



Medium Term Plan

2006 - 2008



WorldFish
C E N T E R

Medium Term Plan 2006-2008



Table of Contents

Medium Term Plan 2006–2008

A. Overview	1
1. Introduction, Context and Program Discussion	1
Overview of the Program	6
Highlights from 2004 and 2005	9
Modifications to the Previous MTP	13
2. Highlights of the 2006 Project Portfolio	14
Pacific Regional Project	14
East & Southeast Asia Regional Project	14
South Asian Regional Project	14
Greater Mekong Regional Project	14
Sub-Saharan Africa Regional Project	15
West Asia and North Africa Regional Project	15
Natural Resources Management Global Project	15
3. Implementation of EPMR Recommendations	16
4. Collaboration	16
5. Internal Organization of Research	17
6. Center Financial Indicators	17
B. WorldFish Center Project Portfolio	18
1. Pacific Regional Project	18
2. East & Southeast Asia Regional Project	23
3. South Asian Regional Project	26
4. Greater Mekong Regional Project	30
5. Sub-Saharan Africa Regional Project	34
6. West Asia and North Africa Regional Project	39
7. Natural Resources Management Global Project	41
C. Finance Plan	45
1. 2004 Results and 2005 Development	45
2. 2006 – 2008 Plans	47
D. Financial Tables for 2006 – 2008	50
Appendix 1. KPGs	65
Appendix 2. Acronyms	66

WorldFish Center: Our Mission, Vision and Values

The WorldFish Center is part of the Future Harvest Alliance of international research centers supported by the Consultative Group on International Agricultural Research (CGIAR).

The WorldFish Center's **Mission** is:

“To reduce poverty and hunger by improving fisheries and aquaculture”

Our Vision is:

“To be the science partner of choice for delivering aquaculture and fisheries solutions for developing countries”

Taken together our Mission and Vision clarify our fundamental purpose and ambition.

Our Values codify the principles by which we will operate as an organization to achieve these ends:

- Our two most fundamental values are integrity and trust. We will trust each other to be honest and open, and hold one another accountable for honoring that trust.
- In the workplace, we will strive for fairness and equity. We will provide equal opportunities for all staff, recognize achievement, celebrate diversity and respect individual dignity. We will strive to practice effective leadership at all levels and empower staff so that they can give their best.
- In our work, we will search for excellence and innovation in all that we do. We will continually seek to improve the quality and efficiency of our products and services, and accept the need for risk taking and genuine mistakes as opportunities for learning.
- We will also value teamwork over individual effort, sharing knowledge amongst ourselves and our partners to build on our collective strengths and interdependencies.

A. Overview

1. Introduction, Context and Program Discussion

The WorldFish Center's Mission is "To reduce poverty and hunger by improving fisheries and aquaculture." This Medium Term Plan (MTP) describes how we propose to pursue this mission over the next three years. The challenge is daunting, but at both the global and the regional level, fisheries have a major role to play in the eradication of poverty and hunger, in improving nutrition and maternal health, and reducing child mortality.

Our Vision is "To be the science partner of choice for delivering aquaculture and fisheries solutions for developing countries." This aspiration recognizes that reducing poverty and hunger at the national, regional and global scales requires a concerted effort by many parties. No organization can do it alone and we are committed to building the partnerships needed to make a difference. Taken together our Mission and Vision clarify our fundamental purpose and ambition.

Our Values codify the principles by which we will operate as an organization to achieve these ends:

- Our two most fundamental values are integrity and trust. We will trust each other to be honest and open, and hold one another accountable for honoring that trust.
- In the workplace, we will strive for fairness and equity. We will provide equal opportunities for all staff, recognize achievement, celebrate diversity and respect individual dignity. We will strive to practice effective leadership at all levels and empower staff so that they can give their best.
- In our work, we will search for excellence and innovation in all that we do. We will continually seek to improve the quality and efficiency of our products and services, and accept the need for risk taking and genuine mistakes as opportunities for learning.
- We will also value teamwork over individual effort, sharing knowledge amongst ourselves and our partners to build on our collective strengths and interdependencies.

Building upon our recent achievements, this MTP has been developed against the backdrop of world events in 2003–2004, particularly the recent interim reports of the Millennium Task Force, the most recent Human Development Report, the World Bank fisheries approach paper, and the ongoing trends of overexploitation of capture fisheries, increasing and intensifying aquaculture production, changing patterns of trade in fish between developed and developing countries and a growing gap between the supply and demand for fish and other aquatic resources. A brief summary of these issues is provided in the following section.

Fisheries and Aquaculture in the Global Context

The total first sale value of the global fisheries catch is now over US\$ 80 billion and the international trade in fish and fish products is more than US\$ 55 billion annually. Most importantly in the context of the Millennium Goals, the South-North trade in fish and fish products grew by 45% in the decade from 1990–2000 to over \$18 billion; a figure that now exceeds many other more traditional agricultural exports. In the face of this growing importance of fisheries and fish trade serious global challenges need to be addressed if the benefits for the poor are to be sustained and where possible increased. Total high seas fisheries production has leveled off and traditional Northern fisheries are under threat. Per capita fish consumption is declining in some developing nations, especially in sub-Saharan Africa. While aquaculture now accounts for 30% of world fish supply and continues to grow, there is growing conflict between production of food from high seas fisheries, fish meal production and feed stocks for aquaculture production. All of these challenges point to uncertainty in the long-term fish supply in many parts of the world and, in particular, for the poor.

The sustainability of supply of fish and fish products, population growth and increasing demand, equity and vulnerability of the poor in the face of growing globalization of markets and finance, the urgent need for improved management regimes, governance and institutional issues, and community capacity and sustainability in a changing world are all issues of substance. For fisheries and aquaculture to realize their full potential for helping to meet the Millennium Goals, these and many other issues need to be addressed.

Fish and Food Security

Achieving the Millennium Development Goal of halving the proportion of people suffering from hunger by 2015 is a huge challenge. FAO has estimated that, if current trends continue, there will still be 600 million hungry people in 2015, compared with 842 million today; this will be only halfway toward the goal of the Millennium Declaration.

Fish, as well as other aquatic plants and animals, are a crucial food source for millions of people throughout the world. (Here, we use “fish” as shorthand for the range of living aquatic resources important to people’s livelihoods and food security.) In low-income food-deficient countries, fish provide 20% of animal protein in a typical diet versus 13% in industrialized countries. In Asia, the proportion is 30% and in some countries, where fishing is a mainstay of the rural economy, the proportion is much higher: 51% in Bangladesh, 58% in Indonesia, and as high as 75% in Cambodia.

Poor people in developing countries are particularly dependent on fish for income and basic nutrition. In many Asian countries, the proportion of the food budget spent on fish is highest in low-income groups. Moreover, fish provide a highly efficient source of micronutrients, so that even small quantities consumed regularly have the ability to significantly improve childhood development and other health indicators.

World population will increase from 6 to over 8 billion in the next 25 years. Meat and fish production must double over this period to meet projected demand. In less than 50 years (up to 1999), the world’s average per capita consumption of fish increased by more than 70%. By 2030 demand is likely to increase further, by nearly 40%, of which the bulk will be from developing countries.

Global fish production is no longer keeping pace with demand and, if not for the contribution from China, would have been falling slightly for the last decade (Figure 1).

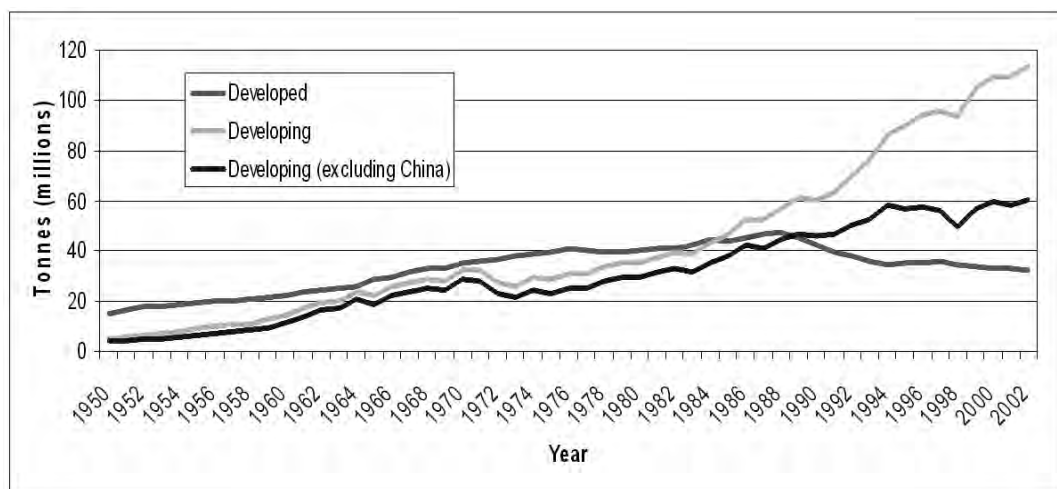


Figure 1. World fish production, developed and developing countries (Source: FAO, 2005).

Capture fisheries are generally declining and have little scope for future growth since 75% of the wild caught fish come from fish stocks that are even now depleted, over-fished or fully exploited. In the future, it is likely that many of these stressed fish stocks will not be able to produce even their current catch, let alone cater to the expected increase in demand. Even under ideal conditions, long term sustainable production from capture fisheries is estimated at about 100 million tonnes. This is just 8 to 9 percent more than current production.

Fish are also an increasingly important export commodity in developing countries (Figure 2).² Fish products, especially from aquaculture, contribute significantly to GDP and foreign exchange earnings in low-income Asian countries. The markets for high-value fish are often vulnerable to trade policies and import requirements of their customers from the developed world. In addition, they often rely on imported fishing gears or feeds. As a counterpoint to this trend, however, fish trade between developing countries is also growing in importance. By 2020, developing countries will produce and consume nearly 80% of the world's fish.³ In many countries, however, small-scale fishers are both politically and economically marginalized which means that targeted policy measures are needed to ensure that growing trade opportunities will benefit the poor.

Fisheries and pro-poor growth

In addition to helping meet the world's rising food requirements, fisheries and aquaculture can also make major contributions to pro-poor growth. Most of the people engaged in small-scale fishing activities in developing countries are resource-poor rural dwellers. They are usually unskilled, with limited financial and/or capital resources, and many, in particular in Asia, have restricted access to land. These small-scale fishers number many millions and total some 95% of all fishers in developing countries. For them fishing provides an economic buffer from the effects of limited job opportunities for a growing unskilled labour force in the rural population. In this context small-scale fisheries (including processing and trading activities) provide a partial or sometimes full-time income source that allows these people to participate actively in the local

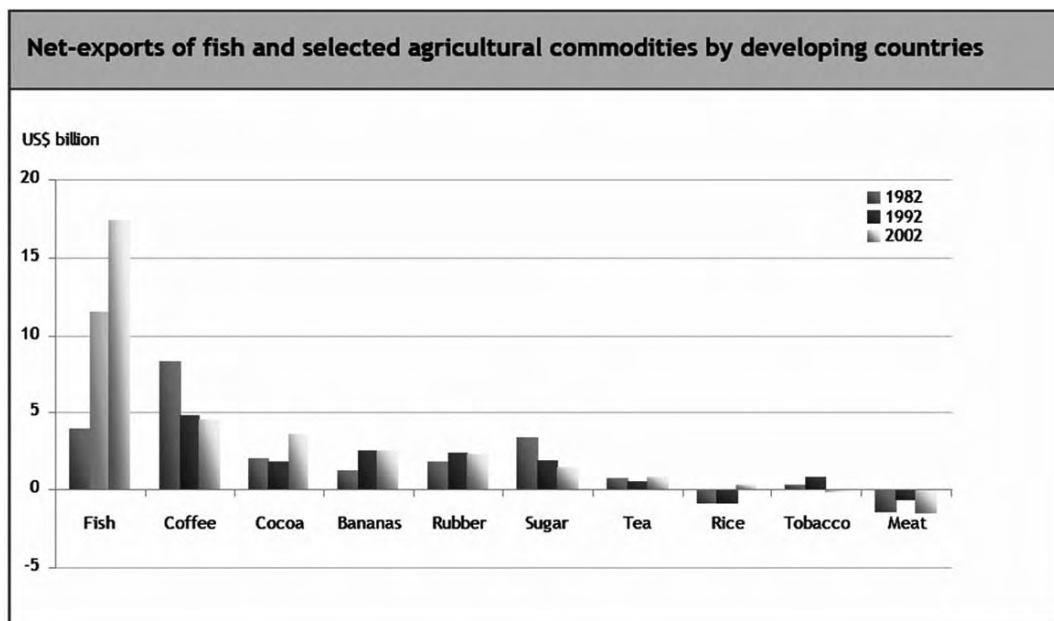


Figure 2. Net-exports of fish and selected agricultural commodities by developing countries (Source: FAO, 2005).

² FAO. 2005. Overview of fish production, utilization, consumption and trade. By Stefania Vannuccini, FAO, Fishery Information, Data and Statistics Unit.

³ Delgado et al. 2003. Outlook for Fish to 2020. Meeting global demand.

economy. Small-scale fisheries also provide an important vehicle for economic integration into the market economy for households and communities that are otherwise resource-poor, unskilled, and sometimes landless. As such, small-scale fisheries can contribute strongly to the overall pro-poor growth mechanisms which are central for poverty alleviation.

Through institutional arrangements (such as co-management) that can improve governance and the way economic benefits from fisheries are redistributed; through economic incentives and measures that lead to a reduction in post-harvest losses; and through enabling policy environments that improve access to markets for poor households and remote communities, many substantial opportunities exist that can enhance the economic development value and the contribution to pro-poor growth of small-scale fisheries.

Similarly aquaculture provides important opportunities for economic diversification at household, community and national levels. Integrating aquaculture with existing farming practices in particular offers many farmers the chance to improve income from existing land and farm resources. This has been shown to increase income substantially in both Asia and Africa, and further investment in scaling out successful approaches has enormous potential to strengthen household economies of the poor.

The Asian Tsunami

The tsunami of December 26, 2004 was a catastrophic event without precedence for millions of poor coastal people in developing countries. In addition to the loss of lives estimated at about 300,000, the tsunami has destroyed the livelihoods of thousands of fishermen and fisheries and aquaculture dependent communities in Indonesia, Sri Lanka and India—the three worst affected countries. The scale of impact is considerable. For example:

- In India an estimated 64,025 fishing vessels were damaged and 12,000 vessels were lost.
- In Sri Lanka it is estimated that two-third of the country's 29,700 fishing boats were damaged, along with gear and nets.
- In Indonesia over 9,000 fishers lost their lives and 9,600 boats were destroyed or damaged.

In addition, there were considerable impacts on natural habitats. In Indonesia, for example, the losses in natural habitats and important ecosystem functions have been valued at US\$ 675 million.

WorldFish's Response

The need to respond to this tragic event has influenced our research focus in Asia, especially during the first few months of 2005 when considerable efforts were made to support and inform the relief effort, especially in Aceh and Sri Lanka.

Immediately after the event the Center set up a "Tsunami Response Information" section on its website to provide information and updates on the tsunami. The ReefBase team joined with other international coral experts to coordinate efforts in the assessment of damage to coral reefs and helped to formulate guidelines on impact assessment. The WorldFish Center was also involved in the research surveys to assess the damage on Malaysian and Myanmar coral reefs hit by the tsunami. Our scientists visited Aceh and Sri Lanka to assess the situation in two of the worst affected countries. Comments and reports on responses and actions in the aftermath to rebuild livelihoods and to sustain fisheries resources were circulated and publications prepared to disseminate this information. NAGA, the WorldFish Center Quarterly magazine (vol. 28 1&2, Jan.-Jun. 2005) focused on the tsunami. A Workshop co-organized by WorldFish and the International Institute of Fisheries Economics and Trade to assess the impacts of the tsunami and its policy implications was held in July 2005 at the WorldFish campus.

As part of a longer term response, the WorldFish Center led the development of a regional proposal for CGIAR and partner collective action to rebuild livelihoods at the cross-sectoral and multidisciplinary levels. From a funding perspective the rehabilitation will need to be country-focused rather than regional and so this regional framework is being translated into proposed national projects in the affected countries. In Aceh, WorldFish is working with the World Agroforestry Centre (ICRAF), CIFOR and IPGRI and collectively developed a project concept note on "Integrated natural resource management and livelihood paradigms in recovery from the tsunami in Aceh" for consideration for funding by the Ford Foundation. The WorldFish Center has also prepared a proposal for a 19-month study on the "Fisheries rehabilitation in tsunami-affected Indonesia: community needs assessment and resource status" and is awaiting a response from the donor agency, ACIAR. The WorldFish Center is also a member of the Consortium to Restore Shattered Livelihoods and Rebuild Communities in Tsunami-devastated Nations (CONSRN) whose aim is to support governments in their efforts to oversee the restoration of livelihoods and of the fisheries and aquatic habitats upon which these communities ultimately depend.

Sub-Saharan Africa

While in Asia the tsunami has become a major focus of our attention, in Africa the Center continues to increase its focus on the role of fish in food security and pro-poor growth in sub-Saharan Africa. In contrast to other regions where chronic hunger is receding, in sub-Saharan Africa undernourishment is still rising in both absolute and relative terms. Fish, as a source of "rich food for poor people" can play an important role in improving Africa's food security and nutrition. More than 200 million Africans eat fish regularly, while a total of some 30-45 million people depend on fish for their income.

However fish supply in Africa is in a crisis. Africa is the only continent where per capita fish consumption has declined in the past 20 years and, if present trends continue, Africa will need some 20% more fish per year in 2020 simply to maintain current consumption levels of 6.7 kg/person/year. To confront this situation, and sustain and where possible increase the contribution of fisheries and aquaculture to meeting the MDGs in Africa, the Center is working closely with regional economic communities and the New Partnership for Africa's Development (NEPAD) to identify future priorities for investment in research and capacity building. Over the course of 2005 a series of regional consultations were held and these culminated in a NEPAD-Fish for All Summit in Nigeria in August, organized by the NEPAD Secretariat, the Nigerian Government, WorldFish, and FAO. This summit laid the framework for future investment in fisheries and aquaculture in the region and will, in turn, serve to guide the Center's future work in the region.

Overview of the Program

In mid 2004 the Center embarked on a major organizational transformation, which is still in progress and has had a direct impact on this year's MTP. Key elements of this transformation include:

- Revision of the Mission, Vision and Values
- Establishment of Thematic and Annual Key Performance Goals (KPGs)
- Revision of pay, grading, remuneration and performance management
- Revision of our research structure
- The design and implementation of an Enterprise Resource Planning (ERP) System

The details of these changes of relevance to this MTP are given below.

Performance Measurement and Management

Of particular relevance within the context of this MTP are our Thematic and Annual Key Performance Goals (KPGs), both of which were adopted by the Board of Trustees in late 2004 and became operational in 2005.

Our Thematic Goals, which have a 3-5 year time horizon, are designed to rally staff around an easily understood common purpose irrespective of the role they play in the organization. The themes of Partnership, Excellence and Growth, have been selected (Box 1).

Box 1. WorldFish Thematic Goals

Partnership

- Rationale: We will not be able to grow unless we do so in partnership with others and we will need to focus on this if we are to realize our Vision.

Excellence

- Rationale: Excellence in both our science and the way we operate must be a priority if we are to meet the challenges that a commitment to growth presents.

Growth

- Rationale: To fulfill our global mandate we need to grow in size and in terms of geographic presence over the next 3–5 years.

Organized around five key stakeholder groups, our 2006 Key Performance Goals operationalize our Thematic Goals for this year and provide a more detailed set of measurable targets to achieve (Appendix 1). The system of goal setting we have adopted serves both our internal purposes as well as the growing expectation among CGIAR investors and others that Centers adopt a much more explicit performance measurement and management framework. Presented here are the KPGs for the organization as a whole. These goals and targets are cascaded down to the WorldFish organizational units and to individuals as part of their personal performance management plans. This cascade process is designed to ensure that the performance expectations set for staff are aligned and clearly linked to the corporate objectives of the Center.

Restructuring Science Delivery

In late 2004 our research structure was re-organized as a matrix of three global disciplines and eight regional portfolios.⁴ The roles of these two matrix dimensions are shown below, along with the rationale for the change (Figure 3).

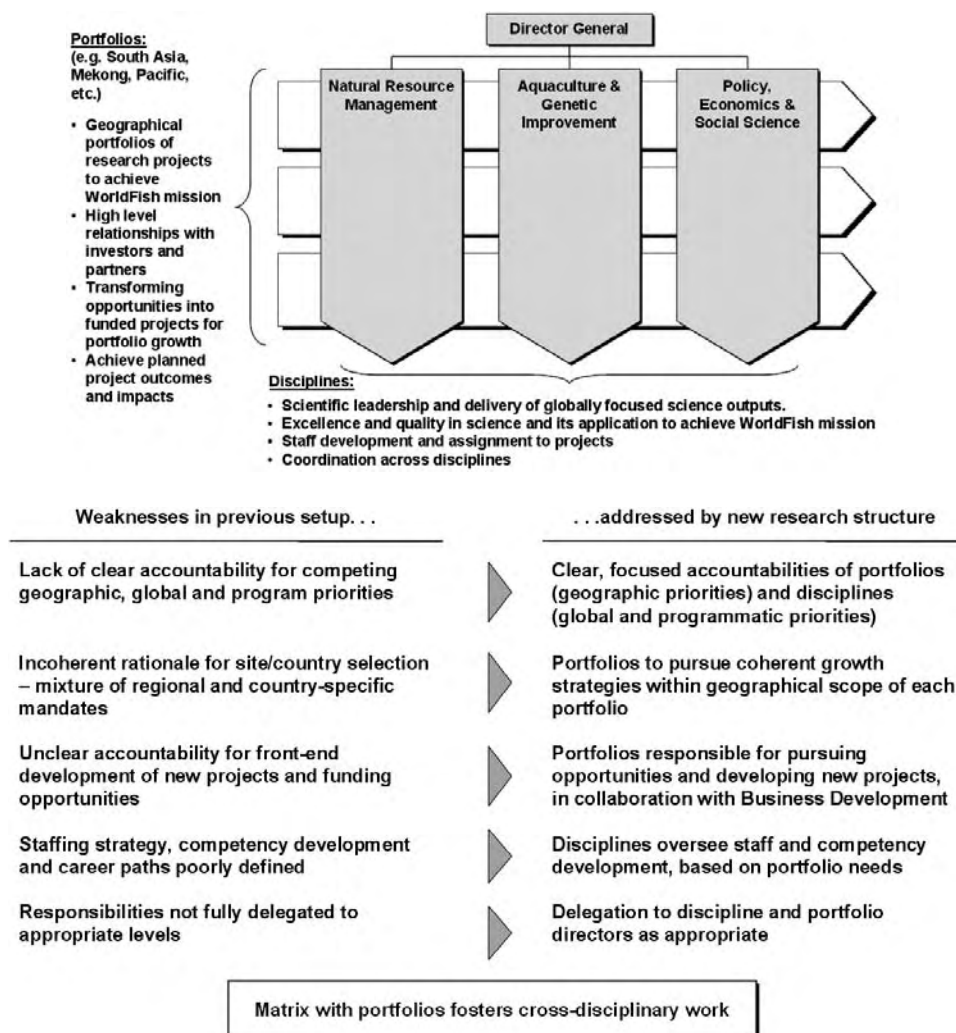


Figure 3. The WorldFish research matrix and the rationale for the change.

For each region, a plan is now being developed which addresses the needs of partners and beneficiaries and is responsive to the priorities of donors and national strategies. A portfolio of multidisciplinary research activities is also being developed to meet these needs. Some research activities currently undertaken by the Center are truly global in scope and reside within the Natural Resource Management discipline. Our intention is to grow the scope of our global activities and develop a larger portfolio of globally focused projects for all disciplines.

⁴ The regional portfolios are East & Southeast Asia; South Asia; Pacific; Greater Mekong; West Asia and North Africa; South Africa, and two other regional African portfolios for which the boundaries have yet to be defined owing to their early stage of development.

Revising our Strategy

As part of the continuing transformation we are now re-examining, re-validating and revising our research strategy. Central to this revision is our conception of the Research for Development Value Chain (Fig. 4). We believe our future effectiveness will depend on the explicit recognition and analysis of this path to impact at the organizational, programmatic and project level. With this value chain concept in mind, a key component of our strategic review will be to ask, for the organization as a whole, what role we should play in each of these stages in the value chain and with how much emphasis. Recommendations for a revised strategy were presented to the Board of Trustees in September 2005.

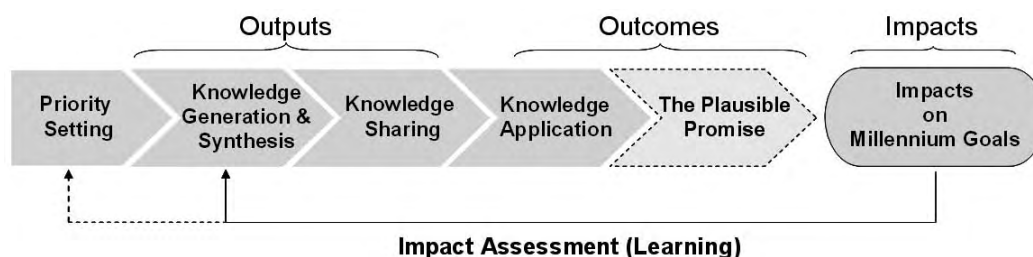


Figure 4. The Research for Development Value Chain. In this diagram “The Plausible Promise” refers to the uncertainty (including uncontrollable external influences) surrounding the actual achievement of the intended impacts from research and development.

WorldFish Campaigns—painting the bigger picture

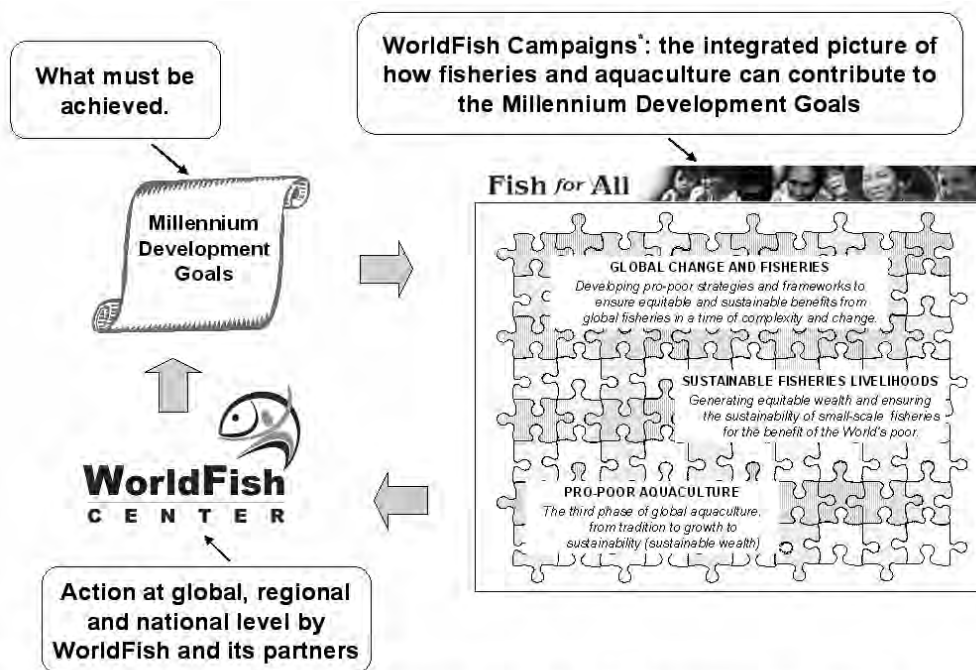
Campaign (n). *A vigorous concerted effort to accomplish a purpose*

While the details of our revised strategy have yet to be decided, debate over the past year has led us to conclude that our role as a global commentator and as an agenda setting organization needs to be strengthened if we are to make a truly substantive contribution to the Millennium Development Goals. In 2002, WorldFish embarked on this path with the establishment of the Fish for All Initiative, which won the CGIAR Award for Communication in 2003. Fish for All has served us well as an awareness raising device and the NEPAD Fish for All Summit in Nigeria in 2005 was another important milestone for the initiative. What is required now, however, is a clearer, more detailed and integrated picture of how support to fisheries and aquaculture can help to achieve the Millennium Goals and what scale of impact might be expected from the investment.

In order to drive towards the successful achievement of the MDGs, and for global fisheries to play their role in achieving these goals, there is a need for renewed focus and effort around the challenges of:

- understanding and exploiting the global vectors of change affecting fisheries and aquaculture so that they benefit the poor,
- increasing the sustainable production of fish through aquaculture as a source of protein and income for poor communities,
- ensuring a sustainable and well managed supply of fish from coastal and inland fisheries.

The above challenges will form the focal points for three WorldFish Campaigns which will reside beneath the Fish for All banner. These campaigns are a new approach by the WorldFish Center and its partners to galvanize support and action around a set of goals designed to assist with the achievement of the MDGs (Fig. 5).



* Campaign (n). A vigorous concerted effort to accomplish a purpose.

Figure 5. Schematic showing how the WorldFish campaign concept relates to our research program.

The campaigns will be organized around a set of outcome focused, time bounded goals that are designed to make a difference to the poor at the global scale. These campaigns are not intended simply as an ambitious research program for WorldFish alone, nor are they conceived as a management structure or program. Rather, they are explicitly intended to be broader in scope and to provide a framework for action which can help to align the interests, capabilities and efforts of a wide range of partners and collaborators to address the problem at hand. We envisage these campaigns as devices for articulating the problems to be solved, defining the interlocking pieces needed for solving them and for monitoring progress in delivering solutions. In meeting this need they will also serve to synthesize information, integrate experience, and challenge thinking on priority issues for the next ten years. Intended to produce alignment and co-investment around major issues affecting poor fishing communities, these campaigns directly address the need for the new development partnerships identified in the MDGs.

Significant effort and resources will be deployed in 2005 to further elaborate the campaign concepts and move the Fish for All agenda forward.

Highlights from 2004 and 2005

In 2004 and 2005, the Center's work has been recognized through a number of awards to our staff and research teams:

- Dr Modadugu Gupta, recently retired Assistant Director General, won the 2005 World Food Prize for his work to enhance nutrition for over one million people, mostly very poor women, through the expansion of aquaculture and fish farming in south and southeast Asia and Africa.
- Two CGIAR awards were won by WorldFish teams in 2004: the Outstanding Partnership Award went to Community-based Fisheries Management, a partnership coordinated by

WorldFish Center in Bangladesh; and the FishBase Team won the 2004 CGIAR Outstanding Scientific Support Award for its scientific work in developing FishBase. In addition, the CGIAR award for outstanding journalism in 2004 was awarded for an article in the Economist based, to a large extent, on WorldFish research.

- WorldFish Scientists also won two prestigious prizes in the World Bank Global Development Marketplace competition. In Cameroon, a proposal on “Sustainable use of African rainforest rivers” was awarded \$150,000, while in southern Africa a proposal on “Adapting Aquaculture to HIV/AIDS affected households” won a prize and project grant at the Zambia Development Marketplace.
- ReefBase GIS won the “best online mapping application” award in a contest organized by Directions Magazine and Microsoft.
- In September 2005 the WorldFish Center was named a 2005 Tech Museum Awards Laureate by the Tech Museum of Innovation located in San Jose, California. The Center was selected as a Laureate for the Accenture Economic Development Award for its development of an improved strain of farmed tilapia, popularly known as ‘GIFT’.

Detailed highlights of our research work within each MTP project are listed below.

Pacific Regional Project

- The auction of pearls from the WorldFish demonstration farm in Solomon Islands highlighted the achievements of the pearl farming research project, and demonstrated the flow of benefits from pearl farming to coastal communities.
- Methods of capturing and on-growing pre-settlement stages of coral reef fish and invertebrates for the aquarium trade developed in the past three years were introduced to low-income rural communities in Solomon Islands. Rapid adoption and prompt income generation were demonstrated; income generation at the village level to be nearly US\$ 1,000 in 2005. In this remote area, many villagers have no source of cash income at all.
- A method to mark hatchery-reared juvenile sea cucumber has been developed for the first time in New Caledonia, allowing effective evaluation of the success of restocking overfished sea cucumber populations. The determinants of growth and survival of juvenile sea cucumber in the land-based nursery phase have been identified. Initial sea cucumber restocking trials have demonstrated moderately high post-release survival rates.
- Obstacles to aquaculture development in several Pacific island countries have been targeted by a series of mini-projects; these include pearl production (Kiribati), assessing the disease status of penaeid shrimp (Fiji); integrated agriculture/aquaculture of freshwater crayfish and taro (Vanuatu and Wallis); and development of release strategies for sea cucumber (white teat fish) (Kiribati).

East & Southeast Asia Regional Project

- The superior performance of the GIFT strain over three red tilapia strains locally cultured in Malaysia in terms of survival, growth and fillet yield shows the potential contribution of GIFT to the Malaysian plan of increasing tilapia production for both domestic and export markets. Overall productivity of GIFT tilapia was between 20-50% greater than the red tilapia
- The recent impact evaluation study conducted by the Asian Development Bank in selected Asian countries including the Philippines, Thailand, Vietnam and Bangladesh showed that GIFT and GIFT-derived strains accounted for up to 68% of the total tilapia seed produced in 2003.
- A study of fish supply and demand in Asia was completed successfully in February 2005, and the results were published in 12 articles of a special issue of the Journal of Aquaculture Economics and Management (vol. 9, no. 1, 2005).

South Asian Regional Project

- WorldFish extension research shows that poor Bangladeshi farmers are willing to pay for quality services (as a small percentage of the profit) and this indication spawns a new approach to increase adoption of improved aquaculture technologies in Bangladesh.
- Subsidized and non-subsidized farmers covered by the aquaculture extension research work in Bangladesh were equally effective. This finding, if validated, points to the need for a paradigm shift in the extension approach of many developing countries.
- Four follow-up trainings in Bangladesh on Household Finance, Integrated Agriculture-Aquaculture, Monitoring and Evaluation of Aquaculture, and Decentralised Tilapia (GIFT strain) Seed Production in Rice-fields were organized for 386 extension workers from 33 partners and 24 associate partner NGOs.
- Preliminary assessment of the introduction of fisheries management and habitat restoration through CBFM approaches were made that shows significant increases in fish production (41%) and biodiversity (14%) in the project water bodies.

Greater Mekong Regional Project

- A synthesis policy report and companion volume of country reports on economic valuation and governance of wetlands was coauthored by WorldFish and partners in Thailand, Vietnam, Laos and Cambodia, with translated reports appearing in three national languages.
- Four theses on economic valuation and policy development in Cambodian fisheries were completed by four MSc students from the Imperial College and the University of Portsmouth, UK.
- Five Cambodian biologists were trained in research methods; 11 staff and 19 students were trained in ecology and 2 biologists were trained in modeling.
- A preliminary model of water-dependent food production in Bac Lieu province, Vietnam, has been developed.

Sub-Saharan Africa Regional Project

- The Center has focused increasing attention on the role of fish farming in improving the income and nutritional status of HIV/AIDS affected households, and in particular the role of new technologies and management practices that are specifically suited to orphan and widow headed households. A pilot proposal for this work by WorldFish and World Vision won funding from the World Bank Country Development Marketplace forum in Zambia, and this will provide an important basis for developing a Southern Africa Development Community (SADC) regional initiative on reducing HIV/AIDS vulnerability through integrated aquaculture.
- The Center has played a central role in supporting the Ministry of Agriculture and Department of Fisheries in Malawi, the SADC regional economic community, and the New Partnership for Africa's Development (NEPAD) to convene and inform policy workshops on the future development of fisheries and aquaculture and their contribution to achieving the Millennium Development Goals. On the basis of these workshops, fish have been incorporated into the Malawi Food and Nutrition Security Policy, and a strategic framework has been set for long term investment in research and development in support of improved fisheries management through SADC and NEPAD.
- An ex-post impact assessment of small-scale integrated aquaculture-agriculture (IAA) technologies over 15 years in Malawi was completed successfully. This has resulted in a policy paper on the contribution of IAA to land and water management which was also completed. The report of the assessment and the paper will be published as a book and as journal articles in 2006.
- In collaboration with FAO, WorldFish has undertaken comprehensive analyses of aquaculture development constraints, opportunities and trajectories relative to proposed management paradigms. On the basis of this data collection and synthesis a holistic and comprehensive set of guidelines have been developed for the creation of national level

aquaculture support systems, in terms of policy, government intervention and the role of the private sector. These guidelines have been adopted formally in Cameroon, Zambia and Angola, and are now under discussion in Kenya, Uganda and Ghana.

- The first quantitative assessment of rainforest river biotopes and fish species associations, in Central Africa was conducted in Cameroon. A detailed sampling effort conducted in collaboration with the Limbe Botanical Garden and the Marine Institute of Canada characterized first and second order rainforest rivers exploited for ornamental fishes. Key findings have been incorporated into a project recently funded by the World Bank Development Marketplace to develop a business plan for the export of ornamental fishes raised in accordance with international standards of fair trade and environmental sustainability. This will contribute to the development of a long term program of research on the contribution of rainforest fisheries to rural food security and livelihood development in Central Africa.
- A first quantitative assessment of the economic importance of market access for small-scale aquaculture products was conducted in Cameroon as part of long term research to ascertain the role of markets as a development driver. It is believed that aquaculture can serve as both an economic engine for rural growth as well as providing high quality food for urban populations, but a practical, feasible and profitable business structure is required to attract private sector investment. In partnership with local farmers and NGOs, such a business plan is now being developed for widespread policy and investment guidance for both governments and the private sector.

West Asia and North Africa Regional Project

- In collaboration with FAO, a regional consultation on fish demand and supply was held in Kuwait (December 2004). This assessed the status of understanding of demand and supply in the region and identified future research needs.
- Ten international training courses were held over the course of two years bringing together 120 trainees from over 40 countries in Asia, Africa and Latin America. In 2004, 40 of the trainees were from sub-Saharan Africa.
- Mass selection of Nile Tilapia (*Oreochromis niloticus*) resulted in a total improvement of 35% in body weight after four generations. While the focus of the Center's work is now on repeating and increasing this success using family selection, the mass selected strain has now been tested successfully in field trials with farmers.
- A robust methodology for spawning and production of fingerlings of African catfish *Clarias gariepinus* was developed and is now being tested with farmers in Egypt.

Natural Resources Management Global Project

- In 2004, two major Global Public Good Databases from the Center achieved global recognition: the FishBase Team won the 2004 CGIAR Outstanding Scientific Support Award for its scientific work in developing FishBase; and ReefBase GIS won the "best online mapping application" award in a contest organized by Directions Magazine and Microsoft.
- A major review on restocking and stock enhancement has been formally accepted by the journal *Advances in Marine Biology*.
- Publication of "Status of the Coral Reefs of the World: 2004" containing maps and data from ReefBase and a major chapter by WorldFish staff on the status of coral reefs of Southeast Asia.
- ReefBase became host for two major coral reef websites: Global Coral Reef Monitoring Network and Reef Check. Over 1,800 full resolution Landsat satellite scenes covering the world's coral reefs are now accessible via ReefBase GIS.
- FishBase global use significantly increased compared to 2003 and the number of unique users crossed the 3 million mark. Significant usage increase in developing countries was seen in 2004 compared to 2003.

Modifications to the Previous MTP

As a consequence of the restructuring of the research programs outlined above, all of the projects from the previous year's MTP have been remapped into regional projects that correspond to the new regional portfolios, and one global project corresponding to the Natural Resources Management Discipline. Table 1 shows the relationship between these old MTP Projects and the projects identified in this MTP. The International Relations & Partnerships and Information & Communications projects have been merged completely into the overall work of the Center, while the other research projects have been assigned to the region or regions in which they operate. While the names of the projects and their content have changed compared to the previous MTP, the research activities have not changed substantially, and the overall research agenda in this MTP represents an evolutionary development of our overall portfolio of work. It is anticipated that in 2006, further strategic planning will result in two additional MTP projects being developed under the auspices of their respective disciplines (described above) to address key global issues identified within the planned campaigns.

MTP 2005-2007	MTP 2006-2008	Comments
1. Sustainable use of biodiversity and genetic resources (Biodiversity Program)	1. Pacific Regional Project	Contains elements of previous MTP projects 1, 3, 5, 6
2. Improved livelihoods through appropriate inland aquaculture technologies and fisheries management (Freshwater Program)	2. East and Southeast Asian Regional Project	Contains elements of previous MTP projects 1, 2, 3, 4, 5, 6
3. Making the most of the coast (Coastal Program)	3. Greater Mekong Regional Project	Contains elements of previous MTP projects 1, 2, 3, 4, 5, 6
4. Assessing technological, institutional and policy options that benefit poor people (Policy Program)	4. South Asian Regional Project	Contains elements of previous MTP projects 1, 2, 3, 4, 5, 6
5. International Relations and Partnerships	5. Sub-Saharan Africa Regional Project	Sub-Saharan Africa Regional Project
6. Information and Communications	6. West Asia and North Africa Regional Project	Contains elements of previous MTP projects 1, 2, 3, 4, 5, 6
	MTP 2007-2009	
	8. Aquaculture and Genetics Global Project	Global projects in this area are currently under development and will be described in the MTP for 2007-2009
	9. Policy, Economics and Social Science Global Project	Global projects in this area are currently under development and will be described in the MTP for 2007-2009

2. Highlights of the 2006 Project Portfolio

Pacific Regional Project

- Methods of capturing and on-growing pre-settlement stages of coral reef fish and invertebrates for the aquarium trade will be expanded to more villages in Solomon Islands, as well as Fiji.
- A management plan for the sea cucumber fishery in Isabel Province (Solomon Islands) will be developed and implemented—the first fishery management plan for the Solomon Islands.
- Processing methods to produce high-quality bêche-de-mer will be adopted by Solomon Islands fishing communities, and income per unit weight of bêche-de-mer will increase.
- Methods for restocking over-fished sea cucumber populations will be adopted in at least one Pacific island country, and hatchery production for stock recovery will be under way.
- Giant clams produced by aquaculture in Solomon Islands will be sold as small juveniles to coastal communities in Solomon Islands, and these will be on-grown for the aquarium trade. The first (fastest-growing) of these will have been sold, and an income stream started.

East & Southeast Asia Regional Project

- The Center's new regional strategy will be developed in collaboration with the national governments of China, Indonesia, Malaysia, the Philippines, and Timor Leste.
- National fisheries research strategies for Indonesia, Philippines and China will also be developed in association with the respective NARS institutes.
- A partial equilibrium model of the live reef fish trade in Asia-Pacific, integrating the empirical modeling of supply and demand and market costs of the trade, will be developed.
- A report on the impact of the dissemination and adoption of milkfish aquaculture technology in the Philippines will be published.
- Improved common carp and Nile tilapia strains in China and Malaysia, respectively, will be developed and tested in farmers' fields.
- Strategies and indicators for improved management of small-scale fisheries in Indonesia and the Philippines will be developed and endorsed by stakeholders successfully.

South Asian Regional Project

- Road maps for dynamic agri-business focused aquaculture in Bangladesh will be developed.
- Appropriate models for institutionalizing community-based organizations for management of water bodies or fisheries will be tested and identified.
- Poverty impact studies in fisheries managed by community-based organizations and at aquaculture extension sites will be completed.
- Impact assessment of Community Based Fisheries Management (CBFM) approaches will be completed.
- Success stories of CBFM and aquaculture extensions will be documented and disseminated to the beneficiaries and all policy stakeholders.
- Macro impacts of micro interventions in managing fisheries resources will be completed.

Greater Mekong Regional Project

- The second phase of support to Cambodia's Inland Fisheries Research and Development Institute will be provided, including capacity building in the Institute to engage stakeholders in policy-oriented dialogue addressing social, economic and ecological change in the country's freshwater fisheries.
- A project proposal will be developed, and funding sought for a new joint initiative in Vietnam to explore collaborative responses by public, private and civil sectors to managing the risks from rapid expansion of coastal aquaculture.
- Our floodplain management decision support tools will provide local and national officials a way to predict the impacts of alternative scenarios for water management and land use

change on fisheries and food production in the Mekong River Basin; by 2006 a critical mass of agencies will have staff trained to apply these tools.

- Capacity development project at the Inland Fisheries Research and Development Institute (Cambodia) delivers 2 policy briefs, plus 1 technical report each on Tonle Sap fisheries, and aquatic resources valuation.

Sub-Saharan Africa Regional Project

- An assessment of the role of market constraints in determining the viability of aquaculture in the forest margins zone of Cameroon will be completed and disseminated.
- Two improved aquaculture technologies (natural spawning of African catfish, fast growing tilapia strains) and two new practices (profitable production models; optimal harvesting strategies) will be further developed for application in Malawi and southern Africa.
- An information base for development of GIS based planning tools for identification of high priority areas for freshwater aquaculture development in Malawi and Cameroon will be established.
- The dynamics of aquaculture development in peri-urban areas in Cameroon and Malawi will be assessed together with implications for further development.
- An inventory of reservoirs suitable for fisheries enhancement in the Nile and Volta basins will be completed and a report published, together with an assessment of the potential for enhanced fisheries in Lake Volta and Lake Nasser.
- Strategies for sustaining freshwater fisheries in the changing Lake Chilwa watershed will be identified and a report published.
- Governance arrangements for river fisheries in the Lake Chad and Zambezi basins will be reviewed and entry points for governance improvement identified.
- Options for community-based management of ornamental fisheries and aquaculture in the rainforest rivers of Cameroon will be assessed and actions to pursue these will be identified.
- The contribution of small-scale aquaculture to HIV/AIDS mitigation in Malawi and Zambia will be assessed and a report published and disseminated.
- Best practice models for HIV/AIDS support to fishing communities will be identified and disseminated and additional research needs assessed.
- A platform for discussion and consensus building amongst fishery stakeholders in the Kafue Flats, Zambia will be established as a basis for organizing management of the fishery and enhancing pro-poor benefits.
- The local and regional fish marketing systems on Lake Tana, Ethiopia will be assessed as a basis for identifying future investments to enhance the contribution of this fishery to local and regional food security.

West Asia and North Africa Regional Project

- An assessment of the current constraints to aquaculture development in Egypt will be completed and published, together with an analysis of fish demand in Egypt and its link to the international fish economy.
- Two improved aquaculture technologies (natural spawning of African catfish, fast growing tilapia strains) and two new practices (low cost feeds; optimal harvesting strategies) will be further developed and disseminated to low income farmers in Egypt.
- Four regional (or multi-regional) training courses (2 WANA; 2 SSA) will be held and a total of 50 farmers trained in the use of new approaches for aquaculture development.

Natural Resources Management Global Project

- "Key Facts" software will be developed for Species Introductions and Species-Ecology Matrix.
- Key FishBase pages and descriptors will be translated into at least 3 Asian languages.
- A user needs surveys of FishBase in at least 4 countries (3 of these in ACP countries) will be conducted.

- ReefBase tables will be updated to include all information from the “2004 Status of Coral Reefs of the World” and all national and regional status reports.
- ReefBase will be updated with socio-economic information from the GCRMN SocMon program.
- A coral reef fisheries and socio-economic “portals” will be created within the ReefBase website with key information for managers.

3. Implementation of EPMR Recommendations

The last EPMR (External Programme Management Review) for the Center was in 1998. We will be undergoing our next EPMR in late 2005 and early 2006. Thus no text on EPMR implementation is required for this MTP.

4. Collaboration

The scope of our mission requires that we develop strategic partnerships in our research and development activities. Through our partnership approach we aim to:

- Develop strong national research and development systems
- Better utilize the scarce resources available for research
- Achieve quicker gains from research results, and
- Match complementary skills

Our partners include national aquatic research organizations, non-governmental organizations, the private sector, universities/academic institutions, advanced scientific institutions, and regional and international organizations. To strengthen our partnerships with developing countries and to ensure we are meeting their needs, we have held regular meetings since 1996 with partner institutions to identify priority areas for collaboration. These consultations provide key input to the development of our strategy and our research plans. Starting from 2002, the Center has assisted partner countries to identify their research priorities and develop national research plans.

Capacity building among developing country institutions is an essential part of developing and maintaining our partnerships. Since 1977, we have conducted formal and informal training programs in our areas of expertise and have developed a critical mass of scientific competence among developing country institutions. We also provide management and policy advice focused on the aquatic resources sector.

WorldFish has ongoing collaboration with over 250 partner institutions from developing and developed countries, although many of these partnerships are informal and restricted in both time and scope. Formal partnerships, where the Center has entered into a signed agreement with another institution, amounted to 123 partners in 31 countries as of May 2005. The majority of our partners are within developing countries (72%) with Asia representing the region with most of our partnerships (65%). The highest number of partners (55) is in Bangladesh, the country where the Center has two major community based projects involving extensive work with local community organizations.

5. Internal Organization of Research

The re-organization of our research structure into a matrix of regional portfolios and global disciplines and the rationale for this change is described in Section 1 above as part of our discussion of organizational change.

6. Center Financial Indicators

For 2006 the Center will meet or exceed all financial benchmarks. Details of these are contained in the Finance section and financial tables. With regards to long-term ratios, the Center has exceeded the recommended range in past years. The Center's Board of Trustees is aware of this and has reaffirmed its commitment to a staged reduction of the Center's reserves through investment aimed at elevating the scientific standing and impact of the Center in accordance with the Center's mission and mandate. The Board has stressed, however, that all such investments must be based on a sound long-term financial management strategy.

B. WorldFish Center Project Portfolio

As described in the Overview section, the Center's research is organized as a matrix of regional programs and disciplinary areas. For the period 2006-2008 there are seven MTP projects, corresponding to six regional portfolios of project activities and one global project relating to natural resources management. This section presents the detailed narratives and logframes for each MTP project.

1. Pacific Regional Project

Project narrative

Background

Most Pacific island peoples derive a significant proportion of their sustenance and livelihoods from the sea. Globally, the highest per capita fish consumption is in the Pacific islands. An increasing trend away from subsistence fishing and toward fishing for commercial purposes has, in many places in the Pacific, led to a depletion of fish and shellfish resources. The WorldFish Pacific program seeks to work with communities, all levels of government, and other organisations to develop methods to effectively develop and implement sustainable fishery management practices, and to measure the success of these practices.

Through this project the Center will assist rural/coastal communities to obtain adequate income for their basic needs (food, health and education) and to achieve stable, healthy fish populations through sustainable harvesting practices. This will be achieved through appropriate projects, partnerships with regional NARS and ARIs, and by enhancing the capacity of NARS to provide the necessary institutional support for these activities. We recognize the need for a multi-partner, multi-disciplinary approach if projects are to succeed fully in meeting their objectives. This is especially true for projects that seek to achieve the sustainable use of natural resources.

Goal

The overall goal of the Pacific Regional Project is to assist Pacific island countries to develop sustainable livelihoods through aquaculture and marine farming, and to conserve and sustainably manage aquatic resources.

Objectives

1. To implement sustainable fishing practices for sea cucumber

This objective is associated with Output 1 (*Improving sustainability and profitability of village sea cucumber fisheries in Solomon Islands*), which seeks to prevent the serious depletion of sea cucumber stocks (the primary source of income from the sea in many coastal communities in Solomon Islands), as has happened in other tropical countries.

2. To accelerate the rate of recovery of severely depleted sea cucumber populations

This objective is associated with Output 3 (*Large-scale restocking of sea cucumber in Pacific island countries*). It also addresses natural resource sustainability issues, but is a fishery management tool for accelerating the rate of recovery of severely depleted populations which might otherwise take many years (or decades) to recover. This extension will draw on experience gained from several years of aquaculture and restocking research by WorldFish in Solomon Islands and New Caledonia, which will conclude in mid-2006. One component of Output 4 (*Sustainable aquaculture development in the Pacific Islands region and northern Australia*) is extending the scope of the project in Output 3 by providing training in sea cucumber culture and release methods to Pacific island countries.

3. To provide a range of livelihood opportunities for poor Pacific communities that are socially, culturally and economically appropriate

This objective will be met through Outputs 4 (above), 5 (*Creating rural livelihoods in Solomon Islands through environmentally friendly aquaculture and trade of marine ornamentals*) and 6 (*Pearl farming as a sustainable livelihood for coastal communities*). It will be addressed through targeted research. Other subordinate objectives will also be met, including training villagers in aquaculture and grow-out of marine species for the aquarium trade; training villagers in responsible methods for collecting wild adult fish and invertebrates for the marine aquarium trade so that their enterprises can achieve Marine Aquarium Council certification; training in small-business management; training in aquaculture and release methods for restocking depleted sea cucumber populations; and training in improved methods of processing sea cucumber to increase value and income.

Linkages and Partnerships

In order to maximize the probabilities of success for this project area (one of the four criteria set for projects under the CGIAR Research Agenda), the resource management projects that we undertake will be linked with projects that either provide alternative livelihoods directly (to mitigate the short-term economic burden caused by reducing rates of fishing to sustainable levels) or that provide, indirectly, the means to develop such alternatives. Thus, the project associated with Output 1 (*Improving sustainability and profitability of village sea cucumber fisheries in Solomon Islands*)—which seeks to reduce rates of harvesting sea cucumber to sustainable levels—is linked in a collaborative way with several other projects: (i) the UNDP Isabel Province Development Project—which provides institutional strengthening at the provincial level for administrative and business support for village-level business development; (ii) the GEF-funded International Waters Project—the Solomon Islands component will be strengthening national and provincial legislation that supports resource management decisions made at the community level; (iii) the project in Output 4 (*Sustainable aquaculture development in Pacific Islands region and northern Australia*)—which has been effective at providing important levels of income, within a few weeks of introduction, through the capture and culture of postlarval fish and invertebrates that are then sold for the aquarium trade; and (iv) the EU-funded seaweed farming development project in Solomon Islands. This project has introduced seaweed farming to a disadvantaged coastal community that has been fishing illegally for sea cucumber and other species in the waters of nearby communities. Seaweed production is now increasing exponentially and, concurrently, illegal fishing activity has declined greatly. This has important consequences for WorldFish activities in Output 1, as implementation of sustainable sea cucumber fishing practices and management plans in the pillaged community now has a greater chance of success since the ‘tragedy of the commons’ factor caused by illegal and uncontrolled fishing is removed. As a result, the community no longer feels that the stock that they leave in the water will be harvested by others.

MTP Project Logframe – Pacific Regional Project				
Outputs		Intended user	Outcome	Impact
Output 1 <i>Improving sustainability and profitability of village sea cucumber fisheries in Solomon Islands</i>				
Output Targets 2006	1) Report describing the fishing practices, triggers and incentives for sea cucumber fishing, and perceived trends in the fishery over time	WorldFish Center; NARS (=Solomon Islands Fisheries Dept.) researchers	Development and implementation of sustainable sea cucumber fishery management practices at the community level	More effective implementation of sustainable fishing practices and plans in the Melanesian context Long-term security of sea cucumber as an income source for Solomon Islands coastal communities
	2) Improved sea cucumber processing methods	WorldFish Center project extension officers; sea cucumber fishers	Improved incomes for coastal communities from sea cucumber fishing	Critical expenses such as school fees will be payable, with consequent improvement of education level in remote coastal communities
	3) Policy advice on legislation relating to community-base fishery management	Solomon Islands Fisheries Dept; Provincial government; coastal community leaders	Changes to national legislation to support community-based fishery management actions	Local communities have greater say and involvement in managing their natural resources
2007	As for 1) and 2) of 2006, extended to more communities	As for 1) and 2) of 2006, extended to more communities	As for 1) and 2) of 2006, extended to more communities	As for 1) and 2) of 2006, extended to more communities
	Village-run resource monitoring program	Coastal communities	Improved monitoring of fished resources leading to better fishery assessment and management	Resource management process incorporates results of monitoring
2008	As for 2007	As for 2007	As for 2007	As for 2007
	Support for local NGOs to extend the resource management planning process widely throughout Solomon Islands	Local NGOs; coastal communities	Effective dispersion of natural resource management process and practices throughout Solomon Islands	The impact area of the project is extended as widely as possible throughout Solomon Islands
Output 2 <i>Optimal release strategies for restocking and stock enhancement of the tropical sea cucumber, sandfish (Holothuria scabra) (Sea cucumber restocking project, Phase 2)</i>				
Output Targets 2006	Reports and publications on effective and cost-efficient methods for scaling-up production of sea cucumber juveniles in earthen ponds	WorldFish Center; NARS; local communities; provincial govts; commercial sea farmers	Knowledge of ways to produce juvenile sandfish at the large scale necessary for significant restocking to occur	Hatchery and field workers better trained and knowledgeable in large-scale juvenile production methods
	A report on cost-effective, simple methods to mark sandfish as a means of assessing the effective-ness of release/restocking operations	As above	Better knowledge of the fate of released juveniles and of their survival rates	Accurate and timely feedback to users on their release efforts

	Outputs	Intended user	Outcome	Impact
	Reports on methods of releasing juvenile sandfish into the sea to maximise post-release survival rates	As above	Practitioners will culture juvenile sandfish and deploy them in the sea using known methods to maximise production, and to minimise costs and post-release mortality	High post-release survival of juvenile sea cucumber, and more rapid recovery of overfished populations
	A technical workshop to demonstrate the release methods and survey techniques to Pacific island nationals	As above	Wide dissemination of knowledge of these methods	Effective replenishment of overfished sea cucumber populations will occur widely throughout the Pacific
Output 3 <i>Large-scale restocking of sea cucumber in Pacific island countries (Sea cucumber restocking project, Phase 3)</i>				
Output Targets 2006	Sea cucumber aquaculture facility set up in at least one Pacific island country (possibly Papua New Guinea) Trained local hatchery technicians	NARS (=Solomon Islands Fisheries Dept.) researchers and extension officers; remote coastal communities; NGOs	A coastal aquaculture facility capable of producing juvenile sea cucumber on a large scale for restocking natural populations depleted by fishing	Coastal community people trained in hatchery/aquaculture methods; Capacity to produce large numbers of juvenile sea cucumbers for population restocking
2007	Large numbers of sea cucumbers produced, and released into natural habitats	Large numbers of sea cucumbers produced, and released into natural habitats	Accelerated recovery of depleted sea cucumber populations	Increased income opportunities in coastal communities
2008	As for 2007	As for 2007	As for 2007	As for 2007
Output 4 <i>Sustainable aquaculture development in the Pacific Islands region and northern Australia</i>				
Output Targets 2006	Aquaculture research for development through mini-projects in village communities	Provincial aquaculture researchers; ARIs; NARS; village communities	Solving bottlenecks to aquaculture production in village communities	Improved aquaculture production in village communities
	Pre-settlement fish capture/culture methods extended to at least 2 Pacific island countries	Coastal village communities	An alternative, sustainable livelihood option	Greater income levels in income-limited communities
	Sea cucumber aquaculture restocking technology extended to at least 2 other Pacific island countries	NARS (=Solomon Islands Fisheries Dept.) researchers and extension officers;	Accelerated recovery of depleted sea cucumber populations	Increased income opportunities in coastal communities
	Outputs	Intended user	Outcome	Impact
Output 5 <i>Rural livelihoods in Solomon Islands enhanced through environmentally friendly aquaculture and trade of marine ornamentals</i>				
Output Targets 2006	Commercially viable aquarium products being actively produced from the WorldFish aquaculture facility	Coastal village communities	A fully functional hatchery facility in Solomon Islands Western Province	

	Outputs	Intended user	Outcome	Impact
	One national and two provincial fisheries officers and two NGOs (future extension officers in the project) will be trained in aquaculture and on-growing methods, and in capture/culture of postlarval ornamental fish species	WorldFish Center; national and provincial fisheries officers; coastal villagers; NGOs	Increased national capacity to improve the well-being of people in rural communities by recognising and developing opportunities to generate income in a sustainable way Villagers trained in farming techniques for aquarium species	Creation of new jobs and alternative sources of income Sustained harvests of fish from the wild for the marine aquarium trade, resulting in long-term opportunities to earn income
2007	As for 2006	As for 2006	As for 2006	As for 2006
	Revised fisheries and aquaculture regulations to support the sustainable growth of the aquarium industry, and certification of all steps in the process by the Marine Aquarium Council system	WorldFish Center; NARS (=Solomon Islands Fisheries Dept.); NGOs	A more comprehensive fisheries legislation that promotes and stipulates sustainable use of coral reef resources	Sustainable fishing of inshore marine resources; price premium for eco-friendly aquaculture products
2008	As for 2006			
	Transfer of aquarium-products holding depot to a selected village; small-business training for depot managers	Village community; WorldFish Center; NGOs	Villagers proficient in running an aquarium-products holding depot and in small-business practices	Improved levels of income in remote communities; increased adoption of aquarium-based business independent of external donors or WorldFish Center
Output 6 <i>Pearl farming as a sustainable livelihood for coastal communities</i>				
Output Targets 2006	Feasibility study report on commercial pearl farming in Solomon Islands	WorldFish Center; NARS (=Solomon Islands Fisheries Dept.); Solomon Islands Govt. (Ministry of National Reform & Planning); donor; commercial pearl farmers; village communities	Clear indications of the financial and social feasibility of commercial pearl farming in Solomon Islands; one or more sites identified as suitable for pearl farming	
	[The remaining activities and outcomes are contingent upon a positive finding by the feasibility study.] Development and construction of a commercial pearl farm; training of villagers in techniques for capture and on-growing of pearl oyster larvae	WorldFish Center; NARS (=Solomon Islands Fisheries Dept.); commercial pearl farmers; village communities	A commercial pearl farm in a suitable area, and pearl oysters grown to commercial size by nearby villagers, then sold to the pearl farmer	Improved levels of income in remote communities from a socially and culturally appropriate village-based activity (capture of pearl oyster larvae, on-growing to suitable size for pearl culture, and sale to the pearl farmer)
2007	Pearl harvesting commences	As for 2006	As for 2006	As for 2006
2008	Pearl production is expanded to full capacity	As for 2006	As for 2006	As for 2006

2. East & Southeast Asia Regional Project

Project Narrative

Background

Research in East and Southeast Asia (ESEA) can contribute to improving the livelihoods of the poor who use natural fish stocks by fostering the sustainability of the resource base for all, and through more equitable management measures so that the poor benefit. However, the critical issue here is to balance ecosystem maintenance with exploitation, as most of the world's wild fish stocks are at about 30% of the levels that existed a decade ago, while human demand has grown and fishing technology has improved. A key approach in achieving our goals is to use scientific knowledge on the above issues to inform national governments, nongovernmental agencies, development assistance partners, other aquatic research agencies and the wider public on the complex place of fish in poverty alleviation.

As with capture fisheries, our work on aquaculture (including the choices of species, production and technology transfer systems and aquaculture governance mechanisms) is governed by equity and livelihood considerations. Research is focused on improving fish productivity and creating livelihood options to benefit the poor in developing countries while protecting and conserving natural ecosystems and environments.

Goal

The overall goal of this project is to enhance the contribution of fish to the alleviation of poverty, hunger and malnutrition, in an equitable and sustainable manner. The Center's research activities in the ESEA region are focused to address the Millennium Development Goals (MDGs) through the following specific goals: a) improved livelihoods through equitable and sustainable management of capture fisheries and through sustainable increases in aquaculture production, b) improved access to fish by the poor, c) environmental sustainability, d) improved knowledge and awareness of the links between fish, poverty and the environment, and e) improved understanding and promoting of gender issues in aquaculture and fisheries. The ESEA Regional Project is primarily responsible for activities involving the countries of China, Indonesia, Malaysia, Philippines and Timor Leste; a region of great historical and cultural significance and today, as never before, of immense opportunity.

Objectives

Research targeted to several of the multiple roles of fish in development can make contributions to poverty eradication, food security and environmental conservation. Our work in the region focuses on: improving equity and benefits from fisheries catches and aquaculture, enhancing the livelihoods of fishing and farming households, improving access to fish at affordable prices for consumers, reducing the impact of fishers on overstressed resources, increasing the number of fish farmers where resources permit, and protecting the aquatic environment and biodiversity. Specific objectives of our work that will contribute towards these goals are discussed below:

1. To develop strategies for fisheries research in ESEA

This objective is associated with Output 1 (*Regional and country-specific strategies for fisheries research developed*), which seeks to help national governments to develop strategies and policies for sustainable and equitable development of their fisheries sectors. Also, it seeks to increase the technical capacity of scientists and managers within collaborating national governments and thus improve aquatic resources management.

2. To improve fish strains and associated fish farming technologies

This objective is associated with Outputs 2 and 3 (*Improved carp and tilapia strains and associated farming technologies developed and disseminated among farmers in China, Indonesia, Malaysia and the Philippines; and Strategies and options developed for increased aquaculture*

and fisheries production to benefit poor communities). The objective is to produce genetically superior carp and tilapia strains which would increase fish production at minimum cost. This addresses the challenge of sustainably and safely increasing aquaculture production for the benefit of poor people.

3. To develop strategies and options to increase aquaculture and fisheries production for poor communities

This will be met through Output 3 (*Strategies and options developed for increased aquaculture and fisheries production to benefit poor communities*). The outcome of this objective is an increase in fish supply and economic benefits from fish production. This will be achieved through assessment of the fish and food supply and demand outlook for the poor, and a study on the impact of various fisheries and aquaculture technologies and policy interventions on the economic well-being of the poor.

4. To improve the productivity of coastal fisheries in developing countries

This objective is associated with Output 4 (*Developed information system for fisheries resources in East and Southeast Asia region documenting: resource maps of stock structure of key species, status of capture fisheries, interventions to restore, improve and sustain productivity, and measures needed to distribute the benefits equitably*). This objective seeks to increase the awareness of the importance of coastal small-scale fisheries for livelihoods and food security, and to promote sustainable and equitable harvest of wild stocks from inland and marine ecosystems.

Linkages and Partnerships

For research work in ESEA to succeed, there must be many linkages and partnerships among and between national governments, nongovernmental agencies and academes.

All outputs will be achieved through collaboration with the national governments of China, Indonesia, Malaysia, the Philippines, and Timor Leste. WorldFish will work with the NARS in the region to come up with a regional strategy for fisheries research and development in 2006. Partnerships among scientists, policy makers and donors will be improved further in 2007 and 2008.

Multi-partner projects will be initiated and implemented in three countries of ESEA, to identify options for improving the livelihoods of coastal communities. International and regional fisheries and aquatic agencies, national fisheries agencies, local government, NGOs, and fishing/coastal communities are the intended users of the outputs.

More collaborative work on fisheries research among national governments and NARS are expected to evolve out of this project. It is expected that the scientists, managers, policy makers, and donors will increase collaboration and capacity among themselves leading to an improvement in aquatic resources management in ESEA region.

A small component of this project will be carried out as part of the Water & Food Challenge Program.

MTP Project Logframe – East & Southeast Asia Regional Project				
Outputs		Intended user	Outcome	Impact
Output 1 <i>Regional and country-specific strategies for fisheries research developed</i>				
Output Targets 2006	Worldfish strategy for fisheries research in ESEA completed and disseminated in China, Indonesia, Malaysia, the Philippines, Timor Leste Fisheries research strategy for Indonesia, Philippines and China completed and disseminated	National governments of China, Indonesia, Malaysia, the Philippines, Timor Leste NARS in Indonesia, Philippines and China	All partners and stakeholders are working to the same timelines, priorities and strategy for achieving the project goals Increased collaborative work on fisheries research within ESEA	National governments adopt development strategies based on research
2007 and 2008	Improved collaboration and capacity among scientists, managers and policy makers within the ESEA region	Scientists and managers, policy makers, and donors	Sustained partnership among members of ESEA to foster improved developmental capacity building activities	Improved capacity of scientists and managers leading to improved aquatic resources management
Output 2 <i>Improved carp and tilapia strains and associated farming technologies developed and disseminated</i>		Scientists & resource managers in NARS, NGOs, other aquatic-dependent communities, fish farmers		
Output targets 2006	Improved genetic strains of tilapia developed in Malaysia Improved genetic strains of common carp developed in China		Genetically improved carp and tilapia strains increase aquaculture production sustainably	The availability of genetically superior fish strains will increase aquaculture production at minimum cost thereby increased income among small-scale farmers result
2007	Improved strains of common carp developed in Indonesia Recommendation domains for appropriate freshwater aquaculture technology developed in China		Same as 2006	Same as 2006
2008	Improved portfolio of sustainable and appropriate technologies and strategies for freshwater areas in China ⁵ , Indonesia, Malaysia and the Philippines		Improved and widely adoptable pro-poor knowledge/technology on aquaculture resources and its management amidst environmental changes	Improved management of aquatic resources with participation of smallholder farms through better and widely available knowledge resulting in sustainable increase in aquaculture production

⁵ Work in China will be carried out through the Center's involvement in the Challenge Program on Water and Food.

Outputs		Intended user	Outcome	Impact
Output 3 <i>Strategies and options to ensure that increased aquaculture and fisheries production benefits poor communities</i>		Policy makers, government agency managers, local government, NGOs, poor farmers and fishers	Options derived through assessment of economic, social and environmental policy issues are implemented	Increased sustainable fish supply to meet increasing market demand and ensure food security among the poor through improved market performance
Output targets 2006	Improved management of small-scale fisheries in at least two countries in ESEA developed and endorsed by stakeholders A partial equilibrium model of the live reef fish trade in Asia-Pacific developed A report published on the impact of the dissemination and adoption of milkfish aquaculture technology in the Philippines			
2007	Initiation and implementation of a multi-partner project in at least three countries of East and Southeast Asia, for identifying options for improving the livelihoods of coastal communities			
2008	Improved strategies and institutional arrangements for resource access, quality management, supply networks, markets and trade identified and applied in at least two ESEA countries (in 2008)			

3. South Asian Regional Project

Project narrative

Background

Nearly 40% of the world's absolute poor people live in South Asia. Within this region, fisheries and agriculture form the principal basis of food and economic security. Farming and fish capture to meet domestic consumption and export demand have been emphasized in the national strategies for economic growth and poverty reduction of many countries. Despite rapid growth in production from aquaculture and capture fisheries in the last three decades the fisheries sector still has tremendous prospects to become an engine for further economic growth, and provide income, employment and nutritional benefits to the poorer segments of the population in countries such as Bangladesh, India and Sri Lanka.

Smallholder aquaculture development, involvement of the poor in the product marketing and input-supply chains, and empowerment of inland and coastal fishers through co- and community-based management of fisheries and water bodies, can all provide huge benefits to poor people. Research and technology transfer activities undertaken by WorldFish and its partner agencies have shown that changes in the governance through strengthening of local fishers and their

organizations can bring about significant improvement in the management of fisheries resources and equity benefits to the poor. The landless and resource poor farmers and fishers and their households have been the immediate targets of WorldFish research and collaborative activities in the region for over a decade.

Building on the Center's engagement in the development of sustainable aquaculture and co- and community-based management of inland fisheries in Bangladesh in the last 15 years, the Center's current strategy for the region is focused on research in support of improved policy, and uptake promotion and dissemination of technologies and lessons from pilot-scale research and development projects.

The WorldFish Center, the Government of Bangladesh and several NGO partners received the 2004 CGIAR Science Award for the development and promotion of community-based fisheries management (CBFM 2), which has provided options for the co-management of the country's vast inland water bodies by community-based organizations, government agencies and NGOs. It has developed options for sustainable aquaculture that can be integrated into rural agricultural and livelihood systems used by poor households in Bangladesh.

Goal

The overall goal of the Project (South Asia Regional Program) is to harness the benefits of fisheries and aquaculture for poverty reduction through development of 1) sound policies and institutional arrangements for management of inland and coastal fisheries resources; and 2) viable and sustainable technologies for aquaculture.

Objectives

1. Alignment of fisheries and aquaculture development with other rural and agricultural sub-sectors to increase the income, consumption and benefits of poor people dependent on fisheries, aquaculture and agriculture.
2. Improve livelihood opportunities for poor fishers and fish farmers by integrating fisheries management and aquaculture activities with community development and market activities.

Linkages and Partnerships

The Center's operations and engagement in the region are based on the identification and implementation of strategies and options to benefit poor people through fisheries and aquaculture. In this regard studies and analysis to provide pro-poor technologies and management models in the past have resulted in collaborative research, training, communication and dissemination activities in freshwater and coastal fisheries, and freshwater aquaculture in Bangladesh, India and Sri Lanka. A significant number of government agencies and NGOs have been involved in projects such as Development of Sustainable Aquaculture, and Community-based Fisheries Management implemented in Bangladesh, and Management of Conflicts in Fisheries, and community-based rice-fish farming implemented in Bangladesh and India. Also, projects such as the identification of recommendation domains, and dissemination of genetically improved carps for aquaculture adoption by rural poor are prime examples of partnership and capacity building approaches in linking fisheries and aquaculture to rural income and employment generation. Most of the above projects are implemented as part of regional and inter-regional initiatives, such as the Community-based Fisheries Management Project in South Asia and Bangladesh.

Some of the work in Bangladesh and India will be carried out as part of the Challenge Program on Water and Food.

MTP Project Logframe – South Asia Regional Project				
Outputs		Intended user	Outcome	Impact
Output 1 <i>Strategy document for aligning the fisheries management and aquaculture development with other rural and agricultural sub-sectors to increase the income, consumption and benefits of the poor people dependent on fisheries, aquaculture and agriculture</i>		Department of Fisheries, relevant government agencies, NGOs and CBOs		
Output Targets 2006	Road maps for dynamic agri-business focused aquaculture in Bangladesh published and linked to poverty reduction strategy through endorsement by key stakeholders		Participation of poor households in production, input supply and product marketing and processing chains	Improvement of productivity, employment and income to communities engaged in fish farming, input-supply and product marketing and processing
	Alternative models for institutionalizing community-based organizations for management of water bodies or fisheries in Bangladesh are tested and evaluated, and best practices recommended		Pro-poor policies and institutions to support CBO management of water bodies	Increased role of poor in aquatic resource governance and economic activities centering around fisheries and aquaculture
	Poverty impact studies in community based organization (CBO) managed fisheries, and aquaculture extension completed at three sites		As above	Improvement of productivity, employment and income to communities engaged in fisheries management and fish farming
	Impact assessment of CBFM approaches completed and published			As above
	Success stories of CBFM and aquaculture extensions documented and disseminated to beneficiaries and policy stakeholders Report on macro impacts of micro interventions in managing fisheries resources completed			As above
2007	Policy analysis (brief) on macro impacts of CBFM approaches completed		Institutional support for pro-poor policies and institutions to support CBO management of water bodies	As above
2008	Scaling up of CBFM approaches in managing resources in Bangladesh	As above	As above	As above

Outputs		Intended user	Outcome	Impact
	A comprehensive macro model for the fisheries sector as a whole developed	As above	Improved planning of fisheries and aquaculture development	Fisheries sector integrated into overall poverty and growth targets
Output 2 <i>Identification of technology and information gaps in production, input use and marketing chains in aquaculture, and development of technology transfer and communication strategies⁶</i>		Department of Fisheries, relevant government agencies, NGOs and CBOs		Increased role of poor in aquatic resource governance and economic activities centering on fisheries and aquaculture
Output Targets 2006	An institutional mechanism for quality seed supply and quality brood stocks developed and disseminated through training and extension materials		Awareness and participation of poor households in production, input supply and product marketing and processing chains	
2007	A model for vertical integration of fish marketing institutions and agents developed		Participation of poor households in input supply and product marketing and processing chains	
Output 3 <i>Action plan to improve livelihood opportunities of the poor fishers in the coastal zone to reduce fishing pressure</i>		Department of Fisheries, relevant government agencies, NGOs and CBOs		Improvement of productivity, employment and income to communities engaged in fisheries management and fish farming
Output Targets 2006	An action plan for livelihoods improvement of the poor fishers of the coastal areas is developed and implemented in Bangladesh		Pro-poor policies and institutions to support coastal fishers developed	
	CBFM approaches are applied in coastal resources management.		Institutionalization of pro-poor policies and institutions to support coastal resources management	
2008	Impacts of CBFM approaches in coastal areas on reducing fishing pressure are assessed and potential AIGA activities are identified		As above	

4. Greater Mekong Regional Project

Project Narrative

Background

Fish production in the Greater Mekong subregion (Vietnam, Cambodia, Laos, Thailand, Myanmar, and Yunnan Province of China) is exceptionally important as a source of food and livelihood. Several factors now threaten the food security and livelihoods of communities dependent upon fish and related aquatic resources in the region. Growing competition over water flows in the

⁶ Part of this output will be delivered through the Center's involvement in the Challenge Program on Water and Food.

Mekong River and other major river systems, stemming in particular from hydropower and irrigation diversion schemes planned or underway, threatens the functioning of sensitive aquatic ecosystems. Private sector exploitation of the fisheries harvest for regional markets is in many areas undermining local users' access to and control of aquatic resources. Overfishing has dramatically reduced marine fish stocks (biomass in the Gulf of Thailand, for example, has dropped over 93% in four decades). Cambodia is the country most dependent on freshwater fisheries as a source of food and livelihood, and among the poorest in Asia. Up to 75% of total animal protein in a typical diet comes from fish. Inland riverine and lake ecosystems are vulnerable to changes underway in land use, habitat destruction, and alterations to the hydrological regime of the Mekong River system. In Vietnam fish production is rising rapidly, especially for export (with official target to double value of fish exports to US\$ 5 bn per year). However this is driven largely by a boom in aquaculture that raises major challenges regarding environmental sustainability and social equity.

Goals

Our work with partners in the region focuses on an integrated set of goals, comprised of three impact domains (development goals) closely aligned with the Millennium Development Goals and with national poverty reduction strategies, and four outcome areas (intermediate goals) that we emphasize as necessary foundations for achieving these. The three project goals are to:

- improve the health and nutritional status of poor families, especially women and children, by increasing people's access to fish for food;
- reduce poverty by supporting sustainable livelihood strategies related to fishing, fish-farming, processing, marketing, and related uses of aquatic resources; and
- protect and restore the aquatic ecosystems that underpin rural livelihoods by addressing the threats to ecosystem sustainability from across the landscape.

Objectives

1. Strengthening governance & institutional capacity. This work (addressed in Output 1) will ensure that policy and management decisions better respond to the interests of poor communities reliant on aquatic resources, and that government agencies and NGOs have the capacity to serve them effectively.

2. Promoting technological, institutional, and market improvements. We will work to identify and promote improvements in management approaches, technology, institutions, or markets for aquaculture and fisheries that boost productivity, improve resilience, or increase the share of benefits captured by poor households. This objective is addressed in Output 2.

3. Integrating science in resource management decisions. We will develop decision support tools to analyze the impacts of hydrological and land use changes on fish production in Cambodia's Tonle Sap Lake and the impact of alternative water management scenarios in Vietnam's Mekong Delta. This objective is addressed in Output 3.

4. Linking ecosystem change to health and food security. Build awareness of how change in aquatic ecosystems affects human health and food security. This objective will be developed with formal outputs in the next MTP.

The 3-year medium term plan addresses these objectives through a staged approach. The first three objectives will be addressed directly by building on the strengths of our prior research and partnerships. The fourth objective area (linking ecosystem change to health and food security) will be pursued as feasible through smaller, exploratory research activities to help establish the agenda; we anticipate that associated outputs and targets will be introduced in future medium term plans.

Geographically, the primary focus initially is on Cambodia and Vietnam, with activities in Lao PDR and Thailand primarily pursued as components of regional outputs. The intent during the 3-year period is to develop national activities in Laos that would be introduced as specific output targets in subsequent years, and to explore the opportunities for engaging constructively in Myanmar, with no specific targets envisioned there yet.

As several significant funded project activities are concluding in 2005, and several new initiatives are in the planning stage with funding not yet secured, delivery on the planned outputs, particularly for 2007 and 2008, is contingent on securing adequate funding. While we expect objectives and higher order outputs to remain constant, the definition and sequencing of output targets may be revised in response to opportunities identified during 2005 and 2006.

Collaboration and Linkages

Our work in the Mekong region is undertaken in close collaboration with intergovernmental bodies—the Mekong River Commission (MRC), World Conservation Union (IUCN), the Southeast Asian Fisheries Development Commission (SEAFDEC), the Food and Agriculture Organization of the UN (FAO)—and with national institutes. We work closely with the Department of Fisheries (Cambodia and Thailand), Department of Livestock and Fisheries (Lao PDR) and the Ministry of Fisheries (Vietnam) as well as related ministries and institutes in environment, rural development, water resources, and planning. An alliance for local capacity development is underway with the Asian Institute of Technology, the World Wide Fund for Nature (WWF), and the Coastal Resources Institute (CORIN), Thailand. We also work with research institutes at Nong Lam University, Can Tho University (Vietnam), the Royal University of Phnom Penh (Cambodia), and the National University of Laos (NUOL). Nongovernmental organization partners include Oxfam America, Wetlands International, and the Fisheries Action Coalition Team.

Part of this project will be carried out as a part of the Challenge Program on Water & Food and includes joint work with IWMI and IRRI.

MTP Project Logframe – Greater Mekong Regional Project				
Outputs		Intended user	Outcome	Impact
Output 1 “Strengthening governance and institutional capacity” <i>Regional experience with alternative governance arrangements for common pool aquatic resources assessed and lessons exchanged; NARS research capacity strengthened</i>		Policy officials, government agencies with responsibility for aquatic resources and rural development, NGOs that serve rural communities	Policy and management decisions respond more effectively to the interests of poor communities reliant on aquatic resources, and government agencies and NGOs have the capacity to serve them effectively	Improved food security and increased incomes for aquatic resource-dependent communities in Cambodia, Vietnam, Lao PDR, and Thailand, and reduced livelihood vulnerability, particularly through measures that protect ecosystem sustainability
Output Targets 2006	Increased capacity and understanding of policy options within Inland Fisheries Research and Development Institute (Cambodia) delivers two policy briefs, plus one technical report each on Tonle Sap fisheries, and aquatic resources valuation	Line ministries (Agriculture, Environment, Rural Development), NGOs supporting Cambodian fishing communities, donor agencies investing in fisheries / rural food security	IFReDI is better linked to partner research institutions, more able to communicate the outcomes of its research to stakeholders, and more capable of achieving sustainable funding	

Outputs		Intended user	Outcome	Impact
2007	Collaborative case studies on aquatic resources governance and local livelihoods completed in Vietnam and Laos with five national partners	As above (output 1)	As above (output 1)	
2008	Policy priorities for supporting local livelihoods in inland and coastal systems endorsed by six national research institutes, drawing on ten case studies regionally	As above, plus regional organizations: Mekong River Commission, Southeast Asian Fisheries Development Commission (SEAFDEC)	As above (output 1)	
Output 2 “Promoting technological, institutional, and market improvements” <i>Technological and market impediments to the expansion of sustainable aquaculture practices among resource-poor households assessed and addressed with context-specific recommendations</i>		National aquatic research and extension services, private providers of aquaculture technology and support services, NGOs that promote aquaculture as a rural development option	Improvements in management approaches, technology, institutions, and markets for aquaculture and fisheries that boost productivity, improve resilience, or increase the share of benefits captured by poor households	Increased share of benefits from aquaculture accrue to poor households, contributing to improvements in early childhood nutrition and household income
Output Target 2006	Partner and donor engagement in research agenda as evidenced by funding commitment secured for new sustainable coastal livelihoods initiative developed in collaboration with three national partner agencies in Vietnam, addressing the links between aquaculture and capture fisheries	Ministry of Fisheries, provincial Integrated Coastal Zone Management authorities, local authorities, private sector, NGOs		
2007	Increased partner capacity delivered (ten national partner agencies in the region trained in use of assessment tools to select appropriate aquaculture management practices according to local social, economic, and resource conditions)	As above (output 2)	Aquaculture technology and management practices selected by small and medium scale operators generate fewer negative ecosystem impacts and more sustainable nutritional and economic benefits	
2008	Regional study identifies market impediments to scale-up and sustainability of pro-poor aquaculture in remote areas and specifies policy options for addressing these		Policy measures reduce market impediments, increasing adoption of appropriate aquaculture practices by remote communities	

	Outputs	Intended user	Outcome	Impact
	<p>Output 3 “Integrating science in resource management decisions”</p> <p><i>Decision support tools developed to predict the impact of development options on the aquatic resource base in freshwater and coastal ecosystems</i></p>	National policy officials, provincial and local authorities whose management decisions affect aquatic resource systems	Resource management in freshwater and coastal environments integrates ecosystem requirements to ensure sustainability of the resource base	Ecosystem services of rivers, floodplains, coastal and estuarine systems protected for the benefit of the rural poor
	<p>Output Target 2006</p> <p>Increase management capacity within relevant agencies. Staff of eight agencies trained in the application of floodplain management decision support tools assessing (i) the impact of hydrological and land use changes on fish production in Cambodia’s Tonle Sap Lake and (ii)⁷ the impact of water management on food production in Vietnam’s Mekong Delta (Bac Lieu Province)</p>	Mekong River Commission, National Mekong Committees, provincial and local authorities, and NGOs who support them	Agencies that influence resource management decisions better equipped to consider the ecosystem requirements for maintaining or increasing food production	
	<p>2007</p> <p>Representatives of eight national and regional agencies convene to consider the results of an analysis of impact of built structures (dams, roads, etc.) on the sustainability of fisheries in the Tonle Sap Lake</p>	Mekong River Commission, Cambodia National Mekong Committee; Ministries of water resources, infrastructure, energy, and planning; Asian Development Bank, provincial and local authorities	Decisions on infrastructure projects in the Tonle Sap basin and in the upstream Mekong Basin consistently take into account the cumulative impacts on fisheries production by minimizing or mitigating disruption to the hydrological regime	
	<p>2008</p> <p>Two-year assessment of inland fish sanctuaries in Cambodia yields recommendations for sustaining long-term fisheries productivity</p>	Ministry of Agriculture, Forests, and Fisheries; provincial and local authorities; community fishery organizations and NGOs who support them	Size, location, and management systems for freshwater sanctuaries optimized to sustain production and benefit livelihoods	

⁷ This output will be delivered as part of the Challenge Program on Water and Food

5. Sub-Saharan Africa Regional Project

Project narrative

Background

Great opportunities exist in Africa today for harnessing fisheries and aquaculture in the fight against poverty. Fish already make a vital contribution to the food and nutritional security of 200 million Africans and provides income for over 10 million mostly small-scale fishers, farmers and entrepreneurs engaged in fish production, processing and trade. In addition, fish has become a leading export commodity for Africa, with an annual export value of US\$ 2.7 bn. Yet these benefits are at risk as the exploitation of natural fish stocks is reaching limits, fisheries management and trade increasingly target global markets, and aquaculture has not yet fulfilled its potential as a major source of fish supply for the continent. As a result, per capita fish supply in sub-Saharan Africa has declined to a world-low of 6.7 kg/year, at a time when global supply is still growing. To redress these trends, key investments are needed to improve resource governance, production, markets and nutritional development. By 2020, Africa will need 27.7% more fish per year just to keep consumption at present levels—a tremendous challenge, but also an opportunity to utilise the existing human and physical resources for developing a sustainable fish economy for the continent. By seizing this opportunity there is enormous potential for investments in fisheries development to make vital contributions to meeting the MDGs in Africa. In many parts of Africa, fisheries and aquaculture offer strategic entry points for short and long-term investment opportunities to contribute to food security and improved health, women's economic empowerment, local enterprise development, market access for the poor, and improved environmental governance.

Goal

In this context the overall goal of the Center's work in sub-Saharan Africa is to assist countries of the region to achieve the Millennium Development Goals by improving fisheries and aquaculture. In pursuing this goal the Center will focus on four primary objectives:

1. sustainable aquaculture development
2. enhanced livelihoods in small-scale fisheries
3. improved food security and health benefits
4. managed implications of expanding markets and trade

Objectives

1. Sustainable aquaculture development

This objective is being pursued through generation of Output 1 (*Opportunities and constraints assessed and development options identified for increasing the up-take, productivity and sustainability of pro-poor aquaculture*). Activities are focused on the Center's two main country programs (Malawi and Cameroon) and on the countries where the learning from this work is being scaled out (Zambia and Mozambique). The approach combines strengthening understanding of the social, economic, and institutional opportunities and constraints for aquaculture development in different contexts within the region, and testing the approaches that can be used to seize these opportunities and remove these constraints. This is combined with continued research on technologies that will increase productivity and strengthen sustainability of pro-poor aquaculture.

2. Enhanced livelihoods in small-scale fisheries

This objective is being pursued through generation of Output 2 (*Governance arrangements and management processes to support sustainable small-scale fisheries identified*). Activities during this 3-year period will focus on river fisheries (Lake Chad basin, Zambezi and rainforest rivers), lakes (Lake Chilwa) and reservoirs (Nile and Volta basins). The approach is based on recognition of the importance of improved fisheries governance as a central prerequisite for improving the benefits of small-scale fisheries for the poor. This will be complemented by research on the impact of

catchment management on fisheries (Lake Chilwa) and research on the scope for ornamental fish production in rainforest rivers and options for improving fisheries production from reservoirs. The latter research will be carried out as part of the CGIAR Challenge Program on Water and Food.

3. Improved food security and health benefits

This objective is being pursued through generation of Output 3 (*Contribution of fisheries to human development goals assessed and supporting policies and processes informed*). Priority will be given to understanding and mitigating the impact of HIV/AIDS on fisheries development in the region. This reflects the emerging recognition of fishing communities as amongst the most vulnerable to HIV/AIDS and the consequent need to understand and mitigate the effects of the disease if the development potential of Africa's fisheries is to be realised. The Center's approach combines the identification of best practice models among development agents and scientists with analytical studies of HIV/AIDS vulnerability, together with adaptive technology development to meet the needs of affected households. All these activities will seek to develop strong and innovative linkages between scientists in fisheries and health sectors. Complementary research on fish and nutrition will also be developed.

4. Managed implications of expanding markets and trade

This objective is being pursued through generation of Output 4 (*Impact of expanding markets and trade on small-scale fisheries and aquaculture assessed and development options identified*). Expanding markets and trade are one of the fundamental drivers of changes in fisheries and aquaculture in the region, with as yet uncertain impacts on livelihoods and food security. The Center is consequently developing a program of research to improve understanding of these issues and build regional capacity to address them. During the next three years, activities will be centered on the fisheries of Lake Tana (Ethiopia), Lake Nasser (Egypt) and Lake Volta (Ghana) where research will assess current markets and marketing systems as well as the potential for increased market integration. This research will be expanded to a larger regional scale when the required resources are secured.

Linkages and Partnerships

These objectives will be pursued through strong and innovative partnerships at local, national and regional levels. Collaboration will continue with NARS institutions in Malawi, Zambia, Mozambique, Cameroon, Ghana, and Ethiopia, and will be expanded to new countries of operation. These include national fisheries and aquaculture research institutions as well as universities and training institutions. In addition, partnerships with NGOs in aquaculture development will be developed further to allow for a more efficient and wider spread of impact. The Center will start new collaborations with private sector enterprises, mainly in aquaculture, guided by our new global program on Public Private Partnerships in Fisheries and Aquaculture. At the regional level, the Center will build on the outcomes of the SADC regional consultation on Demand and Supply held in late 2004, and the NEPAD-Fish for All consultations held in 2005, to develop longer-term activities in partnership with the NEPAD member states and regional economic communities. In support of these programs, stronger linkages will be sought with the African Development Bank and other regional financing agencies that are increasing investment in fisheries and aquaculture.

MTP Project Logframe – Sub-Saharan Africa				
Outputs	Intended user	Outcome	Impact	
Output 1 <i>Opportunities and constraints assessed and development options identified for increasing the up-take, productivity and sustainability of pro-poor aquaculture</i>				
Output Targets 2006	1) Assessment of the role of market constraints in determining viability of aquaculture in the forest margin zones of Cameroon published and disseminated	NARS, government agencies, development assistance agencies	Aquaculture development investments targeted at areas where market conditions will support rapid uptake of aquaculture	More effective investment in aquaculture development
	2) Two improved aquaculture technologies (natural spawning of African catfish, fast growing tilapia strains) and two new practices (profitable production models; optimal harvesting strategies) developed	Farmers, NARS, CGIAR	Farmers adopt new technologies and management practices in Malawi, Zambia, Cameroon	Livelihoods of farmers improved
	3) Information base established for development of GIS based planning tools for identification of high priority areas for freshwater aquaculture development in Malawi and Cameroon	Policy makers, donors and NARS in Africa	Aquaculture development planning better informed of priority areas for investment	More effective investments in sustainable aquaculture development
	4) Assessment of the current dynamics of aquaculture development in peri-urban areas	Government agencies, NARS, development assistance agencies	Improved information base for aquaculture investments and policy development in peri-urban areas	Improved institutional environment for aquaculture development around Africa's growing cities
2007	1) Assessment of the contribution of market constraints to aquaculture development in Malawi, Zambia and Mozambique	NARS, government agencies, development assistance agencies	NARS, government agencies, development assistance agencies	Effective investment in aquaculture development in these countries
	2) Improved aquaculture technologies disseminated	NARS	Farmers adopt new technologies and management practices in Malawi, Zambia, Cameroon	Livelihoods of farmers improved
	3) GIS based planning tools developed for identification of high priority areas for freshwater aquaculture development in Malawi and Cameroon	Policy makers, donors and NARS in Africa	Aquaculture development planning better informed of priority areas for investment	More effective investments in sustainable aquaculture development
2008	1) Methodology developed for assessing the impact of market constraints on aquaculture development	NARS, development agencies	Improved understanding of current aquaculture market conditions and options for maximizing development impact	Aquaculture producers in the region better linked to expanding markets

	Outputs	Intended user	Outcome	Impact
	2) Sustainable systems and guidelines for the dissemination of aquaculture information and technology to fish farmers	Policy makers, NARS and development practitioners	Participatory technology development and transfer methods adopted	Increased rates of adoption of freshwater aquaculture increased in Malawi and Zambia
	Output 2 <i>Governance arrangements and management processes to support sustainable small-scale fisheries identified</i>			
Output Targets 2006	1) Inventory of reservoirs suitable for fisheries enhancement in Nile and Volta basins completed and report published	NARS, regional water and fisheries planners	Improved evaluation of fisheries potential in Nile and Volta basins	Improved regional (basin-wide) water management and planning
	2) Assessment of the potential for enhanced fisheries in Lake Volta and Lake Nasser completed and report published	NARS, local communities and local partners	Action plans for enhanced fisheries developed and agreed by NARS, and local fisheries stakeholders	Consensus and dialogue between local fisheries stakeholders initiated
	3) Strategies for sustaining freshwater fisheries in the changing Lake Chilwa watershed identified and report published	CGIAR, NARS and local communities	Management plans adopted at basin level	Sustainable management of watersheds for improved agricultural and fisheries productivity realized in Malawi and Mozambique
	4) Governance arrangements for river fisheries in the Lake Chad and Zambezi basins reviewed and entry points for governance improvement identified; report published	Regional and national policy makers, NARS	Fisheries governance arrangements in Lake Chad Basin and Zambezi basin better understood	The profile of small-scale fisheries raised
	5) Options for community-based management of ornamental fisheries and aquaculture in the rainforest rivers of Cameroon identified and documented	NARS; local communities and entrepreneurs; DoF	Scope and entry points for support to ornamental fisheries in rainforests better understood	Improved livelihoods of communities in African rainforests through sustainable use of aquatic resources
2007	1) Options for fisheries enhancement and improved management (including co-management) in Lake Nasser and Lake Volta initiated	NARS, local communities, CGIAR and ARIs	Action plan for enhanced fisheries options being implemented	Community capacity in resource management and local governance strengthened
	2) Options for restoring capture fisheries of Lake Malawi identified	CGIAR, NARS, ARIs	Fisheries restoration strategies adopted	Sustained fish supply and livelihood benefits from Lake Malawi fisheries
	3) Methodologies for small-scale inland fisheries valuation conceptually developed	NARS, DoF, CGIAR and ARIs	Techniques for small-scale fisheries valuation developed	The profile of small-scale fisheries raised
	4) Management options and technologies for ornamental fish production in rainforest rivers developed and documented	NARS; local communities and entrepreneurs; DoF	Technology and production systems for ornamental fish production in rainforests better understood and available for use by local communities	Improved livelihoods of communities in African rainforests through sustainable use of aquatic resources

	Outputs	Intended user	Outcome	Impact
2008	1) Improved options for fisheries enhancement and co-management in Lake Nasser and Lake Volta evaluated and adjusted through participative process	NARS, local communities, CGIAR and ARIs	Better options for fisheries enhancement developed and implemented through a co-management framework	Sustainability and economic viability of fisheries in Lake Nasser and Lake Volta improved
	2) Methodologies for small-scale inland fisheries valuation empirically tested in Lake Chad and Zambezi basins	NARS, DoF, local and national partners, CGIAR and ARIs	Techniques for small-scale fisheries valuation tested	Planners and policy makers better equipped to increase pro-poor investments in small-scale fisheries through PRSP and other integrated planning processes
	3) Development of models for assessing the potential and options for restocking of collapsed fisheries	NARS, ARIs, CGIAR	Improved capacity amongst scientists and planners to assess potential and options for restocking	Improved capacity amongst scientists and planners to assess potential and options for restocking
	4) Methods developed and tested for assessing ecological and socio-economic impact of ornamental fish production in rainforest rivers	NARS; local communities and entrepreneurs; DoF	Impact and sustainability of ornamental fish production in rainforests better understood	Improved planning of aquaculture development for vulnerable groups
Output 3 <i>Contribution of fisheries to human development goals assessed and supporting policies and processes informed</i>				
Output targets 2006	1) Contribution of small scale aquaculture to HIV/AIDS mitigation quantified and report published and disseminated	NARS, local communities, CGIAR	Role of small-scale aquaculture in mitigating HIV/AIDS impacts better understood	Improved planning of aquaculture development for vulnerable groups
	2) Platform for discussion and consensus building amongst fishery stakeholders in the Kafue Flats, Zambia established	DoF and local communities (in particular women)	Locally designed regulations and by-laws addressing health and sanitation issues discussed	Fisheries stakeholders better informed to address health and sanitary conditions in fishing camps
	3) Best practice models for HIV/AIDS support to fishing communities identified and disseminated and additional research needs assessed	NGOs, government institutions, science providers in health and fisheries development	More effective health and socio-economic development support to fishing communities affected by HIV/AIDS	Increased capacity of fishing communities to manage the impact of HIV/AIDS
2007	1) Factors underlying HIV/AIDS vulnerability in fishery sector assessed	NGOs, fishing communities, fisheries departments, donors	Improved understanding of socio-economic factors of HIV/AIDS vulnerability in the sector	Improved capacity among fisheries stakeholders to manage impact of HIV/AIDS in the sector
2008	1) Options for reducing risk and impact of HIV/AIDS through economic investments in the fishery sector identified	NGOs, fishing communities, private sector, fisheries departments, donors	Set of investment options in key economic areas affecting HIV/AIDS vulnerability of fishing communities available	Improved capacity among fisheries stakeholders to manage impact of HIV/AIDS in the sector

Outputs	Intended user	Outcome	Impact	
Output 4 <i>Impact of expanding markets and trade on small-scale fisheries and aquaculture assessed and development options identified</i>				
Output targets 2006	1) Local and regional fish marketing system on Lake Tana, Ethiopia assessed and report published	Government institutions, NARS	Improved information base for future investments in Lake Tana fisheries	More effective investments in rural economy in Amhara region
2007	1) Current and potential markets for fish products from Lake Nasser and Lake Volta assessed	Local communities	Improved knowledge base on markets for local and regional investments	Improved commercial options for local communities

6. West Asia and North Africa Regional Project

Project narrative

Background

The shallow seas and major river systems of West Asia and North Africa (WANA) support important fisheries that play a locally (and in some cases nationally) important role in providing employment, income and food. In addition, Egypt has emerged as Africa's leading aquaculture producer and now ranks 12th in the world. Despite the importance of these resources there is growing regional concern as to how the rising demand for fish can be met and how the future management of fisheries and aquaculture can bring benefits to a wider range of beneficiaries, notably poor urban and rural families.

Goal

In this context the overall goal of the Center's work in West Asia and North Africa is to assist countries of the region to develop sustainable and equitable aquaculture. In doing so the Center will help build regional capacity, develop appropriate technologies and share learning with other regions.

Objectives

1. To support the development of sustainable aquaculture

This objective is being pursued through generation of Output 1 (*Constraints and opportunities for sustainable aquaculture in Egypt identified and regional lessons distilled*). Activities are focused on Egypt as the leading aquaculture producer and the country where the greatest opportunities exist to harness regionally relevant lessons through the identification of existing and emerging constraints and opportunities. A strong regional network, including participation in (and convening of) regional workshops, facilitates analysis of regional implications.

2. To develop technologies that can support sustainable aquaculture

This objective is being pursued through generation of Output 2 (*Technologies to remove constraints identified and disseminated within Egypt and the region*). This work builds on several years of research on aquaculture production technologies, but is targeted at addressing new constraints that farmers are encountering as aquaculture production increases, markets become more competitive, costs increase, and legislation changes. The focus is on diversifying technologies in order to be able to access a greater diversity of markets, and reduce costs.

3. To harness learning from the regional experience in aquaculture and communicate this through regional (and multi-regional) training courses

This objective will be achieved through Output 3 (*Results of research communicated through regionally targeted training and capacity building*). This will build on a substantial track record in

MTP Project Logframe – West Asia and North Africa				
Outputs		Intended user	Outcome	Impact
Output 1 <i>Constraints and opportunities for sustainable aquaculture in Egypt identified and regional lessons distilled</i>				
Output Targets 2006	1) Assessment of the current constraints to aquaculture development in Egypt	NARS, government agencies, private sector	Aquaculture development investments targeted at opportunities for sustainable aquaculture	More effective investment in aquaculture development and sustained contribution to employment and food security
	2) Analysis of tilapia and other fish demand in Egypt and its link to the international fish economy	NARS, private sector, government agencies	Fish demand and supply trends in Egypt better understood and lessons distilled for investment and policy	Improved investment planning by private and public sector in market oriented aquaculture
2007	Assessment of evolving local, national and regional market opportunities for aquaculture production	NARS, government agencies, private sector	Aquaculture investments targeted at viable market opportunities	Economically sustainable aquaculture
2008	Identification of future trends that will impact sustainability of aquaculture	NARS, government agencies, private sector	Long-term investment strategy for aquaculture	Sustainable aquaculture, and long-term benefits for employment and food security
Output 2 <i>Technologies to remove constraints identified and disseminated within Egypt and the region</i>				
Output Targets 2006	Two improved aquaculture technologies (natural spawning of African catfish, fast growing tilapia strains) and two new practices (low cost feeds; optimal harvesting strategies) developed	NARS, private sector	Farmers adopt new technologies and management practices	Livelihoods of farmers improved; food security enhanced
2	Improved aquaculture technologies disseminated in Egypt and Jordan; new practices refined	As above	As above	As above
2008	One new technology (faster growing strains of African catfish) developed; one new practice developed and others refined	As above	As above	As above
Output 3 <i>Results of research communicated through regionally targeted training and capacity building (including both WANA and SSA)</i>				
Output Targets 2006	Four regional (or multi-regional) training courses (2 WANA; 2 SSA); Two national courses; Total of 50 trainees	NARS	Improved adoption of aquaculture management practices across the region	Sustainable aquaculture in WANA and SSA

	Outputs	Intended user	Outcome	Impact
2007	Four regional (or multi-regional) training courses (2 WANA; 2 SSA); Two national courses; Total of 50 trainees	NARS	As above	As above
2008	Four regional (or multi-regional) training courses (2 WANA; 2 SSA); Two national courses; Total of 50 trainees	NARS	As above	As above

training and capacity building developed over the course of the past 4 years. The regional dimension of these training courses will increase and the number of longer term training activities (such as in-service training) will also be increased. These courses will reflect the results of learning from the dynamic and technological evolution in aquaculture development in Egypt, from the wider region and also from other regions and global research projects. Contributions to training courses from ARIs, and PhD training arrangements, will be developed.

Linkages and Partnerships

The work described here is focused on the development of strong partnerships at multiple levels. In Egypt this is rooted in collaboration with government institutes and universities, but is developing particularly strongly with the private sector that is leading the development of innovations in aquaculture. Collaboration is also strong with regional bodies such as AOAD and FAO. At a wider regional level strong links are being developed with NEPAD which has encouraged transfer of the lessons from Egyptian aquaculture as a means of fostering aquaculture development in sub-Saharan Africa. Partnerships are also being fostered with ARIs, in particular for provision of high-level expertise in genetics, fish health, and economics, and for development of PhD training opportunities.

7. Natural Resources Management Global Project

Project narrative

Background

Fishing is the largest extractive use of wildlife in the world. In 2002, global production of fish, crustaceans and molluscs reached 134 million tonnes. Approximately 75% of that amount was used for direct human consumption. But demand is exceeding supply, and this is a growing problem: 76% of fish production came from stocks that are now depleted, over-fished or fully exploited. In the future, many of these stressed fish stocks will not be able to produce even their current catch, let alone cater to the expected increase in demand.

There is growing recognition that sustainable fisheries production can only be achieved through an ecosystem based approach. Natural resources management at the ecosystem level is crucial to the effective long-term sustainability of fisheries and aquaculture. Currently sustainable fisheries production is at risk due to problems of over-fishing and destructive fishing. Pollution, diseases and species introductions associated with aquaculture place sustainable productivity of this sector in jeopardy, and may also impact the productivity and health of adjacent systems.

The Natural Resources Management global project carries out collaborative, multi-disciplinary work which ensures improvements in fisheries and aquaculture production are sustainable in the long-term and which conserves and restores ecosystems that support or are affected by this production.

A major impediment to effective conservation of aquatic biodiversity is the availability of information on species and ecosystem status, which is relevant to managers of fisheries and aquaculture. This issue is the current area of focus for the 2006-2008 MTP. However during the next year a plan will be developed to address other key issues associated with fisheries and natural resources management. This plan will be developed in association with the major global campaigns discussed above, particularly the campaign on Sustainable Fisheries Livelihoods.

Goal

The current goal of this project is to assist developing countries implement programs to conserve and manage aquatic resources by developing and improving the use of scientific tools and methods and by ensuring that critical existing information and knowledge are made readily available to policy makers and resource managers.

Objectives

The objectives of this project are to:

1. Provide comprehensive information on the existing biodiversity assets and values relating to fisheries and key habitats.
2. Develop knowledge management and decision support tools to enhance the ability of aquatic resource managers and users to achieve improved and sustainable levels of productivity.
3. To build the capacity of aquatic resource managers to make better use of existing knowledge when developing management practices and policies related to fisheries and the management of coral reef ecosystems.

This project is supported by two global information systems created and run by the Center: FishBase—a database of over 25,000 species of fish and their habitats; and ReefBase a global information system on the status, threats and management of coral reefs and associated ecosystems in over 100 countries and territories. FishBase will evolve from a global biodiversity database focused on taxonomy and biology to resources management and biodiversity conservation supporting decision-making for country-specific management applications. The project will also develop countermeasures to threats to aquatic diversity based on information collected on species biology, habitat requirements and genetics. ReefBase will develop comprehensive information pages on critical management issues such as climate change, over-fishing and livelihood options targeted at policy makers and resource managers.

Linkages and Partnerships

This project relies on strong partnerships with NARS and advanced research institutions. Much of the base information for coral reefs and fish is obtained from the records of museums, universities, government agencies and research institutions and NGOs. There are also strong links with these and other agencies in the design and operation of the information systems to ensure that they are focused on the information needs of target users and beneficiaries.

MTP Logframe: Natural Resources Management Global Project				
Outputs		Intended user	Outcome	Impact
Output 1 <i>New and enhanced FishBase tools and information for fisheries and aquaculture managers in developing countries</i>		Fisheries researchers, managers and extension workers in government departments, research agencies, NGOs in developing countries	Fisheries managers and researchers use FishBase to obtain information which contributes to more effective decision making and fisheries & aquaculture policies	Fisheries and aquaculture are more productive and efficient, while also being ecologically sustainable
Output Targets 2006	Tools for monitoring trophic changes in capture fisheries and aquaculture developed and disseminated	as above	as above	as above
	"Key Facts" software developed for species introductions and Species-Ecology Matrix			
Output Targets 2007	Broadened scope of FishBase from taxonomy and biology to resources management and biodiversity conservation	as above	as above	as above
Output Targets 2008	A range of information products targeted to NARS and management bodies in developing countries developed	as above	as above	as above
Output 2 <i>Additional content and interfaces which improve accessibility and relevance of FishBase to fisheries personnel in developing countries</i>		Fisheries researchers and managers and extension workers in government departments, research agencies NGOs in developing countries	There is an increase in the proportion of managers, researchers and other fisheries stakeholders in developing countries using FishBase	Developing country fisheries increase their commitment to and implementation of more effective management practices and policies
Output Targets 2006	Translation of key FishBase pages and descriptors into at least three Asian languages	as above	as above	as above
	User needs surveys of FishBase in at least four countries (three of these in ACP countries)			
	FishBase content and tools linked to partner web-sites through web services in Asia and ACP			
2007	Increased Asian and ACP inputs into FishBase through country-defined submissions and data	as above	as above	as above
2008	Enhanced availability of comprehensive information on all species in FishBase through the development of software interfaces to national reference collections and increased access to FishBase from national Web sites	as above	as above	as above

Outputs		Intended user	Outcome	Impact
Output 3 <i>A comprehensive knowledgebase and information system on the status, threats and management of coral reef ecosystems and their resources</i>		Coral reef managers, policy makers, researchers, NGOs and other stakeholders	Policies and management practices for use and management of coral reefs are based on information derived from ReefBase	Overexploited coral reef resources are restored to sustainable use levels, and the livelihoods of dependent communities are improved as a result
Output Targets 2006	ReefBase tables are updated to include all information from the 2004 "Status of Coral Reefs of the World" and all national and regional status reports	as above	as above	as above
	ReefBase is updated with socio-economic information from the GCRMN SocMon program and a socioeconomic "portal" is created within the ReefBase website			
	A coral reef fisheries "portal" is created within the ReefBase website with key information for managers			
2007	A set of spatial analysis tools is developed for ReefBase which enables users to explore the relationship of key status, threat and management indicators	as above	as above	as above
2008	ReefBase is updated with a new analysis of "Reefs at Risk" at the global level			
	All GCRMN monitoring data is stored on ReefBase and is available for display, analysis and downloading from the website	as above	as above	as above
Output 4 <i>Training and capacity building are provided to key stakeholder in Asia and the Pacific in order to improve the capacity of reef managers and researchers to manage, analyze and interpret existing coral reef data and information</i>		Coral reef managers, researchers and NGOs in Asia and the western Pacific	Key stakeholders make better use of existing data and information from their region within status reports, management plans and policy briefs	Reefs in the Asian and Pacific regions are more effectively managed due to the enhanced capacity of managers
Output Target 2006	A regional node of the ReefBase information system is established in the Pacific (Noumea) and regional stakeholders are actively providing information	as above	as above	as above
	A regional node of the ReefBase information system is established in the Pacific (Noumea) and regional stakeholders are actively providing information			
2007	A dedicated CD ROM on coral reefs of the Pacific is produced	as above	as above	as above
2008	A dedicated CD ROM on coral reefs of the Pacific is produced	as above	as above	as above

C. Finance Plan

1. 2004 Results and 2005 Development

The 2004 expenditure level was US\$ 14.80 million of gross expenditures and US\$ 14.01 million net of recovery of indirect cost. About 84% of 2004 resources were utilized for programmatic activities. The WorldFish Center (ICLARM) ended the year with a surplus of US\$ 1.02 million.

The 2004 grant income from donors amounted to US\$ 14.15 million in addition to US\$ 0.88 million of earned income. The addition in Center income is due to more funded projects acquired during the year. Recovery of indirect costs from funded projects amounted to US\$ 0.79 million.

Grant income for 2005 is projected at US\$ 15.49 million in addition to US\$ 0.29 million in earned income. The earned income is projected to decline sharply due to the decline in global interest rates.

The 2005 expenditures are estimated at US\$ 15.78 million compared to actual spending of US\$ 14.01 million for 2004. The increase is mostly in project funding.

Resource allocation to programs for 2005 is projected to be around 81% of the total resource available:

Table 1: Comparison of 2004* performance and 2005 current estimate

	2004 Actual* (US\$ million)	2005 Estimate (US\$ million)
Sources of Funds		
Donor Funding	14.15	15.49
Earned Income	0.88	0.29
Total	15.03	15.78
Application of Funds		
Programmatic	11.82	12.99
Management and General Expenses	2.73	3.47
Depreciation	0.25	0.42
Less: Overhead Recoveries	(0.79)	(1.10)
Net Expenditures	14.01	15.78
Unexpended Balance	1.02	0.00

* Targeted project funding which follows the matching principle was under-spent by approximately US\$ 0.77 million in 2004. Actual targeted grant income for the year (2004) was substantially higher.

The 2004 spending and 2005 current planned resource allocation by CGIAR activity are summarized below:

Table 2: Actual and planned resources allocation by CGIAR activity for 2004 and 2005

	US\$ (million)		
	2004 Actual	2005	
		Estimate	%
Increasing Productivity	4.88	6.35	40
Protecting the Environment	1.11	1.22	8
Saving Biodiversity	0.47	0.41	3
Improving Policies	2.93	3.24	20
Strengthening NARS	4.62	4.56	29
Total	14.01	15.78	100

For the 2005 resources, 40% are allocated to increasing productivity, 29% to strengthening NARS, 20% to improving policies, 8% protecting the environment and 3% to saving biodiversity.

Table 3: Allocation of resources by outputs (Logical Framework Format) US\$ (million)

	US\$ (million)		
	2004 Actual	2005	
		Estimate	%
Germplasm Improvement	1.05	1.98	13
Germplasm Collection	0.47	0.41	3
Sustainable Production	4.94	5.59	35
Policy	2.93	3.24	20
Enhancing NARS	4.62	4.56	29
Total	14.01	15.78	100

1.1 Funding Trends

With continued efforts in fund raising and the harnessing of greater public awareness on the importance of aquatic resources management amongst its community of donors and partners, the Center has consistently increased its share of resources within the CGIAR System since 1994. Funding has increased, in nominal terms, from US\$ 9.60 million in 1996 to US\$ 15.49 million in 2005 (expected), an increase during the period of over 61%.

Actual inflation in 2004 was around 1.3% and is forecasted to be between 1.9-3.0% in 2005-2006. The Center will monitor actual inflation and assess its impact on the purchasing power of the budget.

Inflation on the US dollar expenditures is expected to be around 2.0-3.0% for 2005-2006.

1.2 Depreciation of Fixed Assets

The actual depreciation of existing WorldFish Center fixed assets for 2004 was US\$ 0.25 million as against US\$ 0.19 million in 2003. Most of the Center assets were recently purchased, and no investments were made in large equipment items except those for the laboratories. The value of buildings and other immovable assets are recorded (memo entry) and monitored separately.

1.3 Capital Fund

The purpose of the Capital Fund is to finance all Center core capital requirements. The balance of the Capital Fund to 31 December 2004 was US\$ 1.46 million, appropriated by the Board of Trustee for fixed assets renewal.

1.4 Working Capital (Days)

The working capital as of 31 December 2004 can support operations for 272 days compared to CGIAR norm of 120 days of operations.

1.5 Liquidity

The Center's liquidity continues to improve.

The Center is continuing its efforts to improve its liquidity position to absorb minor unexpected shocks and possible cash shortages. The Center is focusing attention on refining the cash flow by programming operating and capital expenditures to improve overall liquidity and spending patterns.

Table 4: Liquidity ratio analysis

	2003	2004	2005 Projected
Current Ratio (times)	2.12	2.30	2.70
Quick Ratio (times)	2.12	2.30	2.70
Cash to Current Assets (%)	67	77	76
Cash to Current Liabilities (%)	142	177	206

1.6 Equity: Longer term management of resources

Minimum equity (net assets less fixed assets) of 25% to cover three months of operations is required for research operations as determined by the CGIAR. The Center equity for 2004 was at 76% or 9.1 months of operations compared to the System proposed standard of 25% or 3 months of operations.

2. 2006 – 2008 Plans**2.1 Funding Requirements and Financing Plans**

The funding level for the first year of the MTP 2006–2008 was based on a carefully projected core and project funding. In 2005 the level of funding is slightly higher due to the inclusion of carry-over project unexpended funds from 2004 and the Center expects more new projects to materialize in the year.

The expected level of donor funding for 2005 is projected at US\$ 15.49 million, in addition to earned income of US\$ 0.29 million and indirect cost recoveries from funded projects of US\$ 1.10 million. The Center's projected operating levels (net of indirect cost recoveries) for 2005 to 2008 are:

Table 5: ICLARM – The WorldFish Center Operating Levels

	US\$ (million)			
	2005	2006	2007	2008
Projected Donor Funding	15.49	15.13	16.34	17.81

A combined growth and inflation rate of 8.0% and 9.0% was incorporated into the plans for the years 2007 and 2008 respectively, which is a conservative growth rate considering the Center's historical annual funding increase since 1992.

Earned income: Earned income is expected to be at the level of US\$ 0.29 million for the duration of the plan. The decrease is due to the sharp drop in global interest rates. Improvements in interest rates are not expected to come soon.

Indirect Cost Recovery: Indirect cost recovery is a critical component for financing the Center's non-research activities and operations that are essential and critical support services to research. The Center has embarked on a full cost recovery system similar to the private sector which will be tested in 2006. The Center's indirect cost recovery is expected to be around US\$ 1.10 million for 2005. Indirect cost recovery is still well below the full costs of targeted research projects.

2.2 Operating Budget 2006–2008

The research activities and allocation of resources were determined by an in-depth review of WorldFish Center discipline and research projects at special program retreats, and a Center-wide review by Board and management was conducted. The seven portfolios were allocated over 78% of total resources consistent with the Center's priorities and strategies. The allocation of funds to

the projects, sources of funding, and linkage with the CGIAR research agenda within the newly adopted log frames are reflected in the main budget tables.

Allocation of resources by object of expenditures (cost structure): The WorldFish Center carefully monitors the cost structure of operations to ensure that fixed costs are kept within a reasonable proportion of the annual budget. Approximately 37-51% of the resources are allocated to personnel costs for the years 2004–2007 (Budget Table 6).

Allocation of resources by CGIAR undertaking: The allocation of resources to CGIAR undertakings is in accordance with the Center's research directions and consistent with CGIAR strategies and priorities (Budget Table 2).

Allocation of resources by region: Approximately 70% of resources are allocated to Asia, 11% to sub-Saharan Africa, 1% to Latin America and the Caribbean and 18% to West Asia and North Africa (Budget Table 5).

Personnel input: Center-hired Internationally Recruited staff (IRS) level is estimated at around 39 positions including post-doctoral fellows and visiting scientists. Additional positions are planned subject to funding availability in 2006 and beyond (Budget Table 9).

Regionally Recruited Staff (RRS) level is approximately 9 positions. The RRS represents the Philippine senior national staff relocated to the new Penang headquarters in February 2000 and a few other positions at other regional research sites.

Nationally Recruited Staff (NRS) overall level will reach around 270 in 2006 for all Center sites.

2.3 Capital Budget

The major capital requirements have been met. An expansion of the conference and meeting facilities was completed in 2003; this has increased meetings and workshops with national system scientists and partner institutions. The Center will be budgeting modest amounts for laboratory and research equipment purchases as follows.

Table 6: ICLARM – The WorldFish Center capital requirements 2006–2008, US\$ (thousands)

Capital Needs (US\$ K)	2006	2007	2008
		200	225

2.4 Financial Ratios

Management has been putting special efforts into improving and sustaining the liquidity position of the Center. The liquidity position of The WorldFish Center has been improving over the years as discussed earlier.

2.5 Inflation and Exchange Rates

Combined annual weighted inflation in developed countries is projected to be around 2.5-3.5% while local inflation is estimated to fluctuate between 2.0-3.0% during the plan period. The RM (Malaysian Ringgit) was fixed at an exchange rate of RM 3.80 to 1 US\$ on September 2, 1998. This fixed exchange rate lasted until 21 July 2005 when it was abandoned in favor of a managed floating system. The Ringgit is now allowed to float against a basket of currencies and monitored by the central bank of Malaysia. Since its floatation the Ringgit has appreciated and its exchange rate to the dollar was 3.72 on February 21, 2006. The impact on the budget of the managed floatation is being assessed.

The US dollar had declined slightly against other major currencies, which has resulted in a positive impact on non-US dollar denominated contributions for 2005 (to June 2005).

2.6 Financing Plan 2006

The confirmed and high probability funding for financing the Center operations in 2006 amounts to US\$ 15.13 million. Included in this amount is US\$ 1.0 million from the World Bank.

The projected core funding amounts to US\$ 6.50 million and project funding is projected at the level of US\$ 8.63 million. Core funding of the Center increased to 42% of total funding level in 2005.

The Center earned income for 2006 is projected at US\$ 0.20 million, substantially lower than previous years due to the sharp drop in the global interest rates.

2.7 Summary of Financing Plan

The resource requirements over the plan period are based on the 2005 Budget level and the best estimate of resources for 2006 which is the basis for this plan period. The plan is increased by a combined annual growth and inflation rate of 8% and 9% for years 2007 and 2008 respectively.

Table 7a provides details of the funding and donor support for the 2006 agenda.

Financing for the 2006 Plan

	<u>US\$ (M)</u>	<u>%</u>
Core support	6.50	42
Targeted /restricted Funding	<u>8.63</u>	<u>56</u>
Subtotal	15.13	98
Center earned income	<u>0.20</u>	<u>2</u>
Total revenue	15.33	100
Surplus in operations	<u>(0.00)</u>	<u>(0)</u>
Expenditure in 2005	<u>15.33</u>	<u>100</u>

D. Financial Tables for 2006 – 2008

- Table 1. WorldFish Center – 2006 Research Agenda Requirements by CGIAR Output
- Table 2. WorldFish Center Research Agenda – Allocation of Resources, 2004–2008
- Table 3. WorldFish Center Research Agenda Project and Output Cost Summary, 2004–2008
- Table 4. WorldFish Center Allocation of Project Costs to CGIAR Activities, 2004–2008
- Table 5. WorldFish Center Research Agenda, 2004–2008; Investment by Sector, Commodity and Region
- Table 6. WorldFish Center Research Agenda, 2004–2008; Expenditure by Object of Expenditures, Capital Investments and Capital Fund
- Table 7. WorldFish Center Research Agenda Financing Summary, 2004–2005
- Table 7a. WorldFish Center Research Agenda Financing Summary, 2005–2006
- Table 8a. WorldFish Center Allocation of Member Financing to Projects by Output for the Year 2004
- Table 8b. WorldFish Center Allocation of Member Financing to Projects by Output for the Year 2005
- Table 8c. WorldFish Center Allocation of Member Financing to Projects by Output for the Year 2006
- Table 9. WorldFish Center Research Agenda Staff Composition, 2004–2008
- Table 10. WorldFish Center – Financial Position: Statement of Cash Flows, 2004 and 2005
- Table 11. WorldFish Center Statement of Financial Position, 2004 to 2008

Table 1. WORLD FISH CENTER - 2006 RESEARCH AGENDA REQUIREMENTS BY CGIAR OUTPUT
(expenditure in US \$ million)

MTP Projects		Germplasm Improvement	Germplasm Collection	Sustainable Production	Policy	Enhancing NARS	PROJECT TOTALS
001.	Pacific			1.46	0.20	0.30	1.96
002.	East and South east Asia	0.89	0.15	0.89	0.59	0.45	2.97
003.	Greater Mekong		0.09	0.69	0.69	0.26	1.73
004.	South Asia			0.89	0.59	1.49	2.97
005.	Sub Saharan Africa	0.14		1.50	0.82	0.26	2.72
006.	West and Central Africa	0.95		0.38	0.28	0.28	1.89
007.	Global Biodiversity Conservation		0.16	0.16	0.22	0.55	1.09
OUTPUT TOTALS		1.98	0.40	5.97	3.39	3.59	15.33

Table 2. WORLD FISH CENTER RESEARCH AGENDA - ALLOCATION OF RESOURCES, 2004 to 2008
(expenditure in US \$ million)

**Allocation of Resources by Outputs
Logical Framework Format**

Outputs:

Germplasm Improvement

(Activity: Germplasm Enhancement & Breeding, plus Networks as appropriate)

Germplasm Collection

(Activity: Saving Biodiversity, plus Networks as appropriate)

Sustainable Production

(Activity: Production Systems Dev & Mgmt, Protecting the Environment, plus Networks as appropriate)

Policy

(Activity: Improving Policies, plus Networks as appropriate)

Enhancing NARS

(Activity: Strengthening NARS - the three sub-activities, plus Networks as appropriate)

TOTAL

	2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
Germplasm Improvement	1.05	1.98	1.98	2.12	2.32
Germplasm Collection	0.47	0.41	0.40	0.44	0.47
Sustainable Production	4.94	5.59	5.97	6.47	7.05
Policy	2.93	3.24	3.39	3.67	4.00
Enhancing NARS	4.62	4.56	3.59	3.87	4.22
TOTAL	14.01	15.78	15.33	16.57	18.06

**Allocation of Resources by CGIAR
Activity**

Increasing Productivity

of which:

Germplasm Enhancement & Breeding

Production Systems Development & Management

Protecting the Environment

Saving Biodiversity

Improving Policies

Strengthening NARS

of which:

Training and Professional Development

Documentation, Publications, Info. Dissemination

Organization & Management Counselling

Networks

TOTAL

	2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
Increasing Productivity	4.88	6.35	6.75	7.29	7.96
<i>of which:</i>					
Germplasm Enhancement & Breeding	1.05	1.98	1.98	2.12	2.32
Production Systems Development & Management	3.83	4.37	4.77	5.17	5.64
Protecting the Environment	1.11	1.22	1.20	1.30	1.41
Saving Biodiversity	0.47	0.41	0.40	0.44	0.47
Improving Policies	2.93	3.24	3.39	3.67	4.00
Strengthening NARS	4.62	4.56	3.59	3.87	4.22
<i>of which:</i>					
Training and Professional Development	1.43	1.18	1.05	1.15	1.24
Documentation, Publications, Info. Dissemination	0.39	0.26	0.22	0.23	0.26
Organization & Management Counselling					
Networks	2.80	3.12	2.32	2.49	2.72
TOTAL	14.01	15.78	15.33	16.57	18.06

Table 3. WORLDFISH CENTER RESEARCH AGENDA PROJECT & OUTPUT COST SUMMARY, 2004 to 2008
(in US \$ million)

	2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
001. Pacific	1.05	1.94	1.96	2.12	2.31
002. East and Southeast Asia	1.55	2.78	2.97	3.21	3.50
003. Greater Mekong	1.80	1.45	1.73	1.87	2.04
004. South Asia	4.48	5.13	2.97	3.21	3.50
005. Sub Saharan Africa	1.04	0.98	2.72	2.94	3.20
006. West and Central Africa	2.11	2.19	1.89	2.04	2.22
007. Global Biodiversity Conservation	1.98	1.31	1.09	1.18	1.29
Total	14.01	15.78	15.33	16.57	18.06

Summary by CGIAR Output:

	2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
Germplasm Improvement	1.05	1.98	1.98	2.12	2.32
Germplasm Collection	0.47	0.41	0.40	0.44	0.47
Sustainable Production	4.94	5.59	5.97	6.47	7.05
Policy	2.93	3.24	3.39	3.67	4.00
Enhancing NARS	4.62	4.56	3.59	3.87	4.22
Total	14.01	15.78	15.33	16.57	18.06

Institutional Cost Components:

	2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
Direct Project Costs	14.80	16.88	16.43	17.75	19.34
Indirect Project Costs (Overhead)	(0.79)	(1.10)	(1.10)	(1.18)	(1.28)
Total Project Costs					
Total	14.01	15.78	15.33	16.57	18.06

Table 4. WORLD FISH CENTER ALLOCATION OF PROJECT COSTS TO CGIAR ACTIVITIES, 2004 TO 2008
(in US \$ million)

Project	Activity	2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
001. Pacific	Production Systems	0.53	0.97	0.97	1.06	1.15
	Protecting the Environment	0.26	0.49	0.49	0.53	0.58
	Improving Policies	0.10	0.19	0.20	0.21	0.23
	Strengthening NARS-Training	0.05	0.10	0.10	0.11	0.12
	Strengthening NARS-Networks	0.11	0.19	0.20	0.21	0.23
		1.05	1.94	1.96	2.12	2.31
002. East and South East Asia	Production Systems	0.47	0.83	0.89	0.96	1.05
	Enhancement and Breeding	0.47	0.83	0.89	0.96	1.05
	Improving Policies	0.30	0.56	0.59	0.64	0.70
	Saving Biodiversity	0.08	0.14	0.15	0.17	0.18
	Strengthening NARS-Training	0.08	0.14	0.15	0.16	0.17
	Strengthening NARS-Networks	0.15	0.28	0.30	0.32	0.35
	1.55	2.78	2.97	3.21	3.50	
003. Greater Mekong	Production Systems	0.45	0.36	0.43	0.47	0.51
	Improving Policies	0.72	0.58	0.69	0.75	0.82
	Saving Biodiversity	0.09	0.07	0.09	0.09	0.10
	Protecting the Environment	0.27	0.22	0.26	0.28	0.31
	Strengthening NARS-Training	0.18	0.15	0.17	0.19	0.20
	Strengthening NARS-Networks	0.09	0.07	0.09	0.09	0.10
	1.80	1.45	1.73	1.87	2.04	
004. South Asia	Production Systems	1.12	1.28	0.74	0.80	0.88
	Improving Policies	0.90	1.03	0.59	0.65	0.70
	Protecting the Environment	0.22	0.26	0.15	0.16	0.17
	Strengthening NARS-Training	0.45	0.51	0.30	0.32	0.35
	Strengthening NARS-Networks	1.79	2.05	1.19	1.28	1.40
		4.48	5.13	2.97	3.21	3.50
005. Sub Saharan Africa	Production Systems	0.52	0.49	1.36	1.47	1.60
	Improving Policies	0.31	0.29	0.82	0.88	0.96
	Protecting the Environment	0.06	0.05	0.14	0.15	0.16
	Enhancement and Breeding	0.05	0.05	0.14	0.14	0.16
	Strengthening NARS - Training	0.05	0.05	0.13	0.15	0.16
	Strengthening NARS - Networks	0.05	0.05	0.13	0.15	0.16
	1.04	0.98	2.72	2.94	3.20	
006. West Asia and North Africa	Production Systems	0.74	0.44	0.38	0.41	0.45
	Improving Policies	0.21	0.33	0.28	0.31	0.33
	Enhancement and Breeding	0.53	1.10	0.95	1.02	1.11
	Strengthening NARS - Training	0.42	0.10	0.09	0.10	0.11
	Strengthening NARS - Networks	0.21	0.22	0.19	0.20	0.22
		2.11	2.19	1.89	2.04	2.22
007. Global Biodiversity Conservation	Improving Policies	0.39	0.26	0.22	0.23	0.26
	Saving Biodiversity	0.30	0.20	0.16	0.18	0.19
	Protecting the Environment	0.30	0.20	0.16	0.18	0.19
	Strengthening NARS - Information	0.39	0.26	0.22	0.23	0.26
	Strengthening NARS - Training	0.20	0.13	0.11	0.12	0.13
	Strengthening NARS - Networks	0.40	0.26	0.22	0.24	0.26
	1.98	1.31	1.09	1.18	1.29	
Total		14.01	15.78	15.33	16.57	18.06
Summary by Undertaking:						
		2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
	Increasing Productivity	4.88	6.35	6.75	7.29	7.96
	Protecting the Environment	1.11	1.22	1.20	1.30	1.41
	Saving Biodiversity	0.47	0.41	0.40	0.44	0.47
	Improving Policies	2.93	3.24	3.39	3.67	4.00
	Strengthening NARS	4.62	4.56	3.59	3.87	4.22
	Total	14.01	15.78	15.33	16.57	18.06
Summary by Output:						
		2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
	Germplasm Improvement	1.05	1.98	1.98	2.12	2.32
	Germplasm Collection	0.47	0.41	0.40	0.44	0.47
	Sustainable Production	4.94	5.59	5.97	6.47	7.05
	Policy	2.93	3.24	3.39	3.67	4.00
	Enhancing NARS	4.62	4.56	3.59	3.87	4.22
	Total	14.01	15.78	15.33	16.57	18.06

Table 5. WORLD FISH CENTER RESEARCH AGENDA, 2004 to 2008
Investments by Sector, Commodity, and Region (in US \$ million)

PRODUCTION SECTORS & COMMODITIES	2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
1/ <u>Germplasm Improvement</u>					
Crops					
Commodity A					
Commodity B					
Commodity C					
Commodity D					
Livestock					
Trees					
Fish	1.05	1.98	1.98	2.12	2.32
TOTAL	1.05	1.98	1.98	2.12	2.32
2/ <u>Sustainable Production</u>					
Crops					
Commodity A					
Commodity B					
Commodity C					
Commodity D					
Livestock					
Trees					
Fish	4.94	5.59	5.97	6.47	7.05
TOTAL	4.94	5.59	5.97	6.47	7.05
3/ <u>Total Research Agenda</u>					
Crops					
Commodity A					
Commodity B					
Commodity C					
Commodity D					
Livestock					
Trees					
Fish	14.01	15.78	15.33	16.57	18.06
TOTAL	14.01	15.78	15.33	16.57	18.06
REGION	2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
Sub-Saharan Africa (SSA)	1.54	1.31	2.99	3.23	3.52
Asia	9.87	11.96	10.18	11.00	11.99
Latin American and the Caribbean (LAC)	0.06	0.04	0.03	0.04	0.04
West Asia and North Africa (WANA)	2.54	2.47	2.13	2.30	2.51
TOTAL	14.01	15.78	15.33	16.57	18.06

Table 6. WORLD FISH CENTER RESEARCH AGENDA, 2004 - 2008
Expenditure by Object of Expenditures, Capital Investments and Capital Fund (in US \$ million)

OBJECT OF EXPENDITURE	2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
Personnel	6.46	7.21	7.00	7.57	8.25
Supplies and Services	3.44	3.84	3.73	4.03	4.39
Collaborators/Partnerships Costs	2.49	2.78	2.70	2.92	3.18
Operational Travel	1.37	1.53	1.49	1.61	1.76
Depreciation	0.25	0.42	0.41	0.44	0.48
TOTAL	14.01	15.78	15.33	16.57	18.06
CAPITAL INVESTMENTS	2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
Physical Facilities					
Research					
Training					
Administration					
Housing					
Auxiliary Units					
sub-total	0.22	0.22	0.20	0.21	0.22
Infrastructure & Leasehold					
Furnishing & Equipment					
Farming					
Laboratory & Scientific					
Office					
Housing					
Auxiliary Units					
Computers					
Vehicles					
Aircraft					
sub-total					
TOTAL	0.22	0.22	0.20	0.21	0.22
CAPITAL FUND CASH RECONCILIATION*	2004 (actual)	2005 (estimate)	2006 (proposal)	2007 (plan)	2008 (plan)
Balance, January 1	1.43	1.46	1.66	1.87	2.52
plus: annual depreciation charge	0.25	0.42	0.41	0.44	0.48
plus / minus: disposal gains/(losses)**					
plus / minus: other					
minus: asset acquisition costs	(0.22)	(0.22)	(0.20)	0.21	0.22
equals: Balance, December 31	1.46	1.66	1.87	2.52	3.22

* Capital investment due to relocation to Malaysia have not been included in this presentation

** Net of depreciation

Table 7. WORLD FISH CENTER RESEARCH AGENDA FINANCING SUMMARY, 2004 - 2005
(in US \$ million)

Member	2004 (actual)		2005 (est)	
	(US\$)	(national currency)	(US\$)	(national currency)
Unrestricted Contributions				
Australia	0.29	A\$0.45	0.26	A\$0.45
Belgium	0.10	EURO0.08	0.10	EURO0.09
Canada	0.66	C\$0.59	0.59	C\$0.63
China	0.00	-	0.01	US\$0.01
Denmark	0.33	DKK2.00	0.33	DKK2.00
Egypt	0.25	US\$0.25	0.25	US\$0.25
EU	0.01	EURO0.01		
BMZ, Germany	0.31	EURO0.25	0.29	EURO0.24
India	0.04	US\$0.04	0.04	US\$0.04
Japan	0.14	YEN21.0	0.19	YEN21.0
Malaysia			0.03	RM0.11
Netherlands	1.17	EURO0.95	1.16	EURO0.91
Norway	0.66	NOK4.5	0.67	NOK4.5
Philippines	0.02	PHP1.00	0.02	USD0.02
Sweden	0.37	SEK2.70	0.32	SEK2.40
Thailand	0.00	-	0.02	US\$0.02
United States Agency for International Development	0.73	US\$0.73	0.73	US\$0.73
NZAID	0.10	US\$0.1	0.10	US\$0.1
UK	0.30	GBP0.17	0.67	GBP0.44
World Bank	1.00	US\$1.0	1.00	US\$1.00
subtotal	6.48		6.78	
Targeted Contributions				
APAARI				
Asian Development Bank	0.98		0.33	
AUSAID				
Australia	0.25		0.47	
California Academy of Sciences				
Canada (CCLF)	0.03		0.02	
CGIAR				
Challenge Program (Water & Food)	0.14		0.57	
DANIDA				
DA-BFAR				
DFID	2.60		2.57	
European Union	0.97		1.06	
FAO				
Ford Foundation	0.09		0.22	
GEF				
Germany BMZ/GTZ	0.24		0.12	
IDRC				
IFAD	0.10		0.24	
IFPRI				
Japan	0.06			
McArthur Foundation	0.02		0.07	
New Zealand ODA	0.02		0.35	
Netherlands				
NORAD				
Oxfam	0.02		0.03	
Packard				
Rockefeller Brothers				
Sweden - SIDA	0.18		0.17	
IWMI	0.09		0.19	
TAC Special Fund				
UBC	0.01			
UNEP	0.01		0.27	
UNFIP				
UNDP/TCDC	0.03		0.00	
USAID	1.31		1.53	
Others (China, Dept of Sustainability & Environment, French Pacific Fund, IDRC, IFM Kiel, INREF, NOAA, NORAD, Packard Fdn, Philippines, Provinces of New Caledonia, Rockefeller, UNFIP, Western Pacific, WWF Indonesia)	0.43		0.49	
World Bank	0.09			
subtotal	7.67		8.71	
TOTAL CONTRIBUTIONS	14.15		15.49	
Summary Statement of Activity	2004 (actual)		2005 (est)	
Investor Grants	14.15		15.49	
+ Center Income (other revenues)	0.88		0.29	
= Total Revenues	15.03		15.78	
Less:				
Total Expenses	14.01		15.78	
Surplus (Deficit) of total revenues over total expenses	1.02		(0.00)	

Table 7a. WORLD FISH CENTER RESEARCH AGENDA FINANCING SUMMARY, 2005 - 2006
(in US \$ million)

(FINANCING PLAN)

Member	2005 (est)		2006 (proposal)	
	(US\$)	(national currency)	(US\$)	(national currency)
Unrestricted Contributions				
Australia	0.26	A\$0.45	0.38	A\$0.45
Belgium	0.10	EURO0.09	0.10	EURO0.09
Canada	0.59	C\$0.63	0.48	C\$0.63
China	0.01	US\$0.01	0.01	US\$0.01
Denmark	0.33	DKK2.00	0.34	DKK2.00
Egypt	0.25	US\$0.25	0.25	US\$0.25
BMZ, Germany	0.29	EURO0.24	0.29	EURO0.24
India	0.04	US\$0.04	0.04	US\$0.04
Japan	0.19	YEN21.0	0.20	YEN21.0
Malaysia	0.03	RM0.11	0.03	RM0.11
Netherlands	1.16	EURO0.91	1.17	EURO0.91
Norway	0.67	NOK4.5	0.70	NOK4.5
Philippines	0.02	USD0.02	0.02	US\$0.02
Sweden	0.32	SEK2.40	0.33	SEK2.40
Thailand	0.02	US\$0.02	0.02	US\$0.02
United States Agency for International Development	0.73	US\$0.73	0.73	US\$0.70
NZAID	0.10	US\$0.1	0.10	US\$0.1
UK	0.67	GBP0.44	0.31	GBP0.44
World Bank	1.00	US\$1.00	1.00	US\$0.97
subtotal	6.78		6.50	
Targeted Contributions				
APAARI				
Asian Development Bank	0.33		1.62	
AUSAID				
Australia	0.47		0.28	
Belgium			0.10	
California Academy of Sciences				
Canada (CCLF)	0.02		0.13	
Challenge Program (Water & Food)	0.57		0.50	
DANIDA				
DA-BFAR				
DFID	2.57		1.00	
* European Union	1.06		0.89	
France			0.10	
Ford Foundation	0.22			
Germany BMZ/GTZ	0.12		0.87	
GEF				
IDRC				
IFAD	0.24		0.13	
IFPRI				
Japan				
McArthur Foundation	0.07		0.07	
New Zealand ODA	0.35		0.20	
Netherlands				
NORAD				
Oxfam	0.03			
Packard				
Rockefeller Brothers				
Sweden - SIDA	0.17		0.30	
IWMI	0.19			
SW-PRGA				
TAC Special Fund				
UBC				
UNEP	0.27		0.38	
UNFIP				
UNDP/TCDC	0.00		0.30	
USAID	1.53		1.04	
Others (Fishbase Consortium, French Pacific Fund, Malaysia, NOAA, NORAD, Packard Fdtn, Philippines, Provinces of New Caledonia)	0.49		0.23	
World Bank			0.49	
Challenge Program	0.00			
subtotal	8.71		8.63	
TOTAL CONTRIBUTIONS	15.49		15.13	
Summary Statement of Activity	2005 (estimate)		2006 (proposal)	
Investor Grants	15.49		15.13	
+ Center Income (other revenues)	0.29		0.20	
= Total Revenues	15.78		15.33	
Less:				
Total Expenses	15.78		15.33	
Surplus (Deficit) of total revenues over total expenses	(0.00)		0.00	

TABLE 8a. WORLD FISH CENTER ALLOCATION OF MEMBER FINANCING TO PROJECTS BY OUTPUT FOR THE YEAR 2004
(in \$ million)

	Project	Member	Total
001.	Pacific	ACIAR	0.22
		EC	0.02
		NZ	0.02
		McArthur	0.00
		Challenge Program (water & Food)	0.02
		Others	0.21
		Unrestricted+center inc.	0.56
	Total Project	1.05	
002.	East and Southeast Asia	DFID	0.20
		BMZ-GTZ	0.22
		ADB	0.46
		EC	0.15
		Challenge Program (water & Food)	0.02
		McArthur	0.00
		Others	0.08
		Unrestricted+center inc.	0.41
	Total Project	1.55	
003.	Greater Mekong	ADB	0.52
		DFID	0.24
		EC	0.15
		Challenge Program (water & Food)	0.02
		Ford Foundation	0.09
		OXFAM	0.02
		SIDA	0.18
		ACIAR	0.00
		McArthur	0.00
		IWMI	0.09
		Others	0.02
		Unrestricted+center inc.	0.47
	Total Project	1.80	
004.	South Asia	EC	0.02
		DFID	1.75
		IFAD	0.10
		McArthur	0.00
		Challenge Program (water & Food)	0.02
		USAID	1.31
		Others	0.01
		Unrestricted+center inc.	1.27
	Total Project	4.48	
005.	SADC & eastern Africa	UNDP	0.03
		Canada	0.03
		EC	0.02
		Challenge Program (water & Food)	0.02
		DFID	0.41
		Japan	0.06
		McArthur	0.00
		Others	0.07
Unrestricted+center inc.	0.40		
	Total Project	1.04	
006.	West and Central Africa	EC	0.06
		Challenge Program (water & Food)	0.02
		McArthur	0.00
		Others	0.02
		Unrestricted+center inc.	2.01
	Total Project	2.11	
007.	Global Biodiversity Conservation	EC	0.55
		Challenge Program (water & Food)	0.02
		UBC	0.01
		ACIAR	0.03
		World Bank	0.09
		McArthur	0.00
		GTZ	0.02
		UNEP	0.01
		Others	0.02
		Unrestricted+center inc.	1.23
	Total Project	1.98	

Center Totals

	Total
Total Targeted Funding	7.67
Total Unrestricted Funding	5.46
Total Center Income	0.88
Total Allocations	14.01

TABLE 8b. WORLD FISH CENTER ALLOCATION OF MEMBER FINANCING TO PROJECTS BY OUTPUT FOR THE YEAR 2005
(in \$ million)

	Project	Member	Total
001.	Pacific	ACIAR	0.40
		Challenge Prog (Water &Food)	0.05
		NZ	0.35
		UNEP	0.27
		EC	0.02
		Others	0.13
		Unrestricted+center inc.	0.72
		Total Project	1.94
002.	East and Southeast Asia	DFID	0.07
		ADB	0.24
		ACIAR	0.07
		USAID	0.52
		BMZ-GTZ	0.06
		EC	0.24
		Challenge Prog (Water &Food)	0.05
		McArthur	0.07
		Others	0.18
		Unrestricted+center inc.	1.28
		Total Project	2.78
003.	Greater Mekong	ADB	0.09
		Challenge Prog (Water &Food)	0.08
		DFID	0.08
		IWMI	0.19
		Ford Fdtn	0.12
		OXFAM	0.03
		SIDA	0.17
		USAID	0.01
		EC	0.16
		Others	0.00
		Unrestricted+center inc.	0.52
		Total Project	1.45
004.	South Asia	DFID	2.42
		IFAD	0.24
		Ford Foundation	0.10
		Challenge Prog (Water &Food)	0.08
		USAID	0.90
		EC	0.02
		Others	0.02
		Unrestricted+center inc.	1.35
Total Project	5.13		
005.	Sub Saharan Africa	Canada	0.02
		Challenge Prog (Water &Food)	0.06
		BMZ-GTZ	0.00
		USAID	0.10
		UNDP	0.00
		EC	0.04
		Others	0.01
		Unrestricted+center inc.	0.75
Total Project	0.98		
006.	West Asia and North Africa	Challenge Prog (Water &Food)	0.20
		BMZ-GTZ	0.05
		EC	0.18
		Others	0.00
		Unrestricted+center inc.	1.76
Total Project	2.19		
007.	Global Biodiversity Conservation	Challenge Prog (Water &Food)	0.05
		BMZ-GTZ	0.01
		McArthur	0.00
		EC	0.40
		Others	0.15
		Unrestricted+center inc.	0.69
Total Project	1.31		

Center Totals

	Total
Total Targeted Funding	8.71
Total Unrestricted Funding	6.78
Total Center Income	0.29
Total Allocations	15.78

TABLE 8c. WORLD FISH CENTER ALLOCATION OF MEMBER FINANCING TO PROJECTS BY OUTPUT FOR THE YEAR 2006
(in \$ million)

	Project	Member	Total
001.	Pacific	ACIAR	0.21
		EC	0.13
		France	0.10
		McArthur	0.07
		NZAID	0.20
		UNEP	0.38
		Others	0.01
		Unrestricted+center inc.	0.86
	Total Project	1.96	
002.	East and Southeast Asia	ADB	0.92
		ACIAR	0.07
		Canada	0.04
		BMZ-GTZ	0.43
		EC	0.18
		Challenge Prog W&F	0.35
		Others	0.18
		Unrestricted+center inc.	0.80
	Total Project	2.97	
003.	Greater Mekong	ADB	0.70
		Challenge Program W&F	0.05
		EC	0.15
		SIDA	0.30
		Unrestricted+center inc.	0.53
	Total Project	1.73	
004.	South Asia	DFID	0.80
		IFAD	0.13
		USAID	0.74
		Unrestricted+center inc.	1.30
	Total Project	2.97	
005.	Sub Saharan Africa	Canada	0.09
		BMZ-GTZ	0.44
		DFID	0.20
		Belgium	0.10
		USAID	0.30
		World Bank	0.49
		UNDP	0.30
		Others	0.04
Unrestricted+center inc.	0.76		
	Total Project	2.72	
006.	West and Central Africa	EC	0.03
		Challenge Program W&F	0.10
		BMZ-GTZ	0.00
		Unrestricted+center inc.	1.76
	Total Project	1.89	
007.	Global Biodiversity Conservation	EC	0.40
		Unrestricted+center inc.	0.69
		Total Project	1.09

Center Totals

	Total
Total Targeted Funding	8.63
Total Unrestricted Funding	6.50
Total Center Income	0.20
Total Allocations	15.33

Table 9. WORLD FISH CENTER RESEARCH AGENDA STAFF COMPOSITION, 2004 to 2008

	2004 (actual)		2005 (estimates)		2006 (proposal)		2007 (plan)		2008 (plan)	
	Hired by:		Hired by:		Hired by:		Hired by:		Hired by:	
	center	other	center	other	center	other	center	other	center	other
<u>Internationally-Recruited Staff (IRS)</u>										
Research and Research Support	28	1	32	1	33		33		33	
<i>of which:</i>										
Post-doctoral Fellows										
Associate Professionals										
Training / Communications	1		1	1	1		1		1	
<i>of which:</i>										
Post-doctoral Fellows										
Associate Professionals										
Research Management	5		4		5		5		5	
<i>of which:</i>										
Post-doctoral Fellows										
Associate Professionals										
Total IRS	34	1	37	2	39		39		39	
<u>Regionally-Recruited Staff (RRS)</u>										
Research and Research Support	8		9		7		10		10	
<i>of which:</i>										
Post-doctoral Fellows										
Associate Professionals										
Training / Communications	1		0		1		1		1	
<i>of which:</i>										
Post-doctoral Fellows										
Associate Professionals										
Research Management	2		3		2		2		2	
<i>of which:</i>										
Post-doctoral Fellows										
Associate Professionals										
Total RRS	11		12		10		13		13	
<u>Support Staff</u>	256		266		270		272		274	
TOTAL STAFF	301	1	315	2	319		324		326	

Table 10. WORLD FISH CENTER - FINANCIAL POSITION: STATEMENT OF CASH FLOWS, 2004 and 2005 (US\$ 000)

2004	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Opening Cash Balance	12,032	11,265	13,597	12,931	12,125	12,644	12,540	12,938	13,218	13,515	13,272	12,821
Receipts												
Grants:												
Unrestricted	204	2,381	38	200	661	328	911	504	662	530	685	883
Restricted	372	1,046	636	248	722	271	1,098	1,055	842	98	295	1,591
Earned Income	56	101	11	36	24	148	(169)	24	30	239	5	374
Disbursements												
Operations	1,399	1,195	1,351	1,279	829	842	1,433	1,266	1,236	1,110	1,391	1,397
Capital Acquisition	-	1	-	11	59	9	9	37	1	-	45	49
Other												
Ending Cash Balance	11,265	13,597	12,931	12,125	12,644	12,540	12,938	13,218	13,515	13,272	12,821	14,223

2005	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Opening Cash Balance	14,223	15,154	14,286	14,058	14,015	13,162	12,911	12,729	12,767	13,409	13,255	14,205
Receipts												
Grants:												
Unrestricted	1,031	292	-	807	-	786	653	755	898	777	986	1,165
Restricted	1,283	426	1,170	166	435	240	257	323	750	250	1,051	507
Earned Income	(8)	1	25	36	15	31	21	27	26	39	40	37
Disbursements												
Operations	1,335	1,579	1,195	1,000	1,293	1,301	1,102	1,055	1,021	1,220	1,115	2,155
Capital Acquisition	40	8	228	52	10	7	11	12	11	-	12	15
Other												
Ending Cash Balance	15,154	14,286	14,058	14,015	13,162	12,911	12,729	12,767	13,409	13,255	14,205	13,744


CURRENCY STRUCTURE OF EXPENDITURES

Currency	2004 (actual)			2005 (proposal)			2006 (proposal)		
	Amount	\$ value	% share	Amount	\$ value	% share	Amount	\$ value	% share
US Dollar		7.99	57%		8.36	53%		7.82	51%
Malaysian Ringgit		2.10	15%		2.37	15%		2.61	17%
Others		3.92	28%		5.05	32%		4.90	32%
TOTAL		14.01	100%		15.78	100%		15.33	100%

Table 11. WORLD FISH CENTER STATEMENT OF FINANCIAL POSITION, 2004 to 2008
(in \$'000)

<u>Assets</u>	2004 (actual)	2005 (est)	2006 (proposal)	2007 (plan)	2008 (plan)
<u>Current Assets</u>					
Cash & Cash Equivalents	14,223	13,744	14,500	14,700	14,750
Accounts Receivable					
Donors	2,135	1,977	2,200	2,300	2,400
Employees	104	125	130	110	120
Others	1,626	1,989	1,900	1,700	1,650
Inventories	0	0	0	0	9
Prepaid Expenses		0	0	0	0
Other Current Assets	405	124	250	350	400
Total Current Assets	18,493	17,959	18,980	19,160	19,329
Total Fixed Assets - Net	366	616	700	750	800
Other Assets	107	106	110	120	156
Total Assets	18,966	18,681	19,790	20,030	20,285
<u>Liabilities and Net Assets</u>					
<u>Current Liabilities</u>					
Bank Indebtedness					
Accounts Payable					
Donors	3,127	2,926	3,100	3,150	3,200
Employees	107	105	115	110	110
Others	2,106	1,164	1,200	1,100	1,250
Advances from Donors	0	0	0	0	0
In-Trust Accounts	0	0	0	0	0
Accruals and Provisions	2,706	2,464	2,500	2,800	2,900
Total Current Liabilities	8,046	6,659	6,915	7,160	7,460
<u>Long-Term Liabilities</u>	333	324	400	500	600
Total Liabilities	8,379	6,983	7,315	7,660	8,060
<u>Unrestricted Net Assets</u>					
Appropriated	2,998	2,998	3,000	2,700	2,800
Unappropriate	7,589	8,700	9,475	9,670	9,425
Total Net Assets	10,587	11,698	12,475	12,370	12,225
Total Liabilities & Net Assets	18,966	18,681	19,790	20,030	20,285

Appendix 1. KPGs

 Key Performance Goals 2005			
	Goal	Measure	Target
CGIAR	☆ Increase CORE and matching support	\$ value of CG contribution	\$6.3 Million for 2005 (5% increase)*
	○ Improve project pipeline to support the MTP	# projects under review	\$19m total value of full project proposals submitted*
		# projects submitted	60 project proposals submitted
	○ Increase quality, timeliness and accuracy of reports	% of reports on time and with minimal budget variances	100%
	Goal	Measure	Target
Investors	☆ Increase project funding	\$ value of project funding	\$8.0m mobilized for 2005*
	☆ Increase diversity of investors	# of new investors	2 new investors
	○ Improve scientific and organisational performance	Scoring against World Bank Performance Measures	Within top 10 Centers for each WB performance element
	○ Improve accountability to investors and partners	% satisfaction with report quality	80% satisfaction (determined by customer survey)
		# impact statements provided	11 impact statements available (one for each major program area)
	○ Increase support to investors to build support for R&D with their constituencies	# special reports, briefs and publications provided	6 WorldFish Policy briefing documents/events
		% satisfaction with materials/events	90% satisfaction (determined by customer survey)
	# media articles that highlight WorldFish	9 articles per scientists	
	Goal	Measure	Target
NARS/NGO	☆ Increase partnerships	\$ value of new projects jointly formulated	\$1.7m of jointly formulated proposals submitted to investors*
	○ Increase early stage engagement of NARS and NGOs in research design and implementation	# New projects jointly formulated	54 projects jointly formulated proposals submitted to investors
		# of NARS scientists collaborating with WorldFish (FTE's)	2 visiting scientists working on WorldFish projects at Center sites
	○ Increase the capacity of NARS and NGOs to generate and disseminate locally appropriate aquaculture and fisheries technologies.	# WorldFish scientists spending time in NARS and NGO facilities and labs	20 person months
		# days training provided to NARS and NGOs on technologies, management practices and dissemination approaches	15 training courses (>5 days) on IAA and research and extension approaches
			10 training courses on fisheries research management and conservation.
			20 graduate students from developing countries co-supervised by WorldFish staff
	Goal	Measure	Target
ARI's	☆ Increase recognition of WorldFish as the natural partner in mega projects (i.e. projects with >\$1m to support WorldFish activities)	# of mega projects developed in partnership with ARIs	3 proposals submitted to investors
	☆ Increase application of ARI research capabilities for developing-country problems	# ARI scientists working at WorldFish for > 1 month	3 ARI scientists
		# Refereed publications co-authored with ARI scientists	20 publications co-authored with ARI scientists submitted to refereed journals
	Goal	Measure	Target
Our People	☆ Increase project proposal success rates	% success rate for proposals	40% success rate for submitted proposals (33% increase)
	☆ Improve project management	% project underspend	<10% underspending on all projects
		% progress milestones achieved for research projects	80%
		% of staff who feel that WorldFish Corporate Service delivery has improved substantially	75% of staff feel that an improvement has been made
	☆ Increase the number and quality of scientific publications	# papers accepted for publication	25% increase in papers accepted by peer-reviewed journals (67 in total)
		# value of average journal impact factor for refereed publications	Mean impact factor for submitted papers of 2.0
		# of 'Nature' or 'Science' articles or commentaries	2 articles accepted for publication
	○ Increase managerial and leadership training	# hours training provided	An average of 8 hrs of training provided per staff member
		% of staff receiving management and/or leadership training	100% of staff receive some form of training
		% satisfaction with training provided	80% satisfaction from customer survey
	○ Increase writing skills	% of staff receiving training	100% of staff who request training
		% satisfaction with training provided	80% satisfaction from customer survey
	○ Increase fairness and equity	% of staff who feel that WorldFish has become a more fair and equitable employer	75% of staff feel that an improvement has been made
○ Increase external recognition for our people	# of staff (teams) entered by WorldFish for external awards	5 people or teams	
	OH & S Objective	To be decided	To be decided

☆ Denotes a Behavioural Outcome (i.e. What WorldFish wants from the stakeholder)
 ○ Denotes a Strategic Factor (i.e. What the stakeholder wants from WorldFish)
 * Excludes funds in trust

Appendix 2. Acronyms

ACIAR	Australian Centre for International Agricultural Research
ACP	Africa, Caribbean and Pacific
AGM	Annual General Meeting
AIGA	Alternative Income Generating Activities
AKVAFORSK	Norwegian Institute of Aquaculture Research
AOAD	Arab Organization for Agricultural Development
ARI	Advanced Research Institutions
ASI	Advanced Scientific Institutions
AusAID	Australian Agency for International Development
BMZ	Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung
BVI	British Virgin Islands
CAPRI	System-wide Initiative on Property Rights and Collective Agreements
CAS	Catalogue of fishes
CBD	Convention on Biological Diversity
CBFM	Community based fisheries management
CBO	Community based organization
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro Internacional de Agricultura Tropical
CIDA	Canadian International Development Agency
CIFOR	Center for International Forestry Research
CIMMYT	International Maize and Wheat Improvement Center
CIRAD	Coopération Internationale en Recherche Agronomique pour le Développement
CORDIO	Coral Reef Degradation in the Indian Ocean
CP	Challenge Program
Danida	Danish International Development Assistance
DFID	Department of International Development, UK
DiGIR	Distributed Generic Information Retrieval
DSAP	Development of Sustainable Aquaculture Project
EPMR	External Programme Management Review
ERP	Enterprise Resource Planning System
ESEA	East and Southeast Asia
FAO	Food and Agriculture Organization
GAPE	Global Association for People and the Environment, Laos
GBIF	Global Biodiversity Information Facility
GCRMN	Global Coral Reef Monitoring Network
GEF	Global Environmental Facility
GIFT	Genetically improved farmed tilapia
GIS	Geographic Information System
GISP	Global Invasive Species Program
GoFAR	Group of Fisheries and Aquatic Research
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
IAA	integrated aquaculture and agriculture
IARC	International Agricultural Research Centre
ICARDA	International Center for Agricultural Research in Dry Areas
ICM	Integrated coastal management
ICRAF	International Center for Research in Agroforestry
ICRAN	International Coral Reef Action Network
ICRISAT	International Crops Research Institute for the Semi-arid Tropics
IDRC	International Development Research Centre

IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IFReDI	Inland Fisheries Research and Development Institute (Cambodia)
IFREMER	Institut Francais de Recherche pour l'Exploitation de la Mer (French Research Institute for the Exploitation of the Sea)
IIFET	International Institute of Fisheries Economics and Trade
IITA	International Institute of Tropical Agriculture
ILRI	International Livestock Research Institute
IMPACT	International Model for Policy Analysis of Agricultural Commodities and Trade
INGA	International Network on Genetics in Aquaculture
IPGRI	International Plant Genetic Resources Institute
INRM	integrated natural resource management
IPCC	Intergovernmental Panel on Climate Change
IRRI	International Rice Research Institute
IRS	Internationally recruited staff
ITMEMS	International Tropical Marine Ecosystem Management Symposium
IUCN	World Conservation Union
IWMI	International Water Management Institute
LMEs	Large marine ecosystems
MCA	Marine Conservation Area
MNHN	Museum National d'Histoire Naturelle
MPA	Marine protected area
MRC	Mekong River Commission
MSSP	Multi-Sector Support Program
MTP	Medium Term Plan
NARES	National Aquatic Research and Extension Systems
NARS	National Aquatic Research Systems
NEPAD	The New Partnership for Africa's Development
NGO	Non-Governmental Organizations
NOAA	National Oceanographic and Atmospheric Administration
NRM	National Resources Management
NRS	Nationally recruited staff
NTAFP	Network of Tropical Aquaculture and Fisheries Professionals
NZAID	New Zealand Agency for International Development
OBIS	Ocean Biogeographic Information System
OECD	Organisation for Economic Cooperation and Development
RESTORE	Research tools for natural resource management monitoring and evaluation
RET	Research extension and training
RM	Malaysian Ringgit
RRS	Regionally recruited staff
SACCAR	Southern African Center for Cooperation in Agricultural and Natural Resources Research and Training
SEAFDEC	Southeast Asian Fisheries Development Centre
SEARCA	Southeast Asian Regional Center for Graduate Study and Research in Agriculture
SFIS	Selective Fisheries Information Service
SGRP	System-wide Genetic Resources Program
Sida	Swedish International Development Cooperation Agency
SPC	Secretariat of the Pacific Community
SSA	Sub-Saharan Africa
TCDC	Technical Cooperation among Developing Countries
TNC	The Nature Conservancy
UNDP	United Nations Development Program

UNEP	United Nations Environmental Program
UNEP-WCMC	United Nations Environmental Program-World Conservation Monitoring Centre
UNF	United Nations Foundation
USAID	United States Agency for International Development
USP	University of the South Pacific
VRSAP	Vietnam river systems and plains
WARDA	West Africa Rice Development Association
WFCP	Water and Food Challenge Program
WRI	World Resources Institute
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization
WWF	World Wildlife Fund



MALAYSIA (Headquarters)

OFFICE Jalan Batu Maung, Batu Maung,
11960 Bayan Lepas, Penang, Malaysia
MAIL PO Box 500, GPO 10670 Penang
PHONE (+60-4) 626 1606 **FAX** (+60-4) 626 5530
EMAIL worldfishcenter@cgiar.org

WorldFish Center - PHILIPPINES

OFFICE Khush Hall, IRRI College, Los Baños, Laguna 4031, Philippines
MAIL MCPO Box 2631, 0718 Makati City, Philippines
PHONE (+63-2) 845 0563, 536 2701 **FAX** (+63-2) 891 1292, 536 0202
EMAIL worldfish-philippines@cgiar.org

WorldFish Center - BANGLADESH

MAIL House 22B, Road 7, Block-F, Banani, Dhaka 1213, Bangladesh
PHONE (+880-2) 881 3250, 881 4624 **FAX** (+880-2) 881 1151
EMAIL worldfish-bangladesh@cgiar.org

WorldFish Center - MALAWI

OFFICE National Aquaculture Center, Zomba, Malawi
MAIL PO Box 229, Zomba, Malawi
PHONE (+265) 01536 298, 01536 313 **FAX** (+265) 01536 274
EMAIL worldfish-malawi@cgiar.org

WorldFish Center - PACIFIC

MAIL c/o The Secretariat of the Pacific Community,
B.P. D5, 98848 Noumea Cedex, New Caledonia
PHONE (+687) 262 000 **FAX** (+687) 263 818
EMAIL worldfish-newcaledonia@cgiar.org

**WorldFish Center - EGYPT
ABASSA RESEARCH CENTER**

WorldFish Center, Abassa, Abou-Hammad, Sharkia, Egypt
PHONE (+20-55) 340 8165 **FAX** (+20-55) 340 5578
CAIRO OFFICE 3, Abou El Feda Street, Zamalek, Cairo 11211 Egypt
MAIL PO Box 1261 Maadi, Cairo, Egypt
PHONE (+202) 736 4114 **FAX** (+202) 736 4112
EMAIL worldfish-egypt@cgiar.org

WorldFish Center - SOLOMON ISLANDS

GIZO OFFICE PO Box 77, Gizo, Solomon Islands
PHONE (+677) 600 22 **FAX** (+677) 605 34
HONIARA OFFICE PO Box 438, Honiara, Solomon Islands
PHONE (+677) 250 90 **FAX** (+677) 232 96
EMAIL worldfish-solomon@cgiar.org

WorldFish Center - CAMEROON

OFFICE IITA-Humid Forest Station, BP 2008 (Messa), Yaounde,
Cameroon
MAIL IITA-Cameroon c/o L.W.Lambourn & Co. Ltd. Carolyn House,
26 Dingwall Road, Croydon CR9 3EE, England, United Kingdom
PHONE (+237) 2237 434, 2237 522 **FAX** (+237) 2237 437
EMAIL worldfish-cameroon@cgiar.org

WorldFish Center - CAMBODIA

MAIL c/o Department of Fisheries, 186, Norodom Blvd., Phnom Penh,
Cambodia
PHONE/FAX (+855-23) 993 598
EMAIL worldfish-cambodia@cgiar.org

For more information on WorldFish Center publications,
please contact:

The Communications Unit
P.O. Box 500 GPO, 10670 Penang, Malaysia
Tel : (+60-4) 626 1606
Fax : (+60-4) 626 5530
Email: worldfishcenter@cgiar.org