinated at this. Although this is not intended, planning is rather indicative considering the dependence on external funding which may or may not be secured. Indeed, funds over and above recurrent costs are extremely limited (e.g. US$ 320 000 for the transitional 1986/87 annual budget).

2.3 Major Orientations of Ongoing Plan

There is a definite trend towards a greater involvement of the private sector and towards a lesser reliance on parastatal and village level cooperatives although these are not discouraged and are still receiving support. The recurrent cost of the training centres (3) and the boatyards (4) as well as support to TAFICO are, however, involving large expenses and limiting greatly the possibility of budgetary reallocations. Extensiion of national jurisdiction is forthcoming with the intention to further develop commercial fisheries in the context of joint ventures with foreign partners (Indian Ocean). Joint ventures will also be encouraged for the development of commercial fisheries on major lakes and one has already been formed for Lake Victoria. The DOF also intends to play a larger role in stimulating

small-scale fisheries development as well as in the area of research, monitoring and management, but still lacks the capability to do so. Assistance in planning will be provided under FAO funding to assist with the elaboration of policies, programmes and projects for the period 1988-1992. It is expected that this project will bring national attention to the importance of the sector and renewed interest for its development.

2.4 Policies with regard to Shared Stocks

Tanzania is an active member of the FAO Committee for the Inland Fisheries of Africa (CIFA), its sub-committees for Lake Tanganyika and Lake Victoria and of the FAO/UNDP South West Indian Ocean Project. Tanzania is also seeking funding for the undertaking of regional stock assessment and biological research projects on Lake Malawi/Nyasa (ODA funded project, forthcoming), Lake Victoria (EEC funded project, forthcoming) and Lake Tanganyika (funding arrangements being coordinated by FAO). Joint ventures with foreign partners are now encouraged and some are presently being reviewed. It is expected that the forthcoming extension of Tanzanian fisheries jurisdiction in the Indian Ocean will lead to increased regional and international cooperation.

3. MAJOR RELATED PROGRAMMES AND PROJECTS

3.1 Past Programmes and Projects

Tanzania has been actively involved in regional stock assessment projects undertaken by UNDP/FAO in the 1970's on Lake Tanganyika and Lake Victoria. Numerous small projects involving very little financing have also been completed in the areas of training, fish farming, research and development, small-scale fisheries development and planning. The impact of these projects is difficult to assess. The major projects undertaken for the development of the fishery sector and involving multi-million US$ investment and expenditures concern: TAFICO (investment in 19 boats, infrastructure and technical assistance); NCCO (investment in cold storage facilities, infrastructure and technical assistance); Nyanza Fishing and Processing Company (four trawlers, fish meal plant, infrastructure and technical assistance); the MBEGANI Training Centre (investment and technical assistance for about US$ 20 million for 1976-1987); a US$ 9-million IDA Project involving the setting up of four Ujamaa commercial fishing centres which was discontinued shortly after being initiated; other training and boatbuilding centres now operated by the DOF. The commercial fishing sector, which these projects intended to promote, remaining insignificant; it can only be said that the projects had very little impact on the development of the sector. Nevertheless, training can be considered as a long-term investment which may contribute to accelerated development of the commercial sector under more favorable circumstances.

3.2 Ongoing Programmes and Projects

There are few ongoing projects related to the development and management of fisheries in Tanzania. The major ones are:

- Mbegani Training Centre: financial and technical assistance received from NORAD for about US$ 600 000 per year now being negotiated for another three years: Project started in 1976;

- Mwanza and Dar-es-Salaam fishnet factories: financial assistance by the Dutch and Norway Governments for 1987-88 amounting to about US$ 1million;

- Integrated technical assistance and credit for small-scale fishermen of Lake Tanganyika implemented by FAO with Dutch funding amounting to about US$ 350 000 per year; Phase III of the project is now being negotiated for the next three years; Project started in 1983;

- ODA funded project for fisheries development and village pond rehabilitation in the Lindi and Mtwara regions; started in 1980 with financial assistance amounting to about US$ 200 000 per year;

- Financial and technical assistance to TAFICO amounting to over US$ four million for the period 1985-88; financed by Japan;

- Financial and technical assistance to Pasiansi Boatyard (Lake Victoria) provided by the Netherlands (1980-86); Phase II being negotiated for further assistance.

Other projects include FRG assistance to the Zanzibar Fisheries Corporation amounting to about US$ three million since 1983; Dutch assistance for stock assessment and research on Haplochromis on Lake Victoria and an FAO/TCP Project providing technical assistance for the preparation of the forthcoming five year fisheries development plan.

3.3 Pipeline Programmes and Projects

The major projects for which financing has been sought and potential donors identified are the following:

- Regional stock assessment of pelagic resources on Lake Malawi/Nyasa; financing pledged by ODA with project cost estimated at US$ 385 million over a three year period;

- Regional stock assessment of fisheries resources on Lake Victoria; financing pledged by the EEC;

- Regional stock assessment of fisheries resources on Lake Tanganyika; partial financing identified by FAO for an initial phase of one year.

It is expected that additional projects will be formulated in the context of the forthcoming preparation of the next five year plan.

4. ADMINISTRATIVE STRUCTURES AND INSTITUTIONS

4.1 Administration

The Department of Fisheries is attached to the Ministry of Land, National Resources and Tourism. It has primary responsibilities for fisheries development, management, statistics and legislation at national level and in general for the execution of the fisheries development policy. However, under the present decentralization policy, the DOF has actually little control on the deployment of field staff or in the planning and implementation of field programmes as this is the prerogative of the Regional Development Director and Regional Natural Resource Officers. The DOF has two main divisions: research and statistics, and development. The DOF operates about 20 stations throughout the country, three training centres, four boatyards and further controls of the activities of TAFICO and the Tanzanian Fisheries Research Institute (TAFIRI). As a commercial parastatal body, TAFICO should presumably be financially self-sufficient or finance itself through the banking system. The recurrent DOF budget for 1987-88 is Tsh 61 million , with an additional Tsh 24

million allocated to development (in total about US$ 1.2 million, which represents less than one percent of the gross value of production in the sector). External financing was reported to be about US$ 1.7 million. The national budgetary allocation is as follows: general administration (28 percent), TAFIRI (28 percent), training centres (27 percent), boatyards (10 percent), TAFICO (7 percent). Zanzibar has its own fisheries administration.

4.2 Credit Institutes

The major credit institutions which have so far financed the commercial fisheries sector are the Tanzania Investment Bank, the National Bank of Commerce and Tanzania Finance and Development Ltd. A credit scheme for small-scale fishermen is being implemented by the Cooperative and Rural Development Bank with the assistance of the above-mentioned FAO/Netherlands project (for Lake Tanganyika). The role of these institutions in financing the development of fisheries has remained marginal.

4.3 Research and Training

Fisheries research is the responsibility of the Tanzanian Fisheries Research Institute (TAFIRI). One of the primary objectives of TAFIRI is to initiate research in stock assessment for both marine and inland fisheries. TAFIRI has eight stations across the country but has lacked the financial resources needed to pursue extended and adequate research since its creation in 1980. Its main objectives and priorities are stock assessment and fisheries biology, socio-economic studies, hydrobiology, gear technology and aquaculture. In addition to the University of Dar-es-Salaam, which offers marine biology courses (BSc. level) and a MSc. in oceanography, there are three main training centres:

- Mbegani Fisheries Development Centre which offers three-year diploma courses and two-year certificate courses in: fishing technology, fish processing and marketing, marine mechanics, refrigeration engineering and boat building, (yearly output 35 students; capacity 120 students);

- Kunduchi Fisheries Institute which offers a 3-year diploma in fisheries sciences to "A" level students;

- Nyegezi Fisheries Training Institute which offers a 2-year certificate in fisheries sciences to "O" level students.

There is now an over-capacity in training facilities with the Kunduchi Fisheries Institute being in need of substantial rehabilitation.

4.4 Regional Institutions and Linkages

Tanzania's participation and membership to regional fisheries institutions is indicated in 2.4. Tanzania is also a member of SADCC and PTA.

5. PLANNING PROCEDURES AND MANPOWER

Planning procedures have been described in 2.2. Planning at the DOF level involves mostly the Director of Fisheries and his Deputy, two officers with training in economics and eight fisheries officers with training in fisheries sciences (BSc., Master or Diploma levels). Planning and programming are mostly indicative and much subject to external financing. Reporting and monitoring are minimal. The information base is not at all sufficient for adequate planning and programming; statistical data collection is not

satisfactory. The DOF also lacks the financial capabilities and some expertise (e.g., economic research and intelligence, data processing) to implement any significant research and information gathering and analysis programme. This may be considered as the major impediment to proper planning in general.

6. DEVELOPMENT PROSPECTS AND PROCEDURES

6.1 Development Prospects

There are definite prospects for further development of the fisheries sector, especially in inland fisheries. The potential annual production of inland fisheries is estimated at about 380 000 tons compared to actual production of 240 000 tons (level which might overestimate actual catch). Comparatively, the potential of marine resources is much more limited, being estimated at about 69 600 tons compared to present production of about 40 000 tons. Lake Victoria offers the best immediate development prospects, following the rapid expansion of the Nile perch stock. Careful monitoring and management measures would nevertheless need to be introduced to ensure the sustainability of this fishery. Very good development prospects also exist on Lake Tanganyika. Tanzania possesses substantial shrimp and tuna resources which are largely under-exploited and could contribute to foreign exchange earnings. The prospects for further development of the commercial fishery sector are good for both the inland and marine fisheries sector, although measures would need to be taken to ensure that the activities of artisanal fishermen are not endangered. Development prospects in the area of fish culture are good but will depend very much upon the future development trends in the capture fisheries sector and its impact on fish prices. The amelioration of the distribution and quality of fresh and processed fisheries products could also lead to a significant increase in the efficiency of the whole industry.

6.2 Development Constraints

Shortages in the availability of gear and other fishing equipment - mostly a result of insufficient foreign exchange allocation to the sector - is presently the major constraint to the sustainability of present production levels and to further development in the fishing industry. As the fisheries sector can hardly be expected to be self-sufficient in foreign exchange, it is a matter of national policy to allocate enough foreign exchange for meeting the sector's needs through the national production of fishing nets and complementary inputs. The same constraints are affecting the development of semi-industrial fishing except for the companies which can export part of their production. The other major constraint affecting the sector is the deficiency of the marketing and distribution system, coupled with rather poor infrastructure to support fishing operations and a poor transport network.

Finally, the fisheries administration and the DOF in particular lack the equipment, financial means and to a lesser extent the trained manpower required to properly plan and implement its programmes. This is especially so in the areas of fisheries monitoring and management. Decentralized planning and authority over fisheries development and management programmes further impair the efficiency of these programmes on most water bodies encompassing several regions.

7. PRIORITY INTEREST IN PROJECT RAF/87/099

National priorities are indicated in 2.1. The DOF indicated a strong interest for the proposed UNDP/FAO Project, expressing special interest in:

- technical support to the activities of the CIFA Sub-Committee for Lake Tanganyika and Lake Victoria along the priorities determined regularly by these sub-committees. It was suggested that in this context the Project could conduct specific investigations and assist in the coordination of research to be undertaken at national level;

- the creation of a coordination mechanism for increased collaboration with Malawi and Mozambique in the management and development of fisheries resources of Lake Malawi/Nyasa;

- assist with the follow-up of the work presently undertaken by FAO in the context of a TCP project for the elaboration of the next 5-year plan for the fisheries sector;

- training and advisory services in the areas of data collection, processing and analysis, planning and fisheries manangement.

8. UGANDA [1/]

1. MAJOR CHARACTERISTICS OF THE FISHERIES INDUSTRY

1.1 Marine Fisheries

Not applicable; Uganda is a landlocked country.

1.2 Inland Fisheries

Landlocked Uganda is notably rich in highly productive lakes, rivers and swamps which cover about 20 percent of the country. Commercial fishing is undertaken on Lakes Kyoga, Victoria, Albert, George, Edward, Wamala and other minor lakes, the Nile and other rivers. Total annual catch peaked in 1985 at 190 000 tons and is now close to that level again after having fallen to about 130 000 tons in the late 1970s.

Lake Kyoga, which was stocked with Nile perch (Lates niloticus) and Tilapia (Oreochromis niloticus) in 1955, has been contributing about half of total annual catch in the 1970s, mostly from the catch of these two species. Over the last three to five years, however, the catch has decreased significantly as a result of overfishing and unfavourable environmental conditions which affected the Nile perch stock especially. Overfishing on Lake Wamala has also contributed to a reduction in catch levels from 6 500 tons in 1974 to less than 1 000 tons in recent years.

Lake Victoria, which was stocked with Nile perch and O. niloticus in the late 1950s, is undergoing radical changes since 1979, following the rapid expansion of the Nile perch stock. Very much like what happened on Lake Kyoga but with a time gap of about 15 years, the fisheries of Lake Victoria are now mostly based on three species: L. niloticus, O. niloticus and Rastrineobola argenteus.

Fishing is an important rural industry presently employing about 70 000 fishermen and there may be as many as 100 000 people in secondary activities. The industry is using about 11 000 fishing craft, mostly planked canoes not exceeding 10 m of which about 10 percent are motorized. Gillnetting is the most common fishing method but longlining, beach seining, traps and weirs are also used.

1.3 Aquaculture

Fish culture is presently carried out at subsistence level. Over 100 000 ponds (410 ha) have been developed up to the early 1970s for the farming of Tilapia especially, but maybe up to 75 percent of these have been abandoned in recent years due to adverse security and economic conditions. Aquaculture production was officially reported to have reached a peak of 800-900 tons in 1968. It has since become limited with present production level estimated at about 30 tons.

1.4 Utilization of the Catch

The wars and economic crises which have affected Uganda since the mid-1970s have had a significant impact on fish trade and consequently on fish processing. The percentage of fish production marketed fresh decreased from 70 percent in the early 1970s to about 40 percent in 1984/85; the share of sun-

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dried/salted products remained stable at about 10 percent; the share of smoked products rose from 20 percent to about 50 percent over the same period. Fish smoking is practised throughout the country. Dry-salted and sun-dried products are mostly produced and consumed in the Western Lakes and West Nile regions. At present there are no modern fish processing plants and the one which operated before on Lake George (TUFMAC) has closed down. Projects are now being investigated by private entrepreneurs to process and export Nile perch from Lake Victoria.

1.5 State of the Industry

The fishing industry enjoyed rapid development until the mid-1970s when catches peaked at 190 000 tons, although, since then, data has become quite unreliable. The industry has been severely affected by the adverse economic conditions which have plagued the country, with catch falling to about 130 000 tons in the late 1970s and early 1980s. The industry has been recovering rapidly since 1983, following massive external assistance in the supply of fishing gear and equipment. Greater availability of fishing inputs and the explosive increase of the Nile perch stock have led to unprecedented development of the fisheries of Lake Victoria, with annual catch having about doubled with respect to the average levels observed in the late 1960s/early 1970s. This spectacular development overshadows major constraints which are still affecting the sector in more remote areas (Western Lakes in particular) and in certain activities like fish processing and fish trade.

1.6 Economic Role of the Industry

Fish is an important source of animal protein for Uganda, contributing about 50 percent of total supply. It is also a major source of employment and income for the communities living around the numerous lakes and rivers of Uganda. The contribution of the fishing sector to the agricultural GDP was about 15 percent in 1980 and may have risen slightly since. Although the export of fishery products has been banned temporarily by the Ministry of Commerce since 1986, fish has and could again be an important source of foreign exchange through direct exports or barter trade. The Government is now studying ways to reorganize this trade on an official basis.

2. NATIONAL POLICIES AND PRIORITIES

2.1 Major Objectives and Priorities

The main objectives of the fisheries development programmes, as indicated by the Blue Print Government Fisheries Development in Uganda and re-emphasized in the National Rehabilitation and Development Plan 1987/88 - 1990/91 are:

(a) to step up production of fish and raise per capita consumption;

(b) to raise the income and standard of living of fishermen who are among the least favoured groups in the country;

(c) to maximize employment opportunities in the fisheries sector;

(d) to earn foreign exchange through export of fish and fishery products.

Priority in the late 1970s - early 1980s has been given to the rehabilitation of small-scale fisheries through the provision of key fishing inputs to small-scale fishermen and the partial rehabilitation of the Uganda Fishnet Manufacturers Ltd.

The Government is now putting emphasis on investigating the current status of major stocks and fisheries, and on the rehabilitation of the Fisheries Department facilities and capabilities in order to properly plan for the sound and sustainable development of the sector after years of disrupted work, and unmonitored and uncontrolled development which led to overfishing of some fisheries and missed development opportunities in others.

2.2 Major Characteristics of the Planning System

Planning has been disrupted by the major politico-economic events which took place in Uganda in recent years. Fisheries programmes have recently been developed in the context of the National Rehabilitation and Development Plan. Following national objectives and priorities, planning is conducted at ministerial level and coordinated by the Ministry of Planning and Economic Development. As far as the fisheries sector is concerned, planning is essentially the responsibility of the Fisheries Department, under the Ministry of Animal Industries and Fisheries. Programmes are prepared by the headquarters staff of the Fisheries Department in close collaboration with the Planning Unit of the Ministry. Proper planning is very much constrained by the lack of information on the fisheries sector.

2.3 Major Orientation of the On-going Plan

The National Rehabilitation and Development Plan has the following major programmes, based on existing or pipeline fisheries projects:

(a) Stock assessment programme with complementary investigations as required to properly plan future development and management of major fisheries (major lakes).

(b) Programme for the adequate provision of fishing gear and equipment to small-scale fishermen.

(c) Programme for the undertaking of controlled commercial trawling on Lake Victoria for Nile perch essentially.

(d) Development of a network for fish processing and fish distribution in south eastern Uganda.

(e) Rehabilitation of the physical and technical capabilities of the Fisheries Department.

These programmes reflect an emphasis on rehabilitating the information base and other capabilities as required for proper planning and implementation. Although the major orientation of the Plan is to assist small-scale private producers and traders, programmes (c) and (d) above involve direct Government participation.

2.4 Policies with Regard to Shared Stocks

Uganda is sharing Lake Victoria with Kenya and Tanzania, and Lakes Albert and Edward with Zaire. Under the East African Community, Uganda has played a key role in coordinating the Jinja-based EAFFRO. Uganda is now an active member of CIFA and its Sub-Committee for the Management and Development of the Fisheries of Lake Victoria. Together with Kenya and Tanzania, Uganda is now seeking assistance from the EEC to conduct coordinated stock assessment research on Lake Victoria. No such mechanism exists for a similar cooperation with Zaire, although Uganda would very much like to undertake joint stock assessment research on Lakes Edward and Albert.

3. MAJOR RELATED PROGRAMMES AND PROJECTS

3.1 Past Programmes and Projects

(a) Provision of inputs to small-scale fishermen in the Lake Kyoga area. Project financed by IFAD for US$ 4.5 million (1983-85).

(b) Provision of fishing equipment and technical assistance to small-scale fishermen of Lake Albert and the West Nile region. Project financed by Euro Action Accord for over US$ 1 million since 1983 on an off-and-on basis.

(c) Provision of fishing equipment in areas not covered by the above projects and general assistance to the Fisheries Department for the rehabilitation of small-scale fisheries; project financed by the EEC for a total of ECU 6 million since 1984. The project was interrupted in 1986 and will be completed in 1988-89.

(d) Two lines of credit to enable resumption of fishing net production by Uganda Fishnet Manufacturers Ltd. Financed by IDA for a total of US$ 1.7 million (1983-84).

(e) Construction of an ice plant and cold storage facilities in Kampala by the People's Republic of China. Project completed in 1983 and now producing around 200 000 tons of ice per year. Although use of this plant by the fishing industry was the original objective, this has remained very marginal so far.

3.2 On-going Programmes and Projects

(a) Second phase of the abovementioned EEC project. Project to start immimently with focus on the delivery of inputs ordered during the first phase of the project, essentially for the benefit of small-scale fishermen.

(b) Stock assessment, fisheries monitoring and complementary investigation on Lake Kyoga. Second phase of Project 3.1 (a) financed by IFAD and executed by the World Bank in the context of the Agricultural Development Programme, with a provision of US$ 2 million for fisheries activities (1986-88).

(c) Set up of a Sino-Ugandan joint venture for the acquisition and exploitation of two small steel trawlers on Lake Victoria. The company is to be operated in conjunction with the Kampala Ice Plant to supply the Ugandan market, although the possibility of exporting will be assessed. Started in 1987.

(d) Development of a fish processing and distribution network in the south eastern part of Uganda with receiving stations on Lake Victoria and Lake Kyoga and the organization of fishermen into cooperatives. Project financed with a loan of US$ 14 million from the Government of Italy. Started in 1987.

(e) Integrated development of small-scale fisheries on Lake Albert. Continuation of Project 3.1 (c).

3.3 Pipeline Programmes and Projects

(a) Rehabilitation of statistical and information systems with focus on Lake Victoria and Lakes Edward and George. Project primarily aimed at rehabilitating the permanent fisheries statistical system and providing complementary information and specific plans for future development and management activities. To be financed by UNDP for US$ 830 000 and executed by FAO over a two year period (UGA/87/009). Estimated starting date: April 1988.

(b) Coordinated stock assessment and complementary biological investigations of Lake Victoria's fishery resources. To be financed by EEC upon approval by participating countries (Uganda, Kenya, Tanzania).

(c) Coordinated stock assessment programme for the Lakes Edward and Albert (project idea being developed, financing to be sought).

(d) Various private projects for the exploitation, processing and export of Nile perch from Lake Victoria. Development of such projects awaiting the lifting of the ban on exportation of fisheries products.

4. ADMINISTRATION STRUCTURES AND INSTITUTIONS

4.1 Administration

The Fisheries Department, under the Ministry of Animal Industries and Fisheries, is responsible for planning, training, fisheries monitoring, and implementation of development and management programmes and projects in fisheries and fish culture. The Fisheries Department has regional offices for each major lake or sub-regions of these lakes, and research and development stations for fisheries and fish culture throughout the country, although most are in serious need of rehabilitation. The Fisheries Department also runs the Fisheries Training Institute at Entebbe and the Kajansi Research Farm, a major fish culture research station now requiring major rehabilitation work.

The Ministry of Regional Cooperation, originally responsible for the assets of the East African Community, retained an interest in fisheries research; the Uganda Freshwater Fisheries Research Organization (UFFRO) remains under its authority.

4.2 Credit Institutions

There are at present no credit facilities catering specifically for the sector. The Uganda Commercial Bank is, however, initiating a special credit programme for small farmers which will also provide for the credit needs of small-scale fishermen/fish farmers with minimal guarantees and emphasis on providing inputs in kind with tailored repayment schemes.

4.3 Research and Training

Makerere University offers 3-year B.Sc. zoology courses covering fish biology, limnology, ichthyology and fisheries management. About one to two M.Sc. projects in fisheries are taken every year. Facilities are now being rehabilitated.

The Fisheries Training Institute (FTI), established in 1968, offers two main programmes: (a) a 2-year Certificate in fisheries management and technology with possible extension of one year for specialized topics, and (b) a 2-year Certificate in boat building technology. The FTI has partially been rehabilitated under the EEC project 3.1 (c).

Research is undertaken by UFFRO in the area of ecology, fish biology, limnology and hydrology, and by the Fisheries Department in the area of fish culture (Kajansi Research Farm) and fish technology (Fish Technology Laboratory, Entebbe).

4.4 Regional Institutions and Linkages

Uganda is a member of CIFA, its Sub-Committee for the Management and Development of the Fisheries of Lake Victoria, PTA and OKB.

5. PLANNING PROCEDURES AND MANPOWER

Section 2.2 refers. Planning is generally undertaken on a very ad hoc basis with no systematic process being followed. Very little reliable information being available on the evolutionary and current status of the fisheries sector, the strengthening of the information base required for proper planning is now considered a top priority. A planning unit established within the Ministry of Animal Industries and Fisheries has been strengthened recently with EEC assistance. A UNDP/FAO project is being elaborated which would provide additional assistance to the ministries concerned for improved agricultural development planning.

5.2 Manpower

The Fisheries Department has the following staff:

- 42 staff members, graduates with basic degrees;
- 115 staff members with diploma;
- 230 fisheries assistants with minimum certificate in fisheries;
- 23 technical assistants (boat builders/mechanics/etc.).

In addition, there are 17 UFFRO staff members, graduates with basic degrees.

The personnel of both the Fisheries Department and UFFRO is well qualified, reflecting a definite long-term emphasis on qualifications rather than on staff size. The two areas for which there is a definite lack of expertise are economics/planning (one fisheries scientist attached to the Planning Unit is presently undergoing on-the-job training in planning), and data processing/computer sciences.

6. DEVELOPMENT PROSPECTS AND CONSTRAINTS

6.1 Development Prospects

Opportunities for further development of the fisheries sector do exist, although the major fisheries of Lakes Kyoga and Victoria appear to be fully exploited if not already over-exploited. Develoomment prospects are good for the Western Lakes and for specific fisheries like the small pelagic of Lakes Victoria and Kyoga, the stocks of which have remained largely under-exploited. In general, the lack of information has made it difficult to properly assess development opportunities. Opportunities also exist for a better valuation of fisheries products through the reduction of post-harvest losses, better handling and processing, and more efficient distribution, although progress at this level is much related to purchasing power and thus to further improvement of the economy.

6.2 Constraints

The major constraints to development are:

- lack of information on the recent evolution and current status of the major fisheries;

- heavy dependency of the sector on imported fishing inputs with related constraints such as the poor management of UFM and the general lack of foreign exchange;

- lack of means and equipment which prevent the Fisheries Department from functioning normally and efficiently, and from adequately managing the fisheries which are now becoming over-exploited;

- lack of expertise in fisheries development planning and fisheries management.

7. PRIORITY INTEREST IN PROJECT RAF/87/099

Uganda is very much interested in participating in the project, especially with respect to the following priority areas:

- Organization of technical consultations with Zaire for joint research and the coordinated management and development of fisheries of Lakes Edward and Albert.

- Conduct of a general survey of fisheries activities on Lake Albert in collaboration with UFFRO and Fisheries Department staff.

- Strengthening of the activities of the CIFA Sub-Committee for the Management and Development of the Fisheries of Lake Victoria.

- Contribution to the design and organization of a proper fisheries information system in collaboration with Project UGA/87/007 especially.

- Preliminary assessment of on-going and pipeline development projects on the fisheries of the River Nile System with the view of preparing a specific research/impact study programme.

- Expert advisory services on management for Lakes Kyoga and Victoria especially.

- Training of senior staff at high level in key areas such as planning and management, and participation in exchange programmes (especially towards gaining experience in the exploitation of small pelagics).

- Sponsoring of regional participation in training programmes of the FTI.

- Organization of sub-regional seminars at intermediate level in collaboration with FTI staff.

9. ZAIRE [1]

1. PRINCIPALES CARACTERISTIQUES DE L'INDUSTRIE DE LA PECHE

1.1 Pêches maritimes

Etant donné l'exiguïté du littoral national (40 km) et le peu d'étendue du plateau continental (1 150 km²), les mises à terre de la pêche maritime ne représentent qu'environ un pour cent de la production totale du pays. Les artisans-pêcheurs utilisant pirogues et sennes halées à terre capturent environ 1 000 tonnes par an, tandis que l'unique bateau de pêche industrielle a débarqué approximativement 300 tonnes en 1983.

1.2 Pêches continentales

Le principal réseau fluvial est constitué par le Zaïre et ses affluents. On estime qu'au total le champ d'inondation couvre quelque 25 000 km² pendant les hautes eaux.

Les méthodes traditionnelles de pêche fondées sur l'emploi de pirogues non motorisées, de filets maillants, de sennes et de lignes restent largement utilisées. Les pêcheries sont très dispersées, chaque groupe de pêcheurs ayant pour base un appontement local ou un camp temporaire. A l'heure actuelle, il est difficile d'évaluer le rendement total de la pêche fluviale, mais on a livré environ 20 000 tonnes de poisson (équivalent de poids frais) aux marchés de Kinshasa en 1984. Les principaux lacs du Zaïre sont ceux de la vallée du Rift, le plus important étant le lac Tanganyika dont 45 pour cent de la superficie totale sont en territoire zaïrois. Parmi les autres, citons les lacs Mobutu, Mweru, Kivu et Amin.

La pêche dans le lac Tanganyika repose essentiellement sur l'exploitation des clupéidés pélagiques Stolothrissa tanganicae et Limnothrissa miodon, le reste des apports étant constitué par Lates et Luciolates spp. Les autres pêcheries sont très diversifiées du point de vue des espèces, mais tilapia représente une proportion importante des captures. On estime que ce lac pourrait produire quelque 300 000 tonnes de poisson.

1.3 Aquaculture

La production aquacole est estimée à quelque 700 tonnes par an et pourrait être accrue.

1.4 Utilisation des captures

La plus grande partie du poisson capturé en mer est commercialisée à l'état réfrigéré ou frais, principalement à Kinshasa, la capitale. Une proportion substantielle des prises provenant des eaux intérieures est conservée par diverses méthodes, parmi lesquelles figurent le simple séchage

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[1] Profil préparé par M. Giudicelli

(lac Tanganyika), le fumage au bois et, dans la région du lac Amin, le salage et le séchage au soleil; par ailleurs, la congélation et la mise en conserve ont été introduites. Le cours moyen du Zaïre est parcouru de temps à autre par des navires de l'Office national des transports (ONATRA) à bord desquels se trouvent des négociants qui achètent le poisson fumé-séché pour le livrer aux marchés urbains de Kinshasa.

1.5 Situation et rôle économique de l'industrie de la pêche

L'industrie de la pêche a accusé un fléchissement ces dernières années en raison du manque de matériel et d'équipement, et de la difficulté de transporter les captures jusqu'aux principaux centres de consommation.

Au cours des dix dernières années, les débarquements annuels de poisson, provenant pour l'essentiel des eaux intérieures, ont fluctué autour de 105 000 tonnes. A l'heure actuelle, la valeur de cette production (prix payé aux producteurs) est de quelque 100 millions de dollars E.-U.

Les importations de poisson ont accusé une progression soutenue dans le passé récent, passant d'environ 80 000 tonnes en 1981 à 175 000 tonnes (poids frais) en 1985. Il n'y a pas d'exportations de poisson. Cela signifie que les disponibilités de poisson par habitant dans ce pays qui compte maintenant 29 millions d'habitants se sont établies autour de 9,6 kg par an, le chiffre actuel restant approximativement le même. L'emploi dans l'industrie de la pêche a également régressé, quoique la pêche de subsistance fournisse indubitablement du travail et de la nourriture à un nombre important d'habitants. Le nombre de pêcheurs est estimé à quelque 100 000 et celui des travailleurs, principalement des petits marchands, se livrant à des activités connexes, à près de 600 000.

Toutefois, le poisson consommé par les petites communautés vivant à proximité des pêcheries et par les communautés de pêcheurs elles-mêmes continue de contribuer notablement à l'amélioration des normes nutritionnelles de la population.

2. STRATEGIE ET PRIORITES DU DEVELOPPEMENT SECTORIEL

2.1 Principaux objectifs et priorités

Les objectifs économiques du secteur des pêches, tels qu'énoncés dans le premier plan économique et de développement quinquennal (1986-1990) sont les suivants: accroître les disponibilités alimentaires, réduire les importations de poisson, et améliorer la situation socio-économique des pêcheurs et de ceux qui se livrent à des activités connexes.

2.2 Système de planification et orientation principale du plan actuel

Jusqu'à une époque récente, il n'y avait pas de procédure de planification spécifique pour le secteur des pêches et aucune stratégie précise n'avait été élaborée en vue d'atteindre les buts mentionnés en 2.1.

La "Zaïrisation" de l'économie tout entière était supposée être la solution à tous les problèmes. Toutefois, ses résultats catastrophiques ont incité le gouvernement à rechercher des approches plus pragmatiques. En ce qui concerne le secteur des pêches, il a donc demandé l'aide de la FAO pour l'établissement d'un Plan directeur, qui a été élaboré en 1986. Ce plan est

bien conçu pour ce qui est de la stratégie de développement et de la tactique à employer pour atteindre ses objectifs. Il a été approuvé par la Commission d'Etat aux affaires foncières, de l'environnement et de la conservation de la nature en août 1987. Néanmois, le plan est ambitieux et probablement extrêmement optimiste: il vise à accroître de 100 pour cent la production actuelle, évaluée à 105 000 tonnes en 1986, en l'espace de quatre ans. Il ne tient pas suffisamment compte des obstacles mentionnés au paragraphe 6 qui ne sont pas faciles à surmonter.

Pour les raisons ci-dessus, une deuxième version du Plan est en cours de préparation par la FAO et sera distribuée à des donateurs potentiels d'ici la fin de 1987, en vue d'une réunion à tenir aux alentours d'avril 1988.

2.3 Politiques relatives aux stocks partagés

Le Zaïre est partie à des programmes régionaux de coopération avec le Rwanda (1986) pour l'aménagement du lac Kivu. Récemment, des contacts ont aussi été pris dans le même but avec l'Ouganda pour les lacs Mobutu et Amin, avec la Zambie pour le complexe Luapula-Moizo, et avec l'Angola en vue d'obtenir l'accès à ses ressources marines.

3. PRINCIPAUX PROGRAMMES ET PROJETS CONNEXES

3.1 Programmes et projets passés

Parmi les principaux projets récemment achevés figurent:

(a) Un projet en faveur des pêches continentales (1978-1983) entrepris avec l'aide de la France en vue d'introduire de nouvelles techniques de capture et de conservation. Ce projet a coûté 1 670 000 dollars E.-U.

(b) Un projet de développement des pêches, financé par le PNUD pour un montant de 1 549 000 dollars E.-U. et couvrant la période 1980-85.

(c) Un projet visant à mettre en place un système de vulgarisation de la pisciculture rurale. Ce projet a duré de 1979 à 1985 et a été financé par les Etats-Unis pour un montant de 1 190 000 dollars E.-U.

(d) Un projet financé par la CEE (1980-87), visant à mettre sur pied un centre intégré pour les pêches à Uvira.

3.2 Programmes et projets en cours

Deux importants projets, dont le coût total est de 2,2 millions de dollars E.-U., sont en voie d'achèvement: l'un, financé par la France, pour le lac Mobutu, et l'autre, financé par le PNUD, pour l'élaboration d'un plan directeur et le renforcement consécutif des institutions.

3.3 Programmes et projets dans la filière

Il y a quelque cinq autres projets dans la filière pour les lacs Tanganyika, Amin, Mobutu et Kivu. En outre, d'autres projets, tels que le projet pilote pour la mise en valeur du fleuve Zaïre, ont été formulés au titre du plan directeur pour le secteur des pêches. Le Zaïre mettra également

en route à Muanda un projet concernant les pêches maritimes artisanales, en tant qu'activité du Comité régional des pêches du golfe de Guinée (CPGG).

4. STRUCTURES ADMINISTRATIVES ET INSTITUTIONS

4.1 Administration

Une simple Division relevant du Secrétariat d'Etat, par l'intermédiaire de la Direction de la gestion des ressources naturelles renouvelables (DGRNR), s'occupe du secteur des pêches. A l'heure actuelle, cette division est extrêmement faible avec un personnel de 21 membres, dont 16 seulement sont en poste, et un budget d'environ 10 000 dollars E.-U. pour ce personnel. Le Commissariat d'Etat régit le fonctionnement de la Division; pour ses activités de terrain, elle dépend des Bureaux régionaux de la conservation de la nature (DGRNR). Son personnel comprend actuellement quatre titulaires de diplômes universitaires de niveau supérieur et dix de niveau moyen, et deux personnes non diplômées. On comprend facilement que, dans une telle situation et malgré la grande motivation de son personnel, la Division des pêches soit particulièrement impuissante; si le Plan directeur est mis en application, il faudra renforcer considérablement son statut et les moyens dont elle dispose. Dans cette optique, le Commissariat d'Etat a récemment proposé à la Fonction publique de transformer la division en une direction dont le personnel central compterait 54 membres et le personnel de terrain 686.

4.2 Recherche et formation

La recherche halieutique et la formation dans le domaine des pêches ne sont guère développées au Zaïre. Indépendamment du centre de recherche d'Uvira qui effectue des études limnologiques sur les lacs Tanganyika et Kivu, les Universités de Kinshasa et de Kisangui proposent des programmes d'étude généraux faisant place à l'hydrobiologie et à la pisciculture.

4.3 Institution de crédit

La Société financière de développement (SOFIDE) et le Crédit agricole sont les principales institutions fournissant des services de crédit au secteur des pêches.

4.4 Institutions et liens régionaux

Le Zaïre est membre des institutions régionales ci-après ayant des compétences dans le domaine des pêches: CPGG, COPACE, CPCA, CEPGL, CEEAC.

5. PROCEDURES DE PLANIFICATION ET PERSONNEL

Prière de se reporter à la section 2.2. Un projet entrepris avec l'assistance du PNUD/FAO en vue de développer les capacités de planification de l'administration des pêches a été mis en route en 1987.

6. PERSPECTIVES DE DEVELOPPEMENT ET FACTEURS LIMITANTS

6.1 Perspectives de développement

On observe actuellement une demande croissante de poisson frais et de poisson séché-fumé sur les marchés urbains et ceux des villages. Etant donné les présentes difficultés économiques et les problèmes d'infrastructure, la

première mesure à prendre pour développer les pêches continentales est la revalorisation des pêcheries existantes. A cet effet, chaque pêcherie devrait être considérée séparément, dans l'optique de l'équipement disponible, de la production, du stockage et de l'organisation commerciale. Le but devrait être d'approvisionner à partir de pêcheries particulières des zones de population bien définies. Les projets visant à améliorer les techniques de pêche, former les pêcheurs, etc. ont peu de chance de succès avant l'achèvement de la phase de réorganisation fondamentale de l'industrie de la pêche et de son infrastructure.

Le potentiel d'accroissement de la production de poisson est mal connu. Le rendement maximum équilibré se situe, selon les estimations actuelles, quelque part entre 350 000 et 700 000 tonnes. Si on utilise une estimation prudente et compte tenu de la production annuelle actuelle de 105 000 tonnes, les ressources encore disponibles pour l'exploitation pourraient bien être de l'ordre de 400 000 tonnes. Par conséquent, théoriquement au moins, une croissance importante du secteur de la pêche serait tout à fait possible.

Il existe à la fois un potentiel de production et un potentiel de consommation. Le remplacement des importations actuelles de poisson par des produits locaux permettra d'utiliser près de la moitié des ressources de poisson disponibles.

6.2 Facteurs limitants

Toutefois, pour que les perspectives ci-dessus se concrétisent, il faudra surmonter des obstacles énormes, à savoir par ordre d'importance:

(a) la vaste superficie du pays, qui signifie qu'une proportion d'environ 70 pour cent des ressources qui se trouve dans les lacs orientaux est à une distance de plus de 1 500 km de Kinshasa où se concentre une grande partie de la population;

(b) le manque de routes fiables entre ces deux emplacements géographiques et la rareté du carburant qui rendent de toute façon le transport extrêmement irrégulier et coûteux;

(c) les longues distances de 800 km en moyenne qui séparent encore les lacs orientaux et le sud-est du Zaïre qui est l'autre zone à forte densité de population;

(d) les effets de la "Zaïrisation" passée qui a désorganisé les opérations de production et de commercialisation antérieurement mises en place par des étrangers au Zaïre oriental;

(e) les effets de la même décision sur le commerce des moyens de production, des engins de pêche, des moteurs, etc.;

(f) l'extrême faiblesse de la structure institutionnelle du secteur des pêches, y compris l'absence du système statistique le plus simple.

7. OBJECTIFS PRIORITAIRES DU PROJET RAF/87/099

Le Chef de la Division des pêches a manifesté un vif intérêt pour ce projet, en particulier parce qu'il offre les moyens de dispenser une formation et promouvoir la coopération régionale, principalement pour l'aménagement des stocks partagés.

Il a principalement fait remarquer qu'en plus de ses objectifs immédiats tels que précédemment formulés, ce projet devrait envisager la possibilité de répondre à d'autres besoins prioritaires en entreprenant des activités dans les domaines suivants:

(a) planification et formulation de politiques dans le cas d'interactions entre les pêches continentales et la pisciculture;

(b) soutien aux pays membres pour rechercher auprès de sources extérieures un financement à moyen et à long terme pour des activités visant à améliorer les capacités opérationnelles des institutions s'occupant du secteur des pêches, en particulier pour ce qui concerne la surveillance et l'évaluation (statistiques); et

(c) renforcement des capacités de planification du secteur des pêches au niveau du Ministère du Plan, grâce à la participation de son personnel aux cours et séminaires de formation.

10. ZAMBIA [1/]

1. MAJOR CHARACTERISTICS OF THE FISHERIES INDUSTRY

1.1 Marine Fisheries

Not applicable, Zambia is landlocked.

1.2 Inland Fisheries

The fisheries of Zambia are remarkable for their variety, activities of a traditional nature being carried out on lakes, swamps, flood plains, rivers and approximately 2 000 private fish ponds and 370 water-retention dams used for fish farming. More than a half of the total catch comes from the north eastern region from Lakes Tanganyika, Mweru Wa Ntipa, Mweru-Luapula and Bangweulu. The major species from Lake Tanganyika are 'Kapenta' Storothrissa tanganicae and Limnothrissa miodon. In the other lakes the major species are the 'Tilapia' with Poecilothrissa moeruemsis, or 'Chisense', now supporting an important fishery. In the southern part the Kafue flood plain and Lake Kariba are important. The Kafue flood plain may be over-exploited but the Kapenta stocks of Lake Kariba are thought to be under-utilized. There are a number of minor water bodies which may be important in the future; these include Lusiwashi and Itezhitezhi lakes, Lower Zambezi/Luangwa rivers and Chambishi.

Fish production has been revolving around 50 000 tons in recent years and is estimated to involve 24 000 fishermen, and probably over 200 000 people depend on the fisheries industry for their livelihood.

1.3 Aquaculture

The Department of Fisheries has established 19 fish culture stations throughout the country and, with the help of a UNDP/FAO Fish Culture Development Project, three stations at Chilanga, Chipata and Mwekera have been upgraded to be seed-producing centres. Under the current plan there are Solwezi, Fiongoli and Misamfu. There are 350 ha of ponds under fish culture, producing about 600 tons annually. Of these 47 ha are in the 19 government stations, 190 ha in private commercial farms and the remaining 87 ha comprise small rural fish ponds which number over 2 000.

Experimental operations at Chilanga using Tilapia andersonii integrated with white Peking ducks or pigs have produced up to 4 tons/ha/year. A number of large concerns have shown interest in this type of operation and produce fish for their workers.

1.4 Utilization of the Catch

The geographical location of Zambia's fisheries is a serious constraint to efficient distribution and marketing. The major producing areas are on the periphery of the country, while the principal and most rewarding markets are far from sources of supply. Transport difficulties necessitate some 70-75 percent of the catch being processed by sun-drying or smoking.

1/ Country review prepared by E. Chondoma

1.5 State of the Fisheries Industry

Increase in the overall fish production of the country for the past decade or so has been nominal and the character of the fishing industry has not changed significantly. The problems which account for this stagnation are discussed under Section 6.2

1.6 Economic Role of the Fisheries Industry

Fish forms an important source of animal protein and, as such, forms an essential item in the Zambian diet. The fishing industry is also of considerable importance as a source of employment, with about 24 000 full-time fishermen and over 200 000 people depending on the fisheries industry for their livelihood. Per caput supply is about 10 kg/year and has decreased slightly in recent years as production has not kept pace with the increase in population.

2. MAJOR POLICIES AND DEVELOPMENT PLANS

2.1 Major Objectives and Priorities

The fourth National Development Plan (1986-1990) has the following major objectives for the fishery sub-sector:

(a) To improve the living standards of the socially backward fishing communities.

(b) To provide food in the form of high quality fish protein.

(c) To provide more and better employment opportunities as a source of income at both the primary level of production and secondary level of processing and distribution.

(d) To encourage optimum utlization of all water areas for fish production.

(e) To contribute some share of foreign exchange through the export of ornamental fish species for the aquaria trade and reduction of fish imports.

2.2 Characteristics of the Planning System

The Department of Fisheries under the Ministry of Agriculture and Water Development is responsible for the planning, development and management of the fisheries sector in Zambia.

Within the Department of Fisheries there is no organized structure for the planning process (see Section 5.1). The Director of Fisheries, in collaboration with the Heads of Divisions and Project Managers, is reponsible for the formulation of policy and development of the implementation strategy.

The planning of fisheries development programmes is done once every five years during the overall national development planning exercise. There are annual reviews and preparation of annual plans.

From the Department of Fisheries (DOF), the fishery plan is taken to the Ministry of Agriculture and Water Development (MAWD) Plan Review Committees.

The Fisheries Development Plan is reviewed by three committees, i.e., the Production, Marketing and Agro-industries Committees. The committees consist of members from activities interrelated to fisheries, viz-a-viz financial institutions, industry, university, other agricultural departments, etc.

After the plan has been reviewed by the Ministry's committees, it is passed to the MAWD Planning Division who consolidate the inputs of the committees into the plan and compile the Ministerial Plan. Then this plan is sent to the National Commission for Development Planning in the Ministry of Finance where the National Development Plan is finalized.

At the grass-roots level there are Provincial Planning Committees which are composed of politicians, the provincial fishery development officer, businessmen and elected representatives of the fishermen. The roles of such committees include:

(a) to spearhead development projects
(b) plan fishery development of the districts and carry these to the national level;
(c) appraisal of applicants for credit shares;
(d) assist in the enforcement of fisheries regulations.

Of these roles most committees have been successful only in two, i.e., appraising of credit applications and promoting awareness of fisheries regulations.

2.3 Major Orientation of the Ongoing Plan

The major orientation of the current five year Development Plan 1986-1990 centres around the following programmes:

(a) Increasing fish production from natural capture fisheries, especially the northern fisheries of Lake Tanganyika, Mweru Wa Ntipa, Mweru-Luapula and Bangweulu.

(b) Increasing output from fish farming to close the gap between supply and demand.

(c) Improving harvesting techniques, processing facilities and marketing infrastructure to reduce pre- and post-harvest losses.

(d) Carrying out stock assessment surveys to estimate potential yields from all inland waters.

(e) Development of suitable gear for the exploitation of 'chisense' (small clupeid pelagics), especially in the northern fisheries of Lakes Mweru Wa Ntipa, Mweru-Luapula and Bangweulu.

(f) Surveying the commercially important minor fisheries of man-made Lakes Lusiwashi and Itezhitezhi, and the Lower Zambezi/Luangwa rivers and Chambishi.

2.4 Policies with Regard to Shared Stocks

Zambia shares Lake Tanganyika with Zaire, Burundi and Tanzania. Zambia also shares Lake Mweru-Luapula with Zaire and Lake Kariba with Zimbabwe.

The policy of Zambia with regard to shared lakes and stocks is to promote joint management strategies and stock monitoring programmes with a formal forum for information exchange.

Lake Tanganyika: In Lake Tanganyika the CIFA Sub-Committee on Lake Tanganyika organizes regular meetings to discuss matters of mutual interest. Information exchange is successful with Burundi and Tanzania but not with Zaire. The Sub-Committee's recommendations and project proposals have been frustrated by lack of funding. There is also a lack of serious commitment by Member States.

Lake Kariba: There is no joint body dealing with similar matters for Lake Kariba. However, since 1981, information exchange has developed very well and there are regular meetings and correspondence at professional level to discuss matters of mutual interest. The current DANIDA/NORAD project on the Development of the Lake Kariba Fishery for Zambia and Zimbabwe is a step towards the joint planning and management of Lake Kariba Kapenta fishery. Zambia would like reviews and discussions on the fishing regulations of Lake Kariba which differ between the two countries. They would also like an easening of protocols for professional meetings between the two countries and to have informal meetings, workshops/seminars on fisheries planning and management and study exchange visits between the professionals of the two countries.

Lake Mweru-Luapula: There is a high level Zambia-Zaire Joint Permanent Commission which has monthly meetings mainly on border matters of mutual interest. Although fisheries matters are sometimes discussed, this body is inadequate for the fisheries management of Lake Mweru-Luapula. At present there is no forum for professional meetings and no exchange of information. There are two areas of major concern. First, Mijimbo Island, which is a major breeding site for breams, is protected by regulations by the Zambian authorities but is heavily exploited by Zairian fishermen. Secondly, there are illegal exports of fish by Zambian fishermen to Zaire which are not recorded. Zambia would like assistance to establish contact with Zaire at the professional level and have exchange of information.

3. MAJOR RELATED PROGRAMMES AND PROJECTS

3.1 Past Programmes and Projects

(a) FAO/UNDP Research Development Programme based in Chilanga and which covered all water bodies (1968-76).

(b) FAO/UNDP Training and Development Project which led to the establishment of a junior staff training centre at Kasaka (1978-82).

(c) CIDA: Feeder roads in the northern district which lessened the isolation of the fisheries of Mweru Wa Ntipa, Mweru-Luapula, Northern Bangweulu and Lake Tanganyika (1981-84).

(d) Development of marketing infrastructure.

(e) Development of fishing boats which was supported by the UK (1976-77): Design of fishing and transport boats.

3.2 Ongoing Programmes and Projects

(a) World Bank Fisheries Development Project (1985-90) covers northern fisheries except Bangweulu and also covers the southern fisheries of Kajue and Kariba. The project, involving IDA credit of US$ 6.8 million, will provide credit to fishermen and improve the processing and distribution system. Delivery is proving to be rather slow because of unattractive credit conditions as well as for other reasons.

(b) State of Jersey Overseas Aid Committee Project on the 'chisense' fishery of Lake Mweru-Luapula and focussing on the development of suitable gear, research on the biology of 'chisense' (Poecilothrissa moeruemsis) and stock assessment studies.

(c) Fish Culture Development in Zambia, Phase 2 (UNDP/FAO Phase 1; Netherlands/FAO Phase 2). The project has introduced integrated fish-cum-duck farming using Peking ducks and is developing quality seed and brood stock of T. andersonii.

(d) Development of Fish Farming in the Northern Province. The project will provide and equip a centre in the northern province and support research.

(e) DANIDA/NORAD Lake Kariba Fishery Development Project. Pilot phase study for one year to start November 1987. First phase will concentrate on stock assessment and results from this phase will determine the components of the next phase.

(f) SIDA: Development of Methodology for Rural Small-Scale Aquaculture in the Eastern Province.

(g) ICCARA II Fish Ponds Project in Northern and Western Provinces, involved in pond construction at small-scale and community level.

(h) FINNIDA: Development of Sail Power on Lake Mweru-Luapula. A feasibility study was completed, but the project is now dormant.

(i) Intensive Rural Development Programme (IRDP), a number of bilateral agreements on rural development which also cover fisheries development particularly in the Northern and Luapula Provinces.

3.3 Pipeline Programmes and Projects

The current five year plan 1985-90 has proposed 25 projects. The projects cover three major areas, namely research on fish stocks and limnology to assess production potential and need for conservation measures, strengthening of fisheries administration and the fisheries infrastructure, including marketing and fishing practices, and the socio-economic basis for development actions.

(a) Fisheries Development at Lake Tanganyika. Stock assessment for Kapenta and craft and gear development. Duration 3 years, cost US$ 560 000. Donor: not yet identified.

(b) Fisheries Development at Lake Mweru Wa Ntipa. Stock assessment of major fishery species, especially Oreochromis macrochir, gear development for chisense and processing and marketing infrastructure. Duration 2 years, cost US$ 285 000. Donor: CIDA has shown interest.

(c) Fisheries Development at Lake Mweru-Luapula. Stock assessment and limnological studies, exploitation of the fishery resources. Duration 5 years, cost US$ 800 000. Donor: not yet identified, possibly UK, FINNIDA.

(d) Fisheries Development in Upper Zambezi. Determination of commercially important fish species. Duration 3 years, cost US$ 295 000. Donor: Possibly Netherlands.

(e) Stock Assessment in Relation to Flood Plain Hydrology in Kafue. Duration 3 years, cost US$ 235 000. Donor: not yet identified.

(f) Effects of Effluents on Kafue Fishery and Limnology. Duration 6 months, cost US$ 350 000. Donor: DOF and outside research institute.

(g) Fish Stock and Limnological Investigations at Lake Itezhitezhi. Duration 18 months, cost US$ 145 000. Donor: DOF - part of the project alredy started.

(h) Fisheries Department at Lake Bangweulu. Stock assessment and gear development for pelagic fish stocks. Duration 2 years, cost US$ 80 000. Donor: Both FINNIDA and CIDA are interested.

(i) Preliminary Stock Assessment and Limnological Investigations in Lukanga Swamp. Duration 1 year, cost US$ 40 000. Donor: not yet identified.

(j) Strengthening the Research Facilities at Central Fisheries Institute, Chilanga. Duration 5 years, cost US$ 365 00. Donor: not yet identified.

(k) Upgrading Kasaka Fisheries Training Centre. Duration 3 years, cost US$ 215 000. Donor: DOF - part of the work has already started.

(l) Conservation Patrol Boats. Purchase of four patrol boats at US$ 50 000 each. Total cost US$ 200 000. Donor: not yet identified.

(m) Boat Design Development (at Chilanga). Duration 3 years, cost US$ 90 000 on personnel. Donor: not yet identified.

(n) Fish Technology Department (at Chilanga). Duration 3 years, cost US$ 90 000 on personnel. Donor: not yet identified.

(o) Socio-economic Studies of Fishing Communities at Lake Tanganyika. Duration 1 year, cost US$ 30 000. Donor: not yet identified.

(p) Socio-economic and Fish Market Study in Luapula. Duration 18 months, cost US$ 100 000. Donor: not yet identified.

(q) Fisheries Development Planning and Coordination in the Province of Luapula. Development of Provincial Plan with other related activities. Duration 3 years, cost US$ 230 000. Donor: not yet identified.

(r) Feasibility Study of Fish Processing and Ice Plant at Lake Mweru-Luapula. Duration 4 months, cost US$ 30 000. Donor: not yet identified.

(s) National Food Consumption Survey. Determine national food consumption patterns including fish. Duration 2 years, cost US$ 250 000. To be implemented by the National Food and Nutrition Commission/University of Zambia and McGill University. Donor: extra donor is to be sought.

(t) Development of National Centre for Aquaculture in Zambia. Improvement of Chilanga centre and establishment of small number of farms for large-scale fish culture. The Government is putting high priority on this project. Cost US$ 2 467 720. Donor: NORAD has shown interest with FAO.

4. ADMINISTRATION STRUCTURES AND INSTITUTIONS

4.1 Administration

The general management and development of the fishing industry is the responsibility of the Department of Fisheries (DOF). At the national level, DOF is divided into four Divisions, namely Research, Extension and Development, Fish Culture, and Training. There are fisheries development officers at the provincial and district levels. There are also fish culturists in the main aquaculture centres in the provinces. The proposed Fisheries Development Authority, which would look after the DOF and the private sector, is still under debate as to what form it should take.

4.2 Credit Institutions

(a) Lima Bank: This bank, which will eventually replace the activities of both the Agricultural Finance Company (AFC) and Zambia Agricultural Development Bank (ZADB) gives credit to both commercial and artisanal fishermen.

(b) Development Bank of Zambia (DBZ): Most loans given out by this bank have been to the commercial fishermen of Lakes Tanganyika and Kariba. Credit to artisanal fishermen has not been very successful.

(c) International Development Association (IDA) Credit: In 1985 the Zambian Government concluded a development credit agreement of K 14.2 million. This agreement covers a credit of K6 million to the fishermen for production and marketing activities.

4.3 Research and Training

The Research Division of the Fisheries Department conducts research into capture fisheries through field research stations located in the major fishery areas as follows: Mpulungu on Lake Tanganyika, Nsama on Lake Mweru Wa Ntipa, Nchelenge on Lake Mweru-Luapula, Sanfya on Lake Bangweulu, Sinazongwe on Lake Kariba, Itezhitezhi on Lake Itezhitezhi, and Mansangu on the Kafue flood plain. The Central Fisheries Research Institute at Chilanga is well equipped with a laboratory for fishery research, a library and a museum for systematic studies. The research activities on fish culture are being carried out jointly by the Fish Culture Division and the FAO Aquaculture Project, mostly in Chilanga.

The Department has five training centres at Kasaka, Mwekera, Nchelenge, Mpulungu and Sinazongwe. Kasaka Training Centre provides a one year course for junior staff who are recruited as fish scouts. The other centres are used for fishermen and fish farmer courses. The one at Mwekera is the main centre for fish farmer training, and the FAO Fish Culture Project is reintroducing fish farmer and fish culturist training at Chilanga.

4.4 Regional Institutions and Linkages

Zambia is a member of CIFA, PTA and SADCC. Under the proposed Regional Fisheries Training Programme for SADCC, the Chilanga Aquaculture Centre has been selected for technical training for aquaculturists in the region. This selection means that there is an urgent need for the implementation of the National Aquaculture Centre Project in Zambia.

5. PLANNING PROCEDURES AND MANPOWER

5.1 Procedures (See also Section 2.2)

Within the DOF plans are prepared by the Heads of Divisions with the Research Division playing an important role in the plans of the other Divisions, especially the Fish Culture and Training Divisions. There are two economists within the Extension and Development Division who assist with the final preparation of the sectoral plan and the projects. However, with the current organization of the DOF, the economists are not very effective in the planning process. There is a need to establish a planning unit with defined role in the planning process and having links with all the Divisions and participation at the Provincial Planning Committees.

There are monthly meetings of the senior staff consisting of the Director, Deputy Director, Heads of Divisions, fisheries economists and the Departmental development officer. These meetings review the progress of the planned programmes and evaluate the achievements. There is also an annual general meeting which, among other things, reviews the annual progress and prepares the new annual plan.

At the grass-roots level the Provincial Planning Committees have not been very successful in planning for fishery development. However, some have been able to prepare their plans and projects which are incorporated in the Departmental Plan.

5.2 Manpower

Overall manpower in DOF consists of 22 professional and technical staff and 65 technicians which includes fish culturists and fish scouts. The current plan projects an additional 68 professional and technical staff and 60 technicians by the year 1990. Presently there is a shortage of technical staff in the field and there is also shortage of professional staff with managerial and planning skills.

There are two fishery economists. One who has a B.Sc. degree in economics with an option in fisheries economics is now studying for a post-graduate diploma in economic planning. The other has a B.A. degree in general economics and is now studying for an M.Sc. in fisheries economics in the UK. With this aggressive training programme in fisheries economics and planning, there will be a need to reorganize the structure of the DOF to give the planners the possibility to effectively contribute to the planning process. These planners will also need on-the-job training or attachments to acquire experience in fisheries planning.

6. DEVELOPMENT PROSPECTS AND CONSTRAINTS

6.1 Development Prospects

The fisheries development prospects in Zambia are very high due to the importance of fish to the nutritional and economic well-being of Zambians and the high priority given to fisheries development by the Government. Highest prospects for development lie in the development of the minor fishery areas of Lake Lusiwashi, Lake Itezhitezhi, the Lower Zambezi/Luangwa rivers and Chambishi; exploitation of 'Chisense' stocks in Lakes Mweru Wa Ntipa, Mweru-Luapula, and Bangweulu. The Lake Kariba 'Kapenta' fishery could be expanded and the potential yield from Lake Tanganyika is believed to be more than the present production. Rehabilitation of some of the over-exploited resources like the Kafue could also

improve the situation. Development of fish farming, both extensive and intensive at subsistence and commercial levels, has a high prospect for increasing fish production. Improvement of processing, distribution and marketing should reduce post-harvest losses and increase the quality of fish reaching the consumer.

6.2 Constraints

The result of the worsening economic situation and consequent foreign exchange difficulties is a slow progress in the fishery industry. The following are the major constraints:

(a) Lack of knowledge of the fishery resources for proper planning. Some of the water bodies are overfished, like the Kafue flood plain and outer waters of Lake Bangweulu, although the inshore swampy area is underutilized.

(b) Lack of organization amongst the fishermen; however, introduction of fishing cooperatives has not been successful.

(c) Limited availability of credit for the fishermen, especially the artisanal fishermen who do not have the security usually required by financial institutions.

(d) Financial constraints by the budgetary allocations to DOF which makes it difficult to carry out its duties such as extension, training and the enforcement of fishing regulations.

(e) Distribution problems, limited storage and preservation facilities.

(f) High costs and shortage of fishing gears, net mending materials, engines, spare parts and fuel.

(g) Lack of sufficiently qualified manpower in some specialized areas like fishery planning, socio-economics, extension, and insufficient number of management officers who, ideally, should be placed at each major water body.

(h) In aquaculture there is lack of quality seed supply to the districts. The establishment of a national aquaculture centre would alleviate this constraint.

(i) There is also lack of a coordinating body for aquaculture projects being implemented by various donor agencies which is leading to confusion in the transfer of technologies. The FAO Chilanga based project could be used as the coordinating body for the projects based in the area.

7. PRIORITY INTEREST IN THE PROJECT

7.1 Planning

There is high interest to get assistance to improve the planning capability of DOF both at the sectoral and project levels. Advice is also needed on the effective organization of the planning structure within the DOF with short-term training and attachment (on-the-job training in specialized institutions) for fishery planners and senior managers.

7.2 Information

The information collection system is comprehensive enough. There is need, however, for the rationalization of collected information and its availability for use by fishery planners. There is also a request for provision of modern equipment (computers) for information storage and retrieval. Assistance is requested for information collection and standardization in the shared lakes. Also required is the training of a documentation specialist for collection of information sources and literature, especially for the shared lakes.

7.3 Management

Zambia has just introduced new fishery regulations, the Fisheries Act of 1986. The act includes closed seasons for commercial fishing, fishing gear restrictions, licensing of vessels and fishing gear, etc. There is concern over the enforcement of these regulations on the Zambian side of the shared lakes if there are no comperable regulations in the other countries. In view of the many problems encountered in the implementation of this management scheme, there is a need for facilitating workshops and seminars to discuss fisheries management and share experiences for fisheries regulation. Of special interest is Lake Kariba where some of the proposed regulations have not been accepted by Zimbabwe and also Lake Mweru-Luapula where there is no professional contact with Zaire.

7.4 Training

High interest is shown in short-term training in fishery planning which may be:

- in the form of national and regional training workshops;
- short-term courses or attachments for planners, economists and senior managements (Heads of Divisions);
- exchange visits between planners and managers, especially in shared lakes.

The following were also proposed:

(i) Workshops: National and Regional

- Planning
- Extension methodology
- Statistics collection and standardization in shared waters
- Management strategies in inland shared waters.

(ii) On-the-job training:

- Computer programmer
- Planners
- Documentation specialist.

(iii) Short-term scholarships:

- Planners
- Data analyst
- Researchers for exchange visits and tours.

11. Z I M B A B W E[1]

1. MAJOR CHARACTERISTICS OF THE FISHERIES INDUSTRY

1.1 Marine Fisheries

Not applicable, Zimbabwe is landlocked.

1.2 Inland Fisheries

Zimbabwe is a landlocked country with no large natural lakes. There are over 10 300 dams of which 120 are classified as large dams with an area greater than 13 ha. The largest dam is Kariba on the Zambezi river with a total area of 5 364 km² and by far the most important in fish production, producing over 90 percent of the total catch. Other important dams where fisheries activities exist are Lakes McIlwaine, Kyle and Robertson. Total fish production from these dams in 1985 was 17 360 tons: 17 000 tons from Lake Kariba, 215 tons from Lake Kyle, 76 tons from Lake McIlwaine and 69 tons from Lake Robertson. There is no accurate estimated potential yield of inland waters of Zimbabwe and this area needs urgent attention for proper fisheries development planning for the country. Catches from Kariba have by far exceeded the estimated potential of 14 000 tons. Rough estimates put potential yields between 30 000 and 40 000 tons per year for the whole country.

The Lake Kariba fishery is based mainly on the "Kapenta" (Limnothrissa miodon) fishery which is carried out with pontoon-type motorized barges using dipnets and purse seines and electric lights which attract and concentrate the fish. Kapenta was introduced into Lake Kariba from Lake Tanganyika. Kapenta fishing is carried out on a industrial scale. There is also an artisanal inshore fishery using gillnets. This fishery is operated by village cooperatives along the shore and serviced by ice boats from a commercial company in Kariba. Catches include species such as Tilapia, Hydrocynus, Clarias, and Mormyrus.

1.3 Aquaculture

A large part of the aquaculture practised in Zimbabwe is the stocking of numerous reservoirs with fish, mainly Tilapia spp. Recently the farming of trout and freshwater prawns (Macrobrachium) has been developed to commercial scale. The Government is now starting to put emphasis on small-scale rural aquaculture. Fish production from aquaculture is estimated at 800 tons per year.

1.4 Utilization of the Catch

Between 80-85 percent of the catch is brined and sun-dried (Kapenta), the rest being sold frozen or used as food in a number of crocodile farms along Lake Kariba. Processing and wholesale of fish is carried out mostly by large integrated companies which operate nationally.

1.5 State of the Industry

The fisheries industry in Zimbabwe is carried out at both the industrial and artisanal levels. The Kapenta fishery in Lake Kariba is commercially

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developed with well organized processing and marketing infrastructure. To control this fishery a number of regulations have been introduced and are enforced. These include vessel licensing to limit entry and other measures for fisheries management and conservation, such as minimum gillnet mesh size and closed areas.

1.6 Economic Role of the Fisheries Industry

Demand for fish is high but the current production level is low and fish does not contribute very much to the national economy and to the national animal protein supply. However, fishing is an important economic activity around Kariba. It is estimated that about 1 000 people are involved in the commercial "Kapenta" fishery alone.

2. NATIONAL POLICIES AND DEVELOPMENT PLANS

2.1 Major Objectives and Priorities

(a) To maximize fish production in all the lakes and dams and minimize post-harvest losses so as to increase fish production for direct human consumption.

(b) To promote research and development activities in aquaculture at both the rural subsistence level and commercial level.

(c) To create employment through fishery industry activities

(d) To support development of water-related activities such as sports and recreational fishing.

2.2 Characteristics of the Planning System

The current plan under consideration is the second development plan since Independence. The first was a Transitional National Development Plan, 1982/83-1984/85. The new National Development Plan covers five years, and is still in preparation.

The Fisheries Development Plan is prepared by the Division of Aquatic Ecology and Fisheries. The plan is then submitted to the Directorate of the Department of National Parks and Wildlife Management for review. The Directorate is composed of the Director and Deputy Director of the Department, Assistant Directors for Research, Management and Administration. From the Directorate the Fisheries Development Plan is incorporated into the Department Plan and submitted to the Ministry of Natural Resources and Tourism. There is no organized Planning Department in the Ministry and departmental plans are forwarded to the Ministry of Finance, Economic Planning and Development.

2.3 Major Orientations of the Ongoing Plan

(a) Stock assessment to estimate the potential yield of all inland dams and lakes in Zimbabwe.

(b) Research on reduction of post-harvest losses and adoption of appropriate technologies.

(c) Fish seed production of species with aquaculture potential by provincial hatcheries.

(d) Stocking of dams.

(e) Breeding of exotic fish species such as trout and bass which are of recreational fishing interest.

2.4 Policies with Regard to Shared Stocks

Zimbabwe shares Lake Kariba with Zambia. Zimbabwe would like to see the development of joint activities in management and monitoring programmes for Lake Kariba fisheries. The DANIDA/NORAD funded Lake Kariba Fisheries Research Development Project is seen as a step in this direction. Although there are regular meetings between Zambia and Zimbabwe on matters concerning the Lake, the project could facilitate more technical exchange between the professionals in the two countries and provide expertise from outside on the management of shared stocks.

3. MAJOR RELATED PROGRAMMES AND PROJECTS

3.1 Past Programmes and Projects

Research on the limnology, ecology, fish species and fisheries of Lake Kariba by the staff of the Lake Kariba Fisheries Station and the University of Zimbabwe Lake Kariba Freshwater Research Station.

3.2 Ongoing Programmes and Projects

(a) Lake Kariba Fisheries Research and Development Project funded by DANIDA/NORAD through SADCC. Pilot Phase lasting one year to start in November 1987.

(b) Stocking of dams with fish especially those for the recreational fishery, i.e., trout and bass.

(c) Fry production and stocking of ponds for fish farming.

(d) Government assistance to the cooperative fishing groups around Lake Kariba through the Department of Cooperatives.

3.3 Pipeline Programmes and Projects

(a) Creation of a demonstration fishing unit on Lake Kariba. This project was proposed and formulated at the initiative of FAO. The Department is eagerly awaiting the mission.

(b) Policy, Planning and Project Formulation Assistance Mission from FAO. Noting the deficiency of fishery planning capabilities in the Department, FAO proposed this mission in 1985. The Department is eagerly awaiting the mission.

(c) Establishment of an aquaculture centre and hatcheries. A pre-feasibility study for this project was carried out by SODETAG (France) and recommended the project, costing about Z$ 8 million. The opinion is now to develop the project in phases and donor funds are being sought.

(d) Potential yield estimates for all major dams of Zimbabwe, to be implemented by the Aquatic Ecology and Fisheries Division. It is proposed that a training workshop on stock assessment and fish yield

estimates in small inland water bodies be organized in Zimbabwe with the assistance of FAO.

(e) Limnological survey of the dams in Zimbabwe.

(f) A survey of "Kapenta" and kapenta-like fisheries and their fishery products. The survey is to cover production potentials, suitable gear, socio-economics, processing and marketing. The project is being prepared as a regional project for SADCC and would cover other lakes.

(g) Trout Research and Development Centre for SADCC.

(h) Fish feed formulation and production using agricultural by-products such as bagasse, molasses, brewery and milling by-products.

4. ADMINISTRATION STRUCTURES AND INSTITUTIONS

4.1 Administration

Fisheries planning, development and management is the responsibility of the Division of Aquatic Ecology and Fisheries under the Department of National Parks and Wildlife Management in the Ministry of Natural Resources and Tourism. The Division is headed by the chief ecologist (Aquatic) who is a fisheries scientist, and he has 16 "ecologists" specialized in various fishery disciplines (see Section 5.2 below). The Ministry of Agriculture, through AGRITEX, offers assistance in pond site selection, surveying, transporting fry fish and stocking ponds and dams. Local Government bodies and councils are responsible for the administration of small regional water bodies.

4.2 Credit Institution

There is no specialized institution offering finance for fisheries development except through the commercial banks which require securities beyond the reach of artisanal fishermen. However, the Government through the Department of Cooperative Development offers financial and material assistance (vessels, nets, etc.) for starting fishing activities by registered fishing cooperatives.

4.3 Research and Training

The Division of Aquatic Ecology and Fisheries of the Department of National Parks and Wildlife Management maintains eight fishery stations whose functions are to perform research of an ecological and aquaculture nature, manage the fishery and provide fish seed and extension services to fish farmers. The Lake Kariba Freshwater Research Station of the University of Zimbabwe also carries out research of a limnological, ecological and aquaculture nature.

There is no fisheries training institution in Zimbabwe. The University of Zimbabwe offers post-graduate degrees (M.Sc.) in selected topics in freshwater biology, limnology and fish ecology. The University has been selected for future training of graduate fisheries biologists and aquaculturists for the SADCC region under the Regional Fisheries Training Programme Project.

4.4 Regional Institutions and Linkages

The University of Zimbabwe will be developed to offer graduate-level training in fisheries biology and management and aquaculture for the SADCC

region (see also Section 4.3 above). Zimbabwe is a member of SDCC, PTA and CIFA.

5. PLANNING PROCEDURES AND MANPOWER

5.1 Procedures

Under the current structure, fishery planning is carried out at the Division's headquarters in Harare by two senior fishery officers, the chief ecologist (aquaculture) who is the Division Head, and one ecologist who is a specialist in aquaculture. Their role in planning is at the policy level and includes the setting of goals and targets and the selection of overall strategies. The detailed tactical planning is carried out by the heads of eight fishery stations and their senior staff.

The planning process also involves a meeting of all the aquatic ecologists from the stations to discuss and approve the final plan. They also meet annually to review the progress of the plan and evaluate achievements. These reviews are used to develop annual plans for the stations. Involvement of fishermen and fish farmers in the planning process is very limited.

5.2 Manpower

All the professional fisheries staff in the Division of Aquatic Ecology and Fisheries are classified as ecologists in line with the other professional staff in the Research Branch who are ecologists (terrestrial). The aquatic ecologists all have a basic science degree (B.Sc.) and post-graduate training in a specialized fisheries discipline. There are 16 aquatic ecologists professionally grouped as follows:

- 6 aquaculturists or engaged in aquaculture activities
- 2 engaged in post-harvest technology research
- 3 limnologists or engaged in limnology research
- 5 engaged in fishery biology and management, of which one is a fishery statistician and one specialized in fishery population dynamics.

The Department of National Parks and Wildlife Management does not have a fishery planner. There is one agricultural economist who serves as the Department's planner but does not offer technical assistance to the Fisheries Development Plan. Training in fishery planning for the chief ecologist and the Department's economist would be desirable.

6. DEVELOPMENT PROSPECTS AND CONSTRAINTS

6.1 Development Prospects

Significant development opportunities exist in both capture fisheries and aquaculture. Although Lake Kariba may be fully exploited, there is a high potential for the development of fisheries in some of the small inland water bodies. These small water bodies could be developed for capture fisheries, intensive and extensive aquaculture and cage culture, depending on the conditions.

6.2 Constraints

(a) Inadequately trained manpower and absence of specialized extension services (extension work being conducted by AGRITEX).

(b) Inadequate financial support for fisheries development and inadequate institutional set-up

(c) Lack of fisheries training institutions, especially for the technical level.

(d) There has been no clearly defined fisheries development objectives and plan.

(e) Expanding population and low literacy rate around Lake Kariba.

(f) Lack of coordination at regional level for the exploitation and management of Lake Kariba fisheries for Zimbabwe and Zambia.

(g) Although progress has been made in the new organization of the Department of National Parks and Wildlife Management, lack of priority of the fisheries sector and coordination is still a constraint to fisheries development planning.

7. PRIORITY INTEREST IN THE PROJECT

Zimbabwe expressed great interest in the project, especially on its future role of assisting Zambia and Zimbabwe in joint planning, development and management of Lake Kariba fisheries. Interest was also expressed in having assistance to strengthen planning capabilities both at sectoral and project level for the fisheries. Special areas of interest were indicated as follows.

7.1 Planning

(a) Sectoral and project planning

Policy, Planning and Project Formulation Mission from FAO to help the Department to prepare a medium-to-long term fisheries development plan.

(b) Project level

A number of project ideas have been identified and the Department is interested in obtaining assistance to review and rewrite some of these projects so that they could be accepted by the donors.

7.2 Information

Interest was expressed in having advisory services to identify important information to be collected for the management of Lake Kariba both nationally and regionally.

7.3 Management

(a) National

Interest was expressed in having technical assistance for the preparation of the limnological survey and fish yield potentials of the small inland water bodies. It was proposed that two national training workshops be held to train the professional staff to carry out these tasks and supply equipment.

- Training workshop on stock assessment and fish yield estimates in small inland water bodies;
- training workshop on limnological surveys of small inland water bodies including pre-and post-impoundment studies.

(b) Shared lakes

Interest was expressed in advisory services for the development and management of Lake Kariba fisheries.

7.4 Training

In addition to the training programmes mentioned above, special interest was expressed in short-term fellowship training in fishery planning and aquaculture planning which may involve on-the-job training or exchange programmes. The need for training in programme and project monitoring was also stressed.

12. THE SOUTHERN AFRICAN DEVELOPMENT COORDINATION CONFERENCE (SADCC)

The Southern African Development Coordination Conference (SADCC) was established in April 1980 by the nine countries: Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia, and Zimbabwe. SADCC is organized on a decentralized basis, with responsibility for different sectors divided among the Member States. The sectoral coordinator for fisheries is the Government of Malawi.

The potential fish production for the SADCC region has been estimated at about 1.8 million tons, with the potentials of marine and inland fisheries being about equal. Total marine production by the three marine states, Angola, Mozambique and Tanzania, has been decreasing slightly over the last decade and is now of about 150,000 tons. An additional 400,000 tons is caught by foreign fleets operating in the waters of these three countries under various schemes. Total catch from the inland fisheries of the SADCC region has fluctuated in recent years to around 350,000 tons, showing nevertheless a slight upward trend. Aquaculture production has remained insignificant although definite progress is being made in countries like Zambia, Zimbabwe and Lesotho.

With total production representing less than one third of the estimated potential, definite opportunities exist for a greater contribution of the fisheries sector to food security and increased protein supply. Numerous constraints have, however, limited development over the last decade, resulting in a relative stagnation of production, an increasing reliance on imports (although these remain very limited), and a significant reduction in per caput fish supply to about 7.7 kg/year (i.e, well below the world average of 12.3 kg/year). As noted in "SADCC: The next five years, 1985", this is mainly due to the fact that none of the member countries has a fully developed fisheries development and management programme, owing to lack of adequate funds, skilled manpower, suitable fishing equipment, infrastructure and information base.

In this context, SADCC's fisheries programme has been designed with one overall objective: to increase food security through expanded fish production and trade. More specifically, this programme aims at:

- regional self-sufficiency in basic food requirements;
- increased supply of animal protein to help fight malnutrition;
- increased employment and income-generating opportunities, thereby raising the general standard of living.

In the inland fisheries sub-sector, the strategy proposed by SADCC in order to achieve these objectives is based on training; stock assessment and rational fisheries management; provision of infrastructures and equipment; and improved information base for better planning and implementation - (SADCC: the next five years; Fisheries Strategy Paper, 1985).

Following this strategy, SADCC has already formulated a number of fisheries projects, the scope and status of which are outlined below: (Report of the 11th SADCC Sub-Committee Meeting for Fisheries and Wildlife, May 1987).

(i) Joint Research of Pelagic Fishery Resources of the Lake Malawi/Nyasa

This three-year project aims at conducting joint research on offshore stocks and at recommending appropriate development and management measures.
Status: Feasibility study undertaken; financing pledged by the UK (ODA) with eventual co-financing by EEC for follow-up work; project forthcoming; estimated cost US$ 3.85 million.

(ii) Regional Fish Production, Processing and Marketing Survey

The survey aims at reviewing current status and potentials, and at making recommendations for achieving self-sufficiency.
Status: Financing pledged by EEC; project forthcoming; estimated cost US$ 240,000.

(iii) Lake Kariba Fisheries Research and Development

The project aims at studying various aspects of fisheries resources and technologies with appropriate recommendations.
Status: Feasibility study undertaken by NORAD/DANIDA; pilot phase under consideration.

(iv) Study to Identify Projects/Programmes of Production and Commercialization of Fishing and Fish Processing Materials and Equipment

The project aims at promoting transfer of technologies and greater regional integration for subsidiary industries in the fisheries sector.
Status: Financing pledged by the EEC; project forthcoming; estimated cost US$ 390,000.

(v) Fisheries Investigation in Botswana

The project aims at preparing a development plan for Botswana's relatively untapped fisheries resources.
Status: Financed by NORAD; on-going.

(vi) Regional Fisheries Training Project

The project aims at improving infrastructures, facilities and courses to satisfy fisheries training requirements.
Status: Feasibility study now undertaken by USAID.

(vii) Integrated Fish-cum-Duck Development in Lesotho

Status: This fishculture project is financed by FAO; on-going.

(viii) Pilot Integrated Pig-cum-Fish Farming Development and Research Project Malawi

Status: Feasibility study undertaken; financing pledged by France; estimated cost US$ 720,000.

(ix) Regional Fisheries Documentation Centre

The aim of the project is to set up a documentation centre for the SADCC region and disseminate information.

Status: Feasibility study now undertaken by USAID.

(x) Commercial Assessment Surveys of Artisanal and Commercial Fisheries and Long-Term Monitoring of Stock-Size Programme for Lake Tanganyika

Status: Financing pledged by NORAD; estimated cost US$ 1.1 million.

These projects focus on the investigation of opportunities for regional collaboration; the joint investigation of the many shared water bodies, i.e., Lake Kariba, Lake Malawi/Nyasa and Lake Tanganyika, although the latter will require cooperation with non-SADCC countries; and integrated fish farming. The status of these projects reflects a rather slow preparatory and approval process. Awaiting the results of the surveys, the tendency is now for member countries to channel some national projects through SADCC. New project ideas include: the establishment of a national aquaculture centre in Zambia; the establishment of marine reserves and parks in Tanzania; a pilot project for the development of small-scale fish farming in Angola; and technical assistance for the development of a national research and training centre for aquaculture, also in Angola.

The coordination unit established in Malawi has benefitted from the assistance of the French Government which provided an adviser to the unit; of USAID which financed regular workshops; and of ICLARM who has recently provided an aquaculture adviser to the unit. With the assistance of USAID, three workshops, have been organized since 1986: one on aquaculture, one on fisheries strategies and one on fisheries management. FAO contributed to the three workshops the main aims of which were to clarify the SADCC fisheries development strategy, elaborate on former project proposals and identify new projects. At the last workshop, it was decided that future workshops be primarily aimed at training high-level staff. A training workshop in fisheries development planning is programmed for early 1988; it will be organized by FAO. Future workshops will focus on the standardization of fisheries statistics, the reduction of post-harvest losses, marine fisheries; and extension services. FAO is expected to play an important role in organizing or contributing to these workshops.

Of direct relevance to the Project RAF/87/099 are the conclusions of a recently completed SADCC/USAID survey of training needs (feasibility study for the Establishment of a Regional Fisheries Training Organization; RDA, April 1987). Although no quantitative estimate of training needs is provided, major areas for which training is urgently required, but not readily available in the region, have been identified. These concern professional officers (planning, policy formulation, programmes/projects implementation); high-level scientists (biology, resource evaluation, fish processing and marketing, aquaculture); and intermediate technical staff (research assistant, extension specialists).

A regional approach is definitely needed in view of the broad range of specialization which is required and the limited training need of each SADCC country in each area of specialization. The study proposes a regional training organization based on strengthened existing national training institutions and the creation of a training coordinating unit. The following institutions are concerned:

- Eduardo Mondlane University in Maputo for marine research training
- University of Zimbabwe for training in freshwater and fishculture research
- University of Malawi - Bunda College for training in fisheries development planning and project management

- Natural Resources College - Mpapwe Training Institute of Malawi for technical training and extension
- Mbegani Fisheries Development Centre in Tanzania for training of technical instructors (marine fisheries)
- Aquaculture Centre of Chilanga in Zambia for training in the technical aspects of fish farming.

Cooperation between the proposed UNDP/FAO Project and SADCC was discussed with the Malawian authorities which coordinate fisheries activities and programmes for SADCC. The coordinating SADCC unit expressed strong interest in the Project and considered that it would definitely contribute by its activities to the re-enforcement of cooperation among SADCC countries themselves and with SADCC neighbouring countries in the area of inland fisheries development and management. The general project framework was perceived as appropriate to current needs and complementary to the broad assistance presently received for SADCC coordination (France; USAID) and in the area of fishculture (ICLARM).

The mission was requested to notify the SADCC coordinating unit of its main conclusions. It was also suggested that the SADCC Sub-Committee for Fisheries and Wildlife, which meets bi-annually, be notified of the Project's main activities and proposed programme once these are finalized. Cooperation between the Project and SADCC is expected to involve regular consultations between the Project and the SADCC coordinating unit for fisheries and notification of proposed activities and results relevant to the SADCC region to the Sub-Committee. It was also suggested that the Sub-Committee could call upon the Project for technical assistance in areas covered by the terms of reference of the Project.

Cooperation with SADCC is expected to involve in particular:

- Assistance to sub-regional cooperation for the development and management of SADCC shared water bodies like Lake Malawi/Nyasa and Lake Kariba.

- Assistance to sub-regional cooperation for the development and management of shared water bodies involving both SADCC and non-SADCC countries like Lake Tanganyika, Lake Mweru and Lake Victoria.

- Contribution and support to training in key areas covered by the Project and identified by SADCC as priority areas: planning, statistics and information systems; stock assessment; fisheries management (SADCC Workshop on Fisheries Management, Dar-es-Salaam, November 1986). Coordination with existing programmes (USAID) is expected at this level.

- Contribution to research and development planning at regional and sub-regional SADCC level, with focus on inland fisheries' contribution to sectoral objectives.

13. PREFERENTIAL TRADE AREA FOR EASTERN AND SOUTHERN AFRICAN STATES (PTA)

The treaty establishing The Eastern and Southern African Preferential Trade Area was signed in Lusaka in December 1981. Currently PTA has 16 members, i.e., Botswana, Burundi, Comoros, Djibuti, Ethiopia, Kenya, Lesotho, Malawi, Mauritius, Rwanda, Somalia, Swaziland, Uganda, Tanzania, Zambia and Zimbabwe.

The treaty, in addition to trade liberalization, provides for inter-country cooperation in the development of basic manufacturing industries, production of food crops and livestock products, science and technology, the development of human resources, transport and communication. PTA should be seen as the first step towards the establishment of a common market and ultimately a full-fledged economic community.

The headquarters of PTA is located in Lusaka, Zambia. Its main policy-making bodies are the periodic summit of Heads of State and the Council of Ministers. The PTA Secretariat is made up of the Divisions of Administration, Agriculture, Industry, Trade, Customs, Monetary Affairs, and Transport and Communications. The Agricultural Division currently consists of its Director, a Senior Agricultural Expert and an Agricultural Expert.

At the first meeting of the PTA Ministers of Agriculture, held in Lusaka in May 1985, a comprehensive programme of action was adopted for PTA's involvement in Agriculture. This programme assigned particular attention to the upgrading of research and training facilities that already exist in member countries, which are thus to be developed into regional centres. In subsequent meetings of the Council of Ministers the following programme of action in the fisheries sector was adopted:

(a) That a survey be undertaken to up-date information on the distribution, composition and abundance of fish resources in marine and inland waters with a view to formulating joint development and management of fish resources by riparian countries.

(b) That a survey be undertaken on the possibility of establishing new or expanding existing assembly plants in the subregion to produce fishing gear and boat engines with a view to transforming them into manufacturing plants utilizing local raw materials.

(c) That a boat building plant in Somalia be expanded to train personnel who in turn would undertake boat building.

(d) That a survey be undertaken of fish processing, handling and storage facilities within the subregion with a view to rehabilitating and expanding existing ones and/or establishing new plants to reduce post harvest losses, thereby increasing availability of fish.

(e) That a centre in the Comoros be designated as a PTA collaborative training centre on marine fishing for the whole of the subregion.

(f) That a fish processing plant in Somalia be strengthened and expanded to supply fishmeal to the subregion and consideration be given to designating Somalia as a PTA collaborative centre.

(g) That the Uganda Freshwater Fisheries Research Organisation be strengthened to undertake research on appropriate technological packages of fish breeding, fish feeding and management, fish processing and preservation for the subregion in collaboration with Malawi, Somalia and Zambia.

(h) That manpower training be undertaken to improve skills in aquaculture development and other techniques of fish farming, with local fish species being used.

(i) That, in implementing programmes in fisheries development, account be taken of FAO recommendations. In addition, the FAO recommendations be summarised and circulated to member States for information.

Cooperation between the proposed UNDP/FAO Project and PTA was discussed with the Agricultural Expert who coordinates fisheries activities and projects in Lusaka. PTA expressed appreciation for FAO's interest in their activities and was looking forward to assistance from FAO in project identification, project preparation and project implementation. PTA indicated that within the fisheries subsector priority areas were manpower development in research, planning and management, and assistance to artisanal fishermen especially in fishing craft and fishing gear development, and reduction in post-harvest losses.

PTA requested that they be informed of the progress and activities of the UNDP/FAO Project in their Member States. PTA's interest in the project is very high and the following areas were proposed for the UNDP/FAO Project involvement:

(a) Assistance in manpower development in fisheries research, planning and management.

(b) Advisory and technical assistance in areas of craft development and fish processing.

(c) Assistance to the proposed inland fisheries centre at the Uganda Freshwater Fisheries Research Organisation in Jinja to implement some of the planned activities. Special mention was also made for FAO's assistance to revive the African Journal of Fisheries and Tropical Hydrobiology which was published by EAFFRO of the now defunct East African Community.

(d) Assistance to the proposed project for an aquaculture centre in Zambia. Development of such a centre will help in the training of technical staff and technology transfer.

(e) Provision of expertise and funding for fisheries research.

Projects

One project proposal has been prepared in Marine Fisheries, "Fisheries Training Centre, Mogadiscio, Somalia"; financing is being sought.

14. COMMUNAUTE ECONOMIQUE DES PAYS DES GRANDS LACS (CEPGL)

1. GENERAL

La Convention portant sur la création de la Communauté économique des pays des Grands Lacs (CEPGL) a été signée en septembre 1976 et amendée en septembre 1977. Les pays membres de la Communauté sont: le Burundi, le Rwanda et le Zaïre.

Les objectifs de la CEPGL sont notamment de:

(a) assurer la sécurité des Etats Membres et de leurs populations;

(b) promouvoir et intensifier la libre circulation des personnes et des biens;

(c) instaurer une activité de coopération économique et politique.

Le siège de la CEPGL est à Gisenyi (Rwanda). Les organes sont: la Conférence des chefs d'Etats; le Conseil des ministres et commissaires d'Etat (ministres zaïrois); le Secrétariat exécutif permanent.

Les Etats Membres ont également établi des Comités techniques, notamment pour la planification, l'agriculture, l'industrie et les ressources naturelles.

2. ACTIVITES

La CEPGL a entrepris un certain nombre de projets dans divers domaines tels que la création en 1979 de l'Institut de recherche agricole et zootechnique (IRAZ) dont l'objectif est d'étudier et de mettre en oeuvre des projets communautaires dans ces secteurs. Un programme de développement industriel a également été établi. Parmi les projets envisagés, la création d'une usine de conserve de poisson n'a finalement pas été retenue, compte tenu des résultats des études de préfactibilités. (Voir Schevchanko, 1981 et Projet RAF/82/046 - Assistance multisectorielle à la CEPGL).

Plus récemment, une mission a été organisée sous les auspices de l'UNECA en 1987 pour identifier les possibilités de développement des pêches dans la CEPGL. Les grandes lignes en sont:

- Développement des structures d'appui (programme commun de recherche limnologique; amélioration et harmonisation des législations);
- Elaboration d'un cadre de concertation - élargi à la Tanzanie et à la Zambie - (harmonisation des politiques de développement);
- Formation et perfectionnement des agents chargés de l'administration et de l'encadrement du secteur;
- Coordination des missions et des actions réalisées par les organismes internationaux.

Les projets proposés, dont certains appuient des projets en "pipeline" ou existants, sont les suivants:

- Projet régional d'aménagement et de développement des pêches dans le lac Tanganyika; (projet élaboré par la FAO en 1987)

- Projet sous-régional d'aménagement et de développement des pêches dans le lac Kivu - (régionalisation du projet RWA/87/012)

- Projet de création d'un institut halieutique sous-régional pour la formation des cadres de la recherche et du développement en matière de pêche et d'aquaculture;

- Projet de mise en place d'un Fonds communautaire d'encouragement à la pêche et à ses activités annexes;

- Projet de création d'un Centre sous-régional de vulgarisation et de promotion des activités dans le secteur de la pêche

- Projet de sous-régionalisation d'un centre existant de recherche et de formation en matière de pisciculture.

A l'initiative de l'IRAZ, un projet a été soumis lors d'une récente réunion technique de la CEPGL pour la mise en oeuvre d'un programme de recherche hydrobiologique et ichthyologique qui s'appliquerait essentiellement aux lacs partagés de la Communauté: Tanganyika, Kivu, Mweru et Kahoha. Le projet a été proposé à la Belgique pour financement.

L'activité du Comité technique de l'Agriculture, chargé des pêches est restée jusqu'ici embryonnaire compte tenu notamment de ses moyens humains et financiers limités. Toutefois, les récentes initiatives entreprises démontrent un intérêt accru pour le développement de la collaboration dans le secteur des pêches.