

MYANMAR

AGRICULTURAL SECTOR REVIEW AND INVESTMENT STRATEGY

VOLUME 2: AGRICULTURAL SECTOR INVESTMENT STRATEGY

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MAP: Administrative Boundaries and Communications

Currency Equivalents

(as of 1 June 2004)

Official Rate

Currency	=	Kyat (MYK)
US\$1.00	=	MYK 6.90
MYK1	=	US\$0.145

Parallel Market Rate

MYK 1.00	=	US\$0.00106
US\$1.00	=	MYK 940

Fiscal Year

April 1 – March 31

Abbreviations

ADB	Asian Development Bank
AED	Agricultural Extension Division
AFTA	Asian Free Trade Area
AHDD	Animal Husbandry Development Division (MLBF)
AMD	Agriculture Mechanization Department
AMIS	Agricultural Marketing Information System
ARCPC	Applied Research Centre for Perennial Crops
CAA	Commercial Agriculture Alliance
CAF	Commercial Agriculture Fund
CAN	Commercial Agriculture Network
CARI	Central Agricultural Research Institute
CARTC	Central Agriculture Research and Training Centre
CBM	Central Bank of Myanmar
CCE	Central Crop Exchange
CLW	Community Livestock Workers
CSO	Central Statistical Organization
CSRS	Central Sugarcane Research Station
DOF	Department of Fisheries
FDI	Foreign Direct Investment
FMD	Foot and Mouth Disease
GOM	Government of Myanmar
HACCP	Hazard Analysis and Critical Control Point
HDI	Human Development Initiative

HIES	Household Integrated Economic Survey
ICDCA	Institutional Capacity Development for Commercial Agriculture
ID	Irrigation Department
IPM	Integrated Pest Management
IMF	International Monetary Fund
INGO	International Non-Governmental Organization
JICA	Japanese International Cooperation Agency
LBVD	Livestock Breeding and Veterinary Department
LFDB	Livestock and Fisheries Development Bank
LFMPE	Livestock Feedstuff and Milk Products Enterprise
LUD	Land Use Division
MADB	Myanmar Agricultural Development Bank
MAPT	Myanmar Agriculture and Farm Produce Training
MAS	Myanma Agriculture Service
MCSE	Myanma Cotton and Sericulture Enterprise
MDG	Millennium Development Goals
MEB	Myanma Economic Bank
MFE	Myanmar Farm Enterprise
MFI	Micro-Finance Institution
MIS	Management Information System
MJI	Myanma Jute Industries
MLBF	Ministry of Livestock Breeding and Fisheries
MLFDB	Myanma Livestock and Fisheries Development Bank
MOAI	Ministry of Agriculture and Irrigation
MOH	Ministry of Health
MPCE	Myanma Perennial Crops Enterprise
MSE	Myanma Sugarcane Enterprise
MSU	Management Support Unit
MYK	Myanmar Kyat (national currency)
NACA	Network of Aquaculture Centres in Asia-Pacific
NCD	Newcastle Disease
NCPR	National Commission for Poverty Reduction
NGO	Non-Government Organisation
NPRPP	National Poverty Reduction Policy Paper
OIE	International Epidemiological Organization
O&M	Operation and Maintenance
PPA	Participatory Poverty Assessment
PPD	Plant Protection Division
PPME	Participatory Planning, Monitoring and Evaluation
QAS	Quality Assured Seed
RDCD	Research and Disease Control Division
SAI	State Agricultural Institutes
SD	Seed Division
SEAFDEC	Southeast Asian Fisheries Development Centre
SEE	State Economic Enterprise (also known as State Owned Enterprise – SOE)
SMG	Small Farmer Marketing Group
UNAIDS	United Nations AIDS Programme
UNDP	United Nations Development Programme
UNODC	United Nations Office on Drugs and Crime

VEP	Veterinary Epidemiology Programme
VFRDC	Vegetable and Fruit Research and Development Centre
WFP	World Food Programme
WRUD	Water Resources Utilization Department
YAU	Yezin Agricultural University

SECTION 1: INVESTMENT STRATEGY

1. INTRODUCTION

1. International experience has led to a renewed focus on the agriculture sector as the engine for broad-based economic growth. Compared to any other sector within an economy, growth in agriculture productivity has been recognized to be pro-poor; having a direct role in raising real incomes of the rural poor, and thus reducing poverty. This implies that in a sector such as agriculture, which requires relatively high public investments, strategically formulated interventions and policies conducive to growth could significantly contribute to the overall poverty alleviation of a country. This is especially true in a country such as Myanmar where a major proportion of the population is still rural.

2. Myanmar has not received any significant official development assistance for nearly one and a half decades and there is now a serious investment gap in the rural economy. National investments in agriculture and its sub-sectors have been limited by a scarcity of domestic resources and have not always been based on solid feasibility work or underpinned by necessary policy changes. The result has been low productivity growth and increasing rural poverty in many rural areas.

3. Many observers believe that within the next few years the international donor community is likely to resume investment in the country. The availability of a comprehensive overview of the agricultural sector which, in addition, provides investment strategies to accelerate pro-poor sector development, would be of considerable assistance to donors at that time, eliminating the need for major preliminary studies that would delay concrete investment. At the same time, the Government of the Union of Myanmar (GOM) would benefit from the preparation of investment strategies and prioritisation that would make better use of its own resources.

4. In recognition of these factors, and at the request of GOM, the United Nations Development Programme (UNDP) agreed to provide financing to permit a wide ranging review of the agricultural sector of the Union of Myanmar with the intention of determining sector potentials and future investment strategies which would significantly impact upon rural poverty. As part of this agreement, it was decided that the United Nations Food and Agriculture Organization (FAO) would undertake the actual study on behalf of UNDP and GOM.

5. The first volume of the report provides a detailed overview of the agricultural sector and its component sub-sectors, with a focus on the identification of potentials for growth and development, as well as constraints to the realization of those potentials. Volumes 3 and 4 of the series provide the detailed working papers from which Volume 1 was drawn. The sub-sectors covered included: (i) rural social structure and poverty; (ii) community development and local institutions; (iii) crop production; (iii) livestock; (v) irrigation and water resources; (vi) marine and inland fisheries; (vii) agro-industry; (viii) agricultural research, extension and education; (ix) marketing; and (x) rural finance. Forestry was not included in the terms of reference for this study.

6. The present volume (Volume 2) represents the second major element of the Agricultural Sector Review, and provides investment strategies and specific investment project profiles for the sector. The volume is divided into two broad parts. In the first section, broad

development themes which have emerged as of importance to agriculture and the rural sector in Myanmar are discussed. These are used as reference points for the individual sub-sectoral strategies which follow. Proposed strategies and investments relate to both technical and policy areas, and are grouped in to short-term, medium-term and long-term investment horizons. Finally a unified sector strategy is presented together with a ‘road map’ for sector investment.

7. In the second half of the volume, more than 30 specific investment profiles are presented. Typically running to 3-4 pages per investment, these profiles are intended to provide the background, rationale and objectives of each specific investment, as well as to indicate the magnitude of costs and likely time scale involved. They are by no means detailed project proposals, but do provide a departure point for subsequent identification and preparation exercises. Taken in aggregate, they provide some indication of the potential investment costs facing the agriculture sector over the next 10 years.

8. A CD-ROM has been prepared to accompany the overall report which contains all published text as well as additional background material too lengthy to be included in the printed document. It also contains an extensive user controllable GIS-based map display system, which allows users access to over 200 maps derived from District-level data compiled as part of the study. A number of these GIS-based maps are being published separately in the form of an Agricultural Atlas of Myanmar.

2. VISION, GOALS AND DEVELOPMENT THEMES

1. Myanmar is still predominantly an agricultural country. The overwhelming majority of Myanmar's population live in rural areas and much of the nation's wealth is generated there. Most of the country's poor are rural farmers and landless. It is therefore in the rural sector that national economic development and poverty reduction must find its driving force.

2. However, rural growth is not only good for rural populations. Evidence from numerous studies in recent years has shown that rural growth is not only the most effective way of reducing poverty, it is also effective at reducing urban poverty; more effective, in fact, than is urban growth¹. This perhaps surprising outcome arises from the differing impact of economic growth on urban and rural populations. In contrast to urban growth, which goes disproportionately to the wealthy and results in major increases in demand for imported goods, economic growth in rural areas tends to create increased income for poorer segments of the population, and is largely spent on 'non-tradable' goods; those that are produced within the country. The increase in employment resulting from rural economic growth is much greater than for its urban equivalent.

3. Yet, as the sub-sectoral studies which comprise much of this sector review have shown, rural economic growth has been minimal in recent years. Time series data from household income and expenditure studies confirm that overall poverty has failed to decline, and may have actually increased over the last decade. More limited data suggests that rural populations may be suffering from a process of decapitalization, whereby consumption is being maintained only at a cost of increased debt and the loss of assets such as livestock and access to land, while commercial data indicates that sales of basic consumer goods in rural areas are falling. Use of fertilizers is at a level below that required to replace soil nutrients, and declining soil fertility is an inevitable long-term consequence.

4. A number of factors have probably played an important role in creating these unfavourable conditions for rural growth, including increasing economic isolation and the lack of available capital for investment in rural areas. Perhaps the most important factor, however, has been the failure of Myanmar to follow through on the process of economic liberalisation launched at the end of the 1980s to replace the previous centrally planned economic system. Although a number of reforms were introduced at that time which eliminated some of the socialist production and market controls, many other controls were left in place, and the initial impetus for reform has largely disappeared.

5. Farmers are, in effect, small independent businesses and, as far as they can do so, they will make decisions which maximise the income that the farm household receives. If they face policies which restrict their choices, they will not be able to make the best decisions and their incomes will decline. While this is, of course, a direct loss for the farmer and his or her family, if it is repeated for many farmers, there are consequences for communities, and if it is true for hundreds of thousands of farmers, the impact will be felt at a national level. This has largely been the situation in Myanmar, where farmers have had to cope with directed production, trade and

¹ For example 'Growth and Poverty: Evidence for the Developing World', M. Ravallion, Economic Letters, 1995, and 'Faster More Equitable Growth: The Relationship between Growth in Agriculture and Poverty Reduction' J. Mellor, CAER II Discussion Paper No.70, HIID, Harvard, 2000.

price controls, and restrictions on access to rural finance, among other factors. Not only are farmers, rural communities, and the country as a whole, poorer as a result but farmers have not been enabled to adapt to the changing world around them, leaving the agricultural sector relatively undiversified and uncompetitive in comparison with regional competitors.

6. The most important single message resulting from the more than ten sub-sector studies carried out as part of this review has been that, while the rural sector has largely lacked the investment that it needs in recent years, it is the policy environment within which agriculture functions that has been the most important limiting factor to growth. Furthermore, providing additional investment to the rural sector without explicitly addressing these policy issues would likely severely limit effectiveness of that investment.

7. The case for additional investment in agriculture, therefore, must rest on a vision for the future in which the sector has the ability to adapt, change and grow in response to market opportunities and maximise returns to the abundant resources that Myanmar enjoys. The vision for the future can thus be stated as:

VISION: A dynamic, open, productive and diversified rural sector, free of hunger and poverty, which contributes significantly to national wealth and economic development.

In order to achieve this vision, the goal which investment must support is:

GOAL: Accelerated, sustainable growth in the rural sector which especially benefits poor and disadvantaged households.

KEY DEVELOPMENT THEMES

8. In attempting to move the rural sector in Myanmar towards the goal and vision described above, several key themes or strategic elements can be identified which encapsulate the broad strategic elements common to all subsequent sub-sectoral strategies and influence the proposed investments arising from those strategies. These key development themes are presented below.

Supporting Rural Development through a System-Wide Approach

9. Historically, support to the agricultural and rural sector in Myanmar has been almost exclusively commodity focused, with a range of different Government agencies each given the responsibility for supporting a specific aspect of production. Under this approach, research and extension services provided through the Ministry of Agriculture and Irrigation treat each crop separately, while crops assigned to state economic enterprises – for example, rubber, coffee, cotton and oil palm – have distinct service providers. Non-crop farm production activities, such as livestock and inland fisheries are dealt with by a separate ministry which has almost no extension capability. Activities that may well be of importance to rural households, including handicrafts or the exploitation of natural resources (such as Toddy Palm) fall under other Government ministries – to the extent that they are covered at all.

10. Nor is this compartmentalization simply a matter of who provides support to the rural household. Farmers must consider a wide range of factors in selecting which activities to undertake, and the varieties or species to be used. When research and extension efforts focus only on optimising technical performance for an individual crop, they fail to provide guidance in the key decisions that the farmer must take. Among these decisions may be the following factors:

- **Multiple cropping fit:** In Myanmar, most farmers attempt to produce more than one crop per year. Under these circumstances, short season varieties may fit better into overall production patterns than higher yielding long season types;
- **Water usage:** Water is a scarce commodity in the dry season, and may be the limiting factor in utilising land. It may well be better to produce two acres of a lower value crop with low water requirements, than one acre of a higher value, water hungry crop;
- **Labour utilization and timing:** Apparently profitable activities which require high levels of labour input at peak periods of the year may be rejected in favour of ‘off-season’ activities that can use labour in slack months;
- **Complementary activities:** Some activities may be unattractive on their own, but are attractive because they can benefit from investment made for other purposes, e.g. aquaculture in irrigation ponds or paddy fields, or pigeon pea with sesame;
- **Cost/price ratios:** As farmers aim to maximise returns rather than output, the cost of inputs relative to the cost of the resulting output is a key factor and may result in lower input usage than would be required for optimal technical performance;
- **Availability of capital:** An activity may be very attractive, but if the farmer cannot access the capital needed, it will not be feasible;
- **Cost of production:** Where capital is limited, activities which have low costs of production may be preferred to those with high production costs, irrespective of returns;
- **Risk:** Some activities have low prices but reliable markets with plentiful demand and little variation in prices, other offer high returns but uncertain markets. Equally, a highly profitable activity may not be chosen by smaller farmers as they cannot afford the higher risk of losses from disease associated with that crop or animal; and
- **Non-farm alternatives:** Some farmers may have earning opportunities off-farm, in local business or even as labourers. In such cases, a decision may be made not to cultivate at all at certain periods of the year.

11. Support services that fail to take account of these types of considerations run the risk of being irrelevant to the world in which a farmer must operate. And not all farmers are the same; some may have abundant labour but limited capital, others may have access to a reasonably large land area but be distant from markets, still others may have to choose between dry season production with limited water resources and off-farm employment.

12. To help farmers to utilise their own mixture of resources - land, labour, capital – and opportunities – markets, employment, migration – in an optimal manner, it is essential that support services treat farms as the small enterprises that they undoubtedly are. Farming systems based approaches that help farmers to identify the options available to them and then select the best of these, are essential. Only once this has been done is the farmer ready to consider the technologies that can turn the selected choices into profitable activities.

13. To achieve this aim in Myanmar will require a major re-thinking of the way in which support services are provided to rural households. It will entail much closer collaboration and exchanges of information between economists, agronomists, and livestock and fisheries experts, as well as with those responsible for handicrafts and local enterprise. It will require research that examines different combinations of options in different areas, and under different circumstances. Finally, it will require the participation of those who understand the constraints and opportunities facing different types of households, whether they be mature families with abundant labour, elderly couples whose children have left home but who have accumulated resources, or female-headed households with children to care for and no access to land.

Continuing the Transition from Central Planning to Locally Determined Priorities

14. The transformation from central planning to a liberalised economic system commenced at the end of the 1980s is far from complete. All too often, decisions affecting almost all aspects of rural life are taken at national level and thus cannot take into account differences in needs and priorities at the local level.

15. Although the creation of a system-wide focused support system will be an important step in helping farmers to achieve increased growth and poverty reduction, it will not in itself be sufficient. A further key development theme must be that of an increased local role in determining the sort of support that is needed and the allocation of resources available at district and township level.

16. With respect to the goal of accelerated sustainable rural growth, it is possible to identify a number of areas where increased local participation would contribute significantly:

- the determination of research priorities for local producers, and the actual conduct of research at local level so as to ensure results that are indicative of the agro-ecological zone concerned;
- the determination of extension priorities, including the use of local demonstrations and the linking of demonstration content to such local factors as market access, prices, water availability, climate and disease incidence in the area;
- the determination of local service and investment priorities, including the relative priority given to irrigation, access roads, markets, education and health, post-harvest structures; and
- the establishment and operation of locally based groups and cooperatives covering such areas as rural finance (e.g. savings and loan associations), marketing, input procurement, irrigation, and water management.

17. In order to permit these sorts of local choices to occur, it will be necessary to restructure the way in which key decisions are taken in research, extension and the allocation of local resources. It will also be necessary to encourage and support the formation of local groups which can both express local priorities and act to create and operate local institutions that will reduce the burden on central government¹.

18. With decision making on resource allocations still very much concentrated at central level, there will also be a need to consider carefully the extent to which such decisions can be decentralised. In the short run, and in limited areas, it is possible to create specific investment projects which channel resources to local authorities and communities, and thus provide them with the means to respond to local investment priorities. However, this can only be a temporary solution. In the longer run, it will be necessary to determine the extent to which budgetary authority can be realistically transferred to local authorities and the communities they serve.

Redefining the Role of the State in the Rural Economy

19. A key feature of a socialist approach to economic development is State ownership or control over the means of production and, by implication, decisions concerning that production. A liberal economic approach, by contrast, relies on the participants within the economic system to determine for themselves the type, scope and extent of economic activity. Under such an approach the role of Government focuses primarily upon:

- setting the legal framework within which economic activities take place, including such aspects as taxation, quality standards, weights and measures and licensing;
- providing public goods which are difficult, or impossible, for most individuals to provide or access on their own, including security, roads, research, education, public health and plant and animal quarantine; and
- ensuring compliance of system participants with agreements, contracts and legal standards through investigation, analysis and enforcement.

20. Although the transition from a centrally planned to a liberal economic policy was launched more than a decade ago in Myanmar, it has been far from complete. In the context of the agricultural and rural sector in Myanmar, the Government still plays a leading role in many forms of economic activity. Such public intervention is of particular relevance to the financial, agro industrial and export sectors. In rural finance, the Myanma Agricultural Development Bank (MADB), and its sister organization, the Myanma Livestock and Fisheries Development Bank (MLFDB) maintain a virtual monopoly over formal financial activity. Private sector banks are discouraged from lending to agriculture and microfinance groups are limited in the size and mature of their operations. Monopoly positions in the economy are also held by the Government in the export of a number of commodities, while a dominant position for State Economic Enterprises (SEEs) is maintained in the processing of a number of commodities, including sugar cane, rubber, oil palm, cotton and coffee.

¹ It will also be necessary in some cases to modify legislation and decrees which limit the ability of local groups to establish and operate such organizations as local savings and credit institutions.

21. The arguments against direct Government intervention in economic activity are many, including the generally low efficiency of State operations, their limited flexibility in rapidly changing markets, and the cost to the overall economy of such support. In 1999/2000, the last year for which data is available, current public expenditures on SEEs are estimated to have approached MYK 60 billion (US\$172 million), implying a heavy drain on public resources¹. Furthermore, where SEEs operate in a market in which private sector enterprises are also allowed to compete, their privileged position (for example, in terms of access to capital, access to international markets or preferential access to foreign exchange) will tend to depress private activity.

22. The sustainable development of the rural sector of Myanmar requires an enormous level of support. The public sector is the only actor capable of providing much of this support, whether it is in the form of roads, research services or the establishment of grades for agricultural products. The allocation of human and financial resources to areas in which the Government does not need to be present – i.e. in direct productive and support service activities – limits its capacity to respond in those areas where it is needed. The establishment of an enabling environment which will encourage and permit farmers and other sector actors to grow and develop is challenge enough.

¹ See Volume 1, Section 3F. Sector is defined in this context as including livestock, fisheries and forestry as well as crop production.

3. SOCIAL AND COMMUNITY DEVELOPMENT¹

VISION

1. Myanmar is well endowed with natural resources supporting a relatively small population base in comparison with many other countries in South-East and South Asia. The country continues to rely heavily on this resource base, with over 75% of the population living in rural areas and agriculture contributing more than 40% of GDP. Tremendous development potential exists in rural Myanmar.

2. The *overall vision* for rural Myanmar is to attain the best possible quality of life for rural people based on: (i) the sustainable management and use of natural resources (land, water, air); (ii) fair economic and social opportunities (employment, income generation, education and skill development, nutrition and health, drinking water, rural infrastructure, community-based organizations, social protection etc.); (iii) the preservation of a rich cultural heritage (including cohesiveness and mutual support systems in rural communities); and (iv) the achievement of regional competitiveness in the production of agricultural products. An improved quality of life in rural areas will serve as the “pull” factor to retain and attract a skilled and capable population, while at the same time opening up new opportunities for long-term private sector investment. Each and every person will be able to access quality social services, receive fair returns to his/her labour, become free from persistent indebtedness, consume nutritionally adequate food, and lead a respectable life.

GOALS

3. Development of rural communities is a multi-sectoral task and requires a well-designed integrated approach. Some major goals are:

- helping rural people set the priorities for development in their communities, and supporting their access to governmental and non-governmental funding in promoting local economic development;
- creating greater equality in access to natural resources in rural areas, through increased user-rights for occupied land, improved access to cultivable waste lands², participatory management of forest areas, and greater local control over water resources (for irrigation, fishery and aquaculture);
- increasing access to rural financial services for all those in need through provision of adequate resources, user-friendly policy framework, training and capacity building;

¹ The following section is developed from Working Paper 1 “Rural Social Structure and Poverty” contained in Volume 3 of this study and was prepared by Ganesh P. Rauniyar, Rural Sociologist for the Agricultural Sector Review.

² Cultivable waste-lands are lands defined as suitable for agriculture but not presently exploited. They comprise almost 40% of the total cultivable area of Myanmar.

- improving access to community services through the provision of physical infrastructure and social services such as drinking water, sanitation, transport, schooling, health and family planning;
- increasing both farm and non-farm production in rural areas, and increasing the incomes of poor rural men and women;
- assisting vulnerable groups and ethnic minorities through required social protection programmes; and
- ensuring the safety and security of rural people.

4. Myanmar is a signatory to the Millennium Development Goals (MDG) which encapsulates many of these aspects and calls for significant progress towards their achievement by 2015. Although national in scope, the MDG is particularly of relevance to the rural sector in Myanmar.

5. Although all of the factors above are of relevance to improving the lives of the rural population and permitting them to contribute effectively to national economic development, a number of them are addressed in the sub-sectoral strategies and investment profiles in subsequent sections of this report. In this chapter dealing specifically with rural communities, social structures and poverty, therefore, the emphasis will be placed very much on community-based cross-sectoral activities, rather than on specific initiatives in production, irrigation, rural finance or other technical areas.

6. Technical gains, in themselves, will not be sufficient to create genuine and sustainable economic growth in Myanmar. With at least three quarters of the national population living in rural areas, productivity gains cannot be restricted to a small group of technically advanced participants, but rather must be adopted widely by small farmers throughout the country. Pro-poor development will be both a requirement and an outcome of such a widespread adoption process. Food insecure, heavily indebted families, with little access to social or productive services, and without the means to define their own priorities, will lack the capacity to take advantage of new opportunities. Their participation, and thus the achievement of widespread economic growth, will require addressing many of these issues.

7. Equally, however, if the participation of rural families and communities can be achieved, the process will become self-reinforcing as families emerging from poverty, with improved access to resources and services gain the ability and the confidence to further invest in new technologies, diversify their income earning activities and increase output still further.

8. Pro-poor development, therefore, should not be looked on as a social requirement, or a matter of morality or politics, but rather as an essential pre-condition to the creation of national wealth.

POTENTIALS

9. The potential for making substantial improvements in socio-economic conditions and reducing poverty and food insecurity – the goals of the MDGs - are probably greater in Myanmar than any other developing countries in the region. Among the specific opportunities available to contribute to rural pro-poor growth are:

- The availability of sizable under-utilized land resources is a crucial factor in favour of Myanmar. In particular, the potential availability of seven million ha of land for expanded agricultural production offers a tremendous potential. If a substantial portion of this land were to be available to small/marginal or landless households, who were provided with adequate training, working capital and market access support, the level of rural poverty would be reduced substantially.
- Significant additional opportunities also exist for poverty reduction through promotion of small livestock production (pigs, goat, poultry, duck etc.) for the small/marginal and landless households.
- Myanmar still possesses extensive areas of forest and woodland. The participation of communities in the sustainable management and exploitation of these forest areas would provide additional income to some of the poorest groups among the rural population.
- Only limited use is currently made of Myanmar's extensive riverine and aquaculture potentials. The effective development of these resources, and the greater role of rural communities in their utilisation, offers a major potential for pro-poor growth.
- Opportunities also exist in production of horticultural crops and medicinal herbs and other high value crops on small/marginal farms, once marketing, rural finance and other support services are established in a sustainable manner.
- Myanmar's handicraft industry is well known for fine work and skilled work around the world and tremendous opportunities exist for developing a handicraft based export industry which would potentially employ large number of landless, part-time and landless farming household members.
- There are substantial opportunities to produce value added goods and services in rural Myanmar which can generate better paying employment opportunities for potentially a large number of rural population. This is likely to be more pronounced under private sector initiatives.

10. These are all likely to contribute positively towards increasing household incomes of rural and poor households. Increased incomes can partly be used for re-investment in economic activities and the remainder can be used for meeting basic household needs including schooling of children, healthcare, and other consumption items.

11. One potential emphasized in the Community Development report presented in Volume 1 of this report is the relative cultural, religious and linguistic homogeneity, and long tradition of collaboration, evident in most Myanmar communities. The absence of communal conflict and the established practice of community self-help is a major advantage in developing effective pro-poor initiatives.

CONSTRAINTS TO AN ENABLING ENVIRONMENT

12. The goals outlined above require the establishment of an enabling environment – both in terms of policies and institutional reforms. Key constraints to such an environment are:

- Landlessness: An estimated 30% of households in rural areas are landless in Myanmar. A vast majority of rural landless people depends on incomes from low-paying agricultural and construction work, fishing in rivers and working as labourers for fishing vessels, and unorganised collection of forest-based products. Landless populations lack the physical and financial resources to participate in economic development, and are focused almost exclusively on coping strategies for survival.
- Indebtedness: Evidence from rural surveys undertaken as part of this study, as well as from Government statistical sources, suggest that rural indebtedness is dramatically high and increasing. Rural households are forced to sell or trade away their assets, which they may have accumulated over their lifetime, as payment against informal loans or goods they may have received. In particular, loss of either land (although sale of land is not permitted, transfer of control does frequently occur) or draught animals can constitute a blow from which a rural household cannot recover. High and increasing rural indebtedness reflects the relatively low prices received for agricultural output under the current policy environment, the lack of access of rural households to formal sources of finance (as opposed to moneylenders etc.), and the absence of production technologies of relevance to household needs, resulting in stagnant yields and low productivity.
- Top-down planning: The rural population has little say in determining priorities or planning the utilisation of resources. To a large extent, the provision of social and physical infrastructure investment and services is not even determined by local government agencies, but rather reflects targets established at national level and simply passed down for implementation. As a result, needs are often not matched to resources. Furthermore, the potential roles of traditional community-based organizations in mobilizing resources and community labour are not fully exploited. For example, groups based around monasteries could play an effective role in constructing/ repairing/maintaining rural infrastructure.
- Inter-sectoral and inter-agency coordination is often weak, leading in some cases to duplication of services (e.g. extension) and in others the absence of any service provider at all. Although some inter-agency coordination does occur at

Township level, the top-down approach referred to above limits the usefulness of such groups.

- An excessive emphasis is placed on a commodity approach to technical support, where available. Rural poverty is multi-dimensional and most rural households depend on a number of activities for their livelihood. By not relating these different activities (e.g. livestock with cropping with aquaculture), the commodity focus does not serve the interests of rural poor.
- The design and implementation of effective policies is seriously constrained by a series of factors, including:
 - The lack of statistics disaggregated by local area, gender and household type (e.g. landless) are a pre-requisite for sound and effective planning. However, many types of data are simply not collected, while others are available only at Divisional level, rendering them of little use for planning purposes. Statistics collected by different agencies need to be consolidated to make them useful for policy analysis.
 - Monitoring and evaluation of Government activities and services and infrastructure provision is weak. No formal mechanism exists in Government agencies to regularly monitor and periodically evaluate the progress and impact of different interventions on rural people, society at large and for the country as a whole.
 - There is no mechanism for social and economic impact analysis: There is a need to establish a mechanism to evaluate impact (both social and economic) on rural communities, different types of households and different locations at the national and township levels.

SOCIAL AND COMMUNITY DEVELOPMENT STRATEGIES

13. Developing vibrant rural communities in Myanmar will require multi-sectoral and multi-pronged strategies. Overall four broad strategic poverty-focused areas for action can be identified, in addition to the more sub-sector specific strategies proposed in other sections. These four areas can be summarised as: (i) the development of a national level policy and institution for tackling and reducing rural poverty; (ii) the strengthening of the national level capacity to collect, monitor and evaluate information on rural households, communities and poverty; (iii) the strengthening of local capacity, both within Government agencies and in communities themselves, to determine needs, priorities and initiatives; and (iv) the creation of a pilot community development fund that will catalyse and support such local initiatives. Each of these is discussed in more detail below.

Policy and Institutional Development for Rural Poverty Reduction

14. Despite its signature of the MDGs, Myanmar does not possess a national level policy or approach toward poverty reduction, particularly in rural areas where three quarters of the population live. This lack makes it very difficult for the Government to seriously consider priorities for poverty reduction, or to assess the possible costs and resource requirements of

different options. Furthermore, there is no institutional capacity to effectively implement any such policy, were it to be developed. Thus, there is a need not only to develop a specific rural poverty reduction strategy, but also to create an institutional basis within which it can be operationalised.

15. To resolve this constraint, it is proposed that a three phase strategy be adopted comprising:

- **Phase I:** The preparation of a national level assessment of the extent and nature of rural poverty, which would complement and expand upon existing localised studies undertaken under this sector review and a prior JICA exercise, among others. It is expected that the assessment would provide greater information on border and tribal areas, peri-urban conditions, and the impact of such factors as gender, land possession, indebtedness, and the possession of draught animals and other key assets, on poverty and food security. Use would also be made of data available through the HIES and the forthcoming Agricultural Census.
- **Phase II:** The development of a national policy document on rural poverty reduction outlining the approach to be utilised in combating such poverty. Drawing on the data provided by the national poverty assessment, and involving extensive inter-agency and non-Governmental participation in the drafting process, the policy would specify any required changes in policy as well as concrete plans for interventions in the rural sector. The policy would be expected to closely link poverty reduction with enhanced, broad-based rural economic growth, although specific support measures might well be required for particularly vulnerable groups such as female headed households and school age children.
- **Phase III:** The creation of a national body charged with implementing and monitoring the national rural poverty reduction policy, together with the provision of sufficient resources to permit the committee, council or similar group to effectively carry out their work. It is strongly recommended that the body be directly under the Prime Minister's office, to ensure that inter-Ministerial collaboration is forthcoming and that high priority is given to implementation of the policy document. Integral to the functioning of this body would be the establishment of a secretariat, or similar support unit, which would be responsible for monitoring and evaluating data on rural poverty. The body could also assume responsibility for preparing and mounting public awareness campaigns, for example relating to nutrition education, vaccination and similar areas in collaboration with relevant line Ministries.

Improving the Availability of Rural Socio-Economic Data

16. Myanmar is far from unique in experiencing problems in adequately disaggregating data of relevance to the rural sector, as many developing countries face similar problems. Although most agricultural data is of necessity rural in nature, it is generally available only by Division or State, and it is currently impossible to group such data by agro-ecological zone or any other factor not related to administrative boundaries. For other sectors incorporating both urban

and rural activities, such as transport, energy, education, health and water supply, even distinguishing between urban and rural-specific data is much more difficult. In certain categories of data, particularly those relating to socio-economic indicators (e.g. landlessness, indebtedness, change in asset ownership), data of any kind is scarce or completely absent.

17. The effective planning and implementation of the poverty reduction strategy proposed above is largely impossible without sufficient data to identify priority areas, measure progress, and assess impact. For this reason, the establishment of a comprehensive rural data base must be seen as an essential element in any serious effort to combat rural poverty and promote broad-based economic growth in rural areas. Such a data base would probably comprise two elements: the regrouping¹ of existing data to permit the identification of rural-specific data at much lower levels than is currently possible (that is to Township level); and the identification of more complex data that could be collected and analysed based upon a periodic survey of carefully selected sample areas. It is strongly suggested that the data base be developed on Geographical Information System (GIS) lines; that is that all data possible should be tagged as to location in order to render data manipulation and map generation as automated as possible.

18. Although the establishment of a rural data base will have an investment component, covering such aspects as computers, vehicles and staff training, it is inevitable that such an approach will involve increased staffing levels in this area. In order to avoid increased recurrent costs, it may prove possible to reassign staff elsewhere in MOAI or other Ministries, if project funds are made available to cover the short-term costs of reassignment. As far as is possible, the design of the collection system should emphasize the use of existing data, as well as forging partnerships with groups such as UNDP, UNICEF and others who have a direct interest in obtaining such data themselves. The unit should also work in close collaboration with the Central Statistical Organization (CSO) and should be responsible for training and supporting key staff in line Ministries (e.g. MOAI, MLBF, Forestry) in socio-economic impact evaluation relevant to their technical areas of responsibility.

Strengthening of Local Capacity for Community-Based Development

19. The creation of a national policy body and supporting secretariat is a necessary condition for rural poverty reduction in Myanmar but is not sufficient on its own. In order to function, this body must be able to draw on the support of Government staff working at field level as well as from the communities themselves.

20. To this end the strategy would provide for a major strengthening of decision making and implementation capacities at Township and community level, through training of local-level Government staff and community leaders, and through support to increased budget control at local level. Among the most important areas to be covered under such a strengthening approach would be the conduct of participatory community needs assessments, the preparation of community development plans, the introduction of Township and even community budgets (implying a

¹ In some cases this may require the reformulation of questionnaires and other collection tools to allow such re-grouping.

reduction in financial and resource targeting at higher levels) which respond to these plans¹, and the creation of simple monitoring and evaluation procedures.

21. These changes imply a profound rethinking of the manner in which rural development is carried out, and are not expected to be easy to realise – either in terms of central approval for the required changes in resource allocation and control, or in terms of the attitudes of local Government staff and even community leaders as to their roles and responsibilities. For these reasons it is suggested that a phased approach be undertaken which would provide reassurance that these changes not only can be implemented in a manner that avoids disruption of Government activities and overall policy control, but which also demonstrates the anticipated positive impacts of involving the communities and local authorities more directly in prioritising needs and assigning resources. Proposed phases would include:

- **Phase I:** Conduct of a study to determine the extent and nature of responsibilities which could be transferred from more central levels of Government to local authorities and communities, and the implications of such a transfer of responsibilities in budget and resource terms. The recommendations of this study would require considerable discussion at senior government levels and in those Ministries most affected by the proposed changes, including Finance, General Administration and those concerned with rural infrastructure, natural resources and agricultural production.
- **Phase II:** The implementation of the approved changes in a selected pilot area comprising probably no more than several Townships. The implementation process would require Government staff and community leader training, the redefinition of Government staff duties and responsibilities, and the establishment of new accounting and financial management procedures to adequately control allocated resources. It would also likely involve the establishment of liaison committees or groups in which groupings of communities (probably those in Village Tracts) could cooperate in defining complementary priorities and strategies with local authorities.
- **Phase III:** An eventual third phase could expand the pilot programme to a much larger scale, conditional on the results of the initial results.

Financing Community-Based Development

22. The scarcity of financial resources available to rural areas constitutes a serious impediment to a major expansion of community-based development activities. Although significant gains can be achieved solely through such aspects as redirecting extension and infrastructure programmes to meet community priorities, and community participation in the development process, these will inevitably be limited by the capacity of national Government to channel resources to Township level.

¹ As far as is possible given limited financial and other resources available.

23. It is therefore proposed that a national community-based development fund be established, under the overall authority of the national poverty reduction body, which would channel additional resources to communities actively engaged in self-development activities. Although the sums which would be made available through each Township would be relatively small, and would have to be complemented by both local Government and community inputs, it is believed that they could play an important catalytical role. It is suggested that funds be made available for both social/environmental and productive developments¹, but that productive investments be required to refund their costs within a specified time frame (including some measure of inflation indexing) to the Township fund from which they were financed. To avoid unsustainable or minority proposals, projects would have to arise from the approved community development plan, and would be subject to an independent feasibility assessment using a standardized methodology common across all recipients. Proposed phases would include:

- **Phase I:** The preparation of a design for Fund operation and management, including fund supervision, allocation procedures to Township level, permitted financing categories, maximum per capita and per community resource allocations, required participant and local Government contributions, proposal formats and preparation procedures, proposal assessment methodologies, financial and technical monitoring and evaluation, the provision and training of technical support staff to communities for proposal development and implementation, and the contracting of goods and services using Fund resources. In order to ensure an effective pro-poor orientation, the design would have to consider mechanisms to prevent relatively wealthier sections of the community from monopolizing available resources, as well as guaranteeing a voice for landless and other marginal families in the selection of projects.
- **Phase II:** Pilot level implementation in those areas participating in the strengthening of local capacity for community-based development, including the monitoring of resource utilization and project outcomes.
- **A third phase** could be undertaken on the same basis as for the local capacity programme, in accordance with results of the pilot phase.

SUB-SECTOR INVESTMENT PROFILES AND COSTS

24. Investment project profiles arising from the sub-sector strategy are presented in Section 2. Total indicative costs for the social and community development profiles are summarised below. Total costs for the sub-sector are estimated at US\$25 million, of which US\$20 million is accounted for by the community-based development fund. Short-term costs (Years 1 and 2) are estimated to total US\$3 million.

¹ Although it is recommended that social/environmental investments be limited to no more than half of all expenditures, in order to encourage productive projects.

Investment Proposal	Short-Term Years 1-2	Medium-Term Years 3-5	Long-Term Years 6-10	Total (US\$'000)
1. Rural Poverty Reduction Policy and Institutional Development	682.0	610.5		1,292.5
2. The Establishment of Rural Socio-Economic Database and Expansion of GIS Information	517.0	848.1	338.8	1,703.9
3. Strengthening of Local Capacity for Community Based Development	95.7	965.8	748.0	1,809.5
4. Establishment of a National Community-Based Development Fund	2,453.0	7,463.5	14,147.1	24,063.6
TOTAL	3,747.7	9,887.9	15,233.9	28,869.5

4. CROP PRODUCTION INVESTMENT STRATEGY¹

VISION

1. The long-term vision for the sub-sector is for crop production to make a significant contribution to overall national economic and social development through sustainable growth, income generation and employment creation in the rural sector. Rural poverty reduction objectives would be emphasised through the adoption of new planning and management strategies based on market oriented, farming system and community/farmer driven approaches in future crop production development strategies.

OPPORTUNITIES

2. The human and physical resource base devoted to crop production is very considerable, but their full potentials are far from being realised.

- farmers involved in crop production are capable and entrepreneurial but these skills are not applied to optimal effect;
- the land and water resources available for agriculture are under-utilised with great scope for expansion and diversification; and
- the relatively low current crop productivity levels per units of land, water and labour offer considerable scope for greater efficiencies and for increased production through intensification of the existing cultivated areas.

3. The majority of the rural population of almost 40 million are directly or indirectly reliant on crop production for their incomes and food supply. Of the estimated 2.72 million farm holdings with an average farm size of 2.5 ha, over 54% comprise holdings less than 2 ha. The proportion of landless households nationally is estimated to exceed 30%, and can be expected to increase as capital indebtedness worsens in rural areas.

4. A high proportion of rural households are characterised by a very low resource base with a high vulnerability to production and social risks. Throughout the country mixed farming is practised, with crop and livestock enterprises closely integrated and inter-dependent. Crop production depends on livestock for draft power and farmyard organic manure to maintain soil nutrient levels, while livestock production depends on crop by-products for feed. Despite small farm sizes and a limited resource base, farmers are entrepreneurial by nature, competent managers, and generally well informed of the costs and benefits of production and of internal market prices and opportunities. Give appropriate incentives they will respond to price change and new market opportunities and drive rapid growth in the sub-sector.

¹ The following section is developed from Working Paper 2 “Crop Production” contained in Volume 3 of this study and was prepared by Michael Macklin, Agronomist for the Agricultural Sector Review.

5. The favourable soil and water resources of Myanmar and range of tropical, sub-tropical and temperate growing conditions offer considerable opportunities for diversification to more remunerative cropping systems, especially in horticulture and tree crops, and from rice to irrigated pulses and oilseeds in some dry zone areas. An estimated 15.5 million ha of land is cropped annually at an intensity of about 140%. In addition, some 7.2 million ha of cultivable wastelands are theoretically available for area expansion. It is anticipated that a significant proportion of these cultivatable waste lands would be suitable for conversion to sustainable crop production, permitting a significant increase in production and rural employment.

6. An analysis of yields of major crops over the past decade and a comparison with neighbouring countries in the region shows that with the exception of pulses, there has been limited or stagnant growth in productivity, whilst other countries have moved ahead. Data in the table below illustrates the significant opportunities for intensification through modest increases in crop yields, within regional averages.

Comparative Regional Yields (kg/ha), 2001

Crop	Myanmar	Asia	Viet Nam	China
Rice	3,170	3,970	4,260	6,350
Maize	1,740	3,781	2,920	4,933
Groundnut	1,227	1,515	1,501	3,213
Sesame	320	476	459	1,127
Sunflower	524	1,182		2,124
Pulses	777	744	716	1,567
Cotton	591	1,686	1,050	3,325

POTENTIALS AND CONSTRAINTS TO EXPANDED CROP PRODUCTION

Intensification

7. Intensification will not only benefit all sizes of landowners, but will also stimulate on-farm employment and wage rates for landless farm labour. Given the currently low productivity levels, there is immediate scope to intensify the production of all major crops. It is estimated that an incremental annual production of 3 million tonnes of cereals, 265,000 tonnes of pulses, 310,000 tonnes of oilseeds, 110,000 tonnes of seed cotton and 3.5 million tonnes of sugar cane could be derived through intensification within a five-year period.

8. In addition there are considerable opportunities for intensification through improved use of water in existing irrigated areas through, for example, better land levelling to improve water control, weed management and fertiliser use efficiency and through conjunctive water use by the development of groundwater to supplement dry season command irrigation. This potential is further discussed under the Irrigation and Water Resource Section. Similarly, improved in-situ water and soil conservation would intensify production under more vulnerable rain-fed production conditions.

9. The main constraints to realising the enormous intensification potential available to the sector arise from policy and institutional impediments to a favourable enabling environment. These constraints include:

- lack of unrestricted access to export markets for all Principal crops, precluding farmers from responding to international opportunities and demand;
- absence of tradable land ownership rights which would allow farmers to capture the value of land improvements and provide security for borrowing;
- lack of rural financial services able to provide appropriate levels of production and farm development credit for all crops and related activities that are deemed credit worthy (essential to increase fertiliser use);
- inadequate supply of improved seeds and planting materials for principal crops;
- weak extension services and lack of relevant, location specific production technologies;
- the application of restrictive, centrally directed, crop production strategies, preventing farmers from responding rapidly to market opportunities;
- inefficient water use and management in both irrigated and rain-fed situations; and
- lack of investment in watershed development and resource conservation and management in vulnerable dry and hilly zones.

Diversification

10. Whilst the potential for diversification is considerable it is unlikely to happen to any degree until the policy environment is liberalised to allow freedom of farmer choice within a market-oriented system. The constraints to diversification are largely those as described above for intensification. It is not possible to estimate production gains that could accrue from diversification without further study, but particular scope exists in horticulture for export and for diversification from high water duty crops such as rice and sugar cane to supplemental irrigation of larger areas of pulses and oilseeds in upland dry zone areas. The latter aspect is further discussed in the Water Resource Strategy Paper. Whilst the potential for expansion of horticultural production for the domestic market is limited by the low and decreasing disposable urban incomes, there is significant potential in high value horticulture for export. Other diversification options include home garden horticulture for local market niches and possibilities within the tree/plantation crop sub-sector, for example cashew in coastal areas and rubber if out-grower schemes are built into plantation development. However no specific tree crop initiatives are suggested at this time, as these are not considered the most appropriate activities for the small and marginal farmers or landless households and would therefore have a limited pro-poor impact, except through employment generation. Constraints to diversification include:

- the capacity of domestic infrastructure to handle high quality perishable crops for export and lack of incentives to attract foreign investment; and
- current directed cropping practice for rice and sugar limiting diversification under irrigated conditions.

Area Expansion

11. The availability of an estimated 7.2 million ha of cultivable waste lands offers, at least in theory, a massive opportunity for area expansion that could lead to significantly increased production and on-farm job creation, as well as prospects for land re-distribution to the poor and landless. The opening of just 20% of this area could yield at least a further 1.5 million tonnes of production per annum. Constraints to realising this opportunity include:

- lack of plans on the distribution of wastelands and land use capability maps;
- need for revision of current legislation and policies to permit re-distribution of cultivable wastelands to small farmers and the landless, with some security of tenure; and
- lack of funding for small farmer land clearance, land development and farm production.

CROP-BASED DEVELOPMENT STRATEGIES

12. The key challenge facing the sub-sector is how the above opportunities for growth, job creation and poverty reduction can be realised in order to meet the vision objectives, **namely to stimulate national economic development whilst at the same time addressing poverty reduction issues**. Fundamental shifts of approach in crop development planning and management need to be internalised across the sub-sector and future strategy reflect three fundamental shifts in approach.

- change in emphasis from a current commodity approach to one that is market oriented, farming system based and community /farmer driven;
- continued shift away from the centrally planned and directed approach to one that is locally determined and reflective of locally determined communal and individual priorities and initiatives; and
- change in the role and functions of Government to create an appropriate enabling environment that facilitates accelerated growth with greater emphasis on poverty alleviation through strengthened institutions and services and enhanced private sector participation especially in farm input and seed supply.

13. An investment programme supported by blend of policy adjustments and institutional strengthening will be required to change approach and address critical constraints in order to stimulate change and reap the growth potentials available in the crop sub-sector. The prioritised actions below are submitted below on the basis of being the most critical to realising production and poverty alleviation opportunities. Some of the actions are largely specific to the crop sub-sector, others of a cross-sector nature.

14. To exploit growth potentials with a pro-poor focus, four main investment initiatives have been identified within the crop sub-sector. These are (a) area expansion through waste land clearance and development and re-distribution to small-holders and the landless; (b) seed development to improve availability and adoption of improved seed and planting materials for all

principal crops; (c) dry-land area development and improved natural resource conservation in the more vulnerable dry zone and hill situations; and (d) implementation of a revised national crop planning and management process.

15. For the proposed investment initiatives to succeed a number of the priority policy and institutional constraints noted above have to be addressed, the following actions are proposed.

Policy Issues

Centralised Crop Production Planning and Management and Directed Cropping

16. It is suggested that a review of the centrally planned crop development process be undertaken to formulate and agree new methodologies for crop planning, monitoring and evaluation at national level. A process based on improving farm system incomes and developed from the bottom-up through consultation and locally determined priorities is suggested. Funds would be required to facilitate implementation of recommended changes and to establish a revised process. The full profile for this initiative is provided in Section 2.

Lack of Tradable Land Tenure or Access Rights

17. Review of current land policies to propose adjustments to current rules whereby agricultural land could be used as collateral within current constitutional provisions. This issue is discussed further in the Rural Finance Strategy.

Lack of Access to Open Markets for Agricultural Products

18. The long transition toward the national objective of introducing a fully market oriented system leads to induced market uncertainties and restricted access to market opportunities. This issue is discussed further under the agricultural marketing strategy, but it should be stressed that the continuing restrictions on market access, through its influence on crop prices, has a profound impact on the selection of crops and the productivity of crop production. The reintroduction of export controls on rice, following the much publicised liberalisation of the rice marketing system in 2003, raises serious questions as to the commitment of Government to its stated policy of promoting a market-oriented economic system.

Institutional Strengthening Issues

19. Reform and strengthening of the Rural Finance Sub-Sector is of the highest priority as far as the crop production sub-sector is concerned. Without adequate seasonal credit, farmers will be unable to access and apply the essential inputs required to take advantage of the considerable opportunities for intensification as well as diversification and expansion. The most important being fertilisers and improved seeds – furthermore unless farmers can access both they will not be able to utilise relevant technologies generated and offered by research and extension. As far as crop production is concerned the prerequisites for effective credit are:

- (a) credit must be made available at the right time and at reasonable transaction costs;
- (b) credit must be available for any economically viable crop or related activity; and
- (c) loans be granted on the basis of the merit and credit worthiness of individual applications and not limited by arbitrary ceilings.

This issue is addressed in the Rural Finance Strategy.

20. The lack of location specific farming system-relevant technologies and an overall poor extension capacity to offer these to rural communities is a critical weakness. Strengthened research and extension is a vital input for successful crop production development. As far as crop production is concerned the following themes require high priority:

- (a) integrated balanced plant nutrition;
- (b) generation and extension of high quality improved seeds and planting materials;
- (c) integrated pest and disease management;
- (d) soil and water conservation in rain-fed areas; and
- (e) improved water management in irrigated areas.

This issue is addressed in the Research, Extension and Education Strategy.

21. The current inadequate performance of the national seed system emphasizes the need to consider alternative approaches to the production, multiplication and distribution of improved seeds. This involves important institutional issues related to the role and mandate of the different MAS Divisions involved in the seed system.

Specific Proposed Investments

22. The investments identified are of three main categories:

- **Short-Term.** Studies, either of institutional and policy constraints backed by facilitating investment or as precursors to a development investment.
- **Medium-Term - Pilot Projects and Institutional Restructuring.** Pilot projects would be relatively small interventions designed to test options and learn experiences to facilitate preparation of major investments.
- **Long-Term Major Investments.**

23. Investments proposed under the crop sub-sector are summarised below and at the phased implementation and cost schedule at Attachment 1

Short-Term

- Review of the crop planning and management process and formulation of a revised process.
- Study of distribution and land capability of cultivable wastelands, mapping, review of institutional arrangements and legal framework and preparation of a pilot land clearance and re-distribution project.
- Study of lessons learnt from previous community based resource conservation and management interventions and the preparation of a pilot dry-land watershed development project.
- Development of a national seed policy and recommendations for sub-sector reorganization.
- Study of the requirements for development of an horticultural export industry.

Medium-Term

- Pilot land clearance and redistribution project covering about 5,000 ha to benefit some 1,500 smallholders, and the preparation of a major investment project based on experiences gained.
- Pilot dry-land area development project on about 10,000 ha in a high-risk low rainfall dry-zone area and the preparation of a major project investment.
- Investment to facilitate implementation of recommended changes emerging from the study of the national crop planning and management process and to finance establishment costs of a new system.
- Institutional reorganization and a pilot on-farm programme to strengthen national seed production.

Long-Term Development Investment Programs

- Land clearing and re-distribution Programme (200,000 ha).
- On-Farm Quality Assured Seed Multiplication Programme (40,000-50,000 ha).
- Dry-land Agriculture Development Programme (200,000 ha).

24. The above are presented as Investment Profiles, each a programme with phased interventions and investment.

SUB-SECTOR INVESTMENT PROFILES AND COSTS

25. The table below summarises the indicative investment costs for all sub-sector activities developed to profile stage and presented in Section 2. Of the total cost of almost US\$120 million, most costs are heavily loaded towards the long-term, which generally implies the expansion of previously piloted projects to national coverage. Short-term activities, which would encompass generally the first 12-18 months of activities, total less than US\$1 million, while medium-term projects, principally institutional strengthening and pilot activities, total US\$5 million.

Estimated Profile Investment Costs (US\$'000)

Profile	Short-Term	Medium-Term	Long-Term	Total
Cultivable Waste Land Reclamation	462.0	2,001.0	70,000.0	72,463.0
Dry Land Area Development	242.0	2,029.0	34,000.0	36,271.0
Production Planning and Directed Production Study	352.0			352.0
Production and Utilisation of Improved Seed	166.7	1,458.6	10,000.0	11,625.3
Horticultural Export Study	134.2			134.2
TOTAL	1,356.9	5,488.6	114,000.0	120,845.5

5. LIVESTOCK PRODUCTION INVESTMENT STRATEGY¹

OPPORTUNITIES AND CONSTRAINTS TO LIVESTOCK DEVELOPMENT

Regulatory Environment and Information Support for the Sector

1. The domestic market for livestock products in Myanmar offers little potential for expansion at this time. There are export opportunities, but livestock export potential is limited by processing infrastructures which are outdated and unable to produce to international standards. An open and facilitating policy, regulatory and policing environment is needed to encourage investment in production and processing facilities the sector needs, but present government controls and import/export procedures act to effectively discourage such investment. This disincentive is compounded by the absence of much useful information on the livestock base, its off-take, volumes of livestock product processing, and the extent of unofficial processing and exports of livestock and livestock products. Such information as is available is incomplete or is spread across multiple sources, and these data are often conflicting. It is therefore difficult for the private sector and government to clearly identify key production and marketing constraints and opportunities. Consequently the private sector is without the information it needs to plan and invest effectively and government has little rational basis upon which to establish policy for the sector, or to provide a constructive regulatory environment.

Disease Control Capability

2. LBVD has made considerable investment in vaccine production and some diagnostic facilities over the years. It is able to produce a range of vaccines effectively, but for want of resources and investment primarily in human resource development, is unable to provide a comprehensive and effective livestock disease control programme for Myanmar. The Epidemiological Section in LBVD should be able to develop and direct an animal health programme for the nation and while it is able to address this in part, it needs considerable strengthening for it to be more useful. Accurate data in respect of prevalence, incidence, location, and seasonal occurrence for all of the key strategic diseases is lacking, therefore there is no pragmatic basis upon which existing and potential livestock disease threats at national or herd levels can be properly addressed. This has important disease and trade implications both for Myanmar and the other countries in the region. Effective programming and disease control planning would be possible if LBVD could institute a Veterinary Epidemiology Programme (VEP), which if well resourced, could make a useful contribution to animal health management for the commercial and traditional sectors and provide a facilitating basis for livestock exports.

Credit for Livestock Production

3. An important constraint to the development in the smallholder livestock sector at present is its general lack of start-up and operating capital for existing and intending small scale

¹ The following section is developed from Working Paper 3 “Livestock Production” contained in Volume 3 of this study and was prepared by Roderick Kennard, Livestock Specialist for the Agricultural Sector Review.

producers. A source of small scale livestock microfinance is essential if those now without livestock are to access them and if those with livestock are to expand their operations or buy the additional inputs they need to manage their livestock productively. Landless households are present in every village but most are without the capital or the collateral to borrow for livestock productive purposes, although some landless households have demonstrated considerable capability in managing small scale livestock enterprises covering the whole livestock spectrum. Therefore an ability on their part to buy small numbers of livestock (chickens, pigs and cattle) would provide them the opportunity to improve food security and increase household incomes. Such households also have opportunity to raise dairy cattle, provided such small scale dairy operations can be linked to milk marketing channels.

Livestock Extension Capability

4. The agricultural extension capability provided nationally through Myanmar Agricultural Services (MAS) is commodity specific, top-down and does not include livestock. LBVD has the responsibility for livestock extension, but a top-down orientation and want of resources means it is unable to provide extension support effectively. Therefore it is not possible to usefully implement national initiatives addressing the production constraints of most traditional livestock classes, or indeed, the specific and on-going, nation-wide Newcastle disease vaccination programme of village chickens.

5. The traditional livestock sector therefore performs less well technically than it could, and dairy, pig and poultry in this sector and to some extent livestock managed commercially, are generally under producing. This is a result of indifferent feed quality and quantity, and management. Traditional poultry production is also limited by two main factors – the poor husbandry of young birds and the almost annual recurrence of Newcastle disease. Constraints such as these could be addressed usefully through a national, bottom-up extension approach and much of specific livestock extension could much more usefully be based on village-groups and in respect of pigs and poultry, should be directed to women.

Milk Collection and Artificial Insemination

6. Much of the milk in Myanmar is produced by smallholder livestock raisers holding traditional cattle. The dairy processing sector limits its use of raw milk collected from such small scale local producers because local cattle produce only small quantities and the milk collection cost in these low milk density areas is high. Imported milk powder could be increasingly displaced with local fresh milk if domestic cattle are able to improve their production enough over the long-term to justify collection. Volumes are too small for this at present and there are problems with the seasonality of milk supply and with its adulteration. There are opportunities nonetheless, to foster higher levels of production and collection at small farm level, but this requires a concerted approach on the part of the processors and a commitment to take small milk volumes from these farms and areas initially and for as long as it takes to build them up to commercially useful volumes. To do this in the absence of effective government extension, the processors will need encouragement to train new dairy producers in milk production and quality – effectively providing their own extension services.

7. Milk production from a broader production base of smallholders would come only from targeted AI and the conversion of local cattle to higher producing crossbreds. Any such change to higher producing animals is likely to come from the better resourced households initially. But if this is done and they produce the volumes needed for milk collection to be economic, the households which are less well resourced could begin production and supply to an existing market and developed milk collection system. Their local cattle also need upgrading to milk production potential to achieve this and LBVD would have to focus the delivery of AI on specific areas and those farms with the potential for dairy expansion. It would also have to direct considerably more efficient AI services to them. Investment in AI to achieve this would usefully (i) ensure a reliable supply of liquid nitrogen – the main input constraint affecting the delivery of AI at present, (ii) supply equipment and training, and (iii) the possible privatisation of the insemination service. Were this done and an effective system of extension established which supported dairy production in the smallholder sector considerable benefits would accrue in terms of household income and food security.

STRATEGY FOR LIVESTOCK DEVELOPMENT

8. The investment strategy will maximise the output efficiency of commercial and traditional livestock production units throughout Myanmar. Such increases in production must be consistent with sound environmental practice and the resulting livestock products should comply with human health standards and be suitable for export. The strategy recognises a production base which is almost, if not entirely within the private sector and a future government role which is limited to establishing appropriate regulations, setting and policing standards. This would constitute the enabling and facilitating environment necessary, in which producers and the suppliers of support services (feed millers, producers of breeding stock, livestock processors and exporters) can operate.

9. The facilitating environment is based on the government provision of services and inputs essential for development but which the private sector cannot profitably supply. These will include the setting up and operation of a national animal health programme with responsibility for protecting domestic livestock and the livestock industries of neighbouring countries from transboundary animal diseases, the production of essential livestock vaccines to support this, and the national supply of inputs such as liquid nitrogen and semen for artificial insemination.

10. Implicit in the strategy is encouragement of the private sector to invest in livestock production and processing as and when suitable opportunities are identified. Investment in the public sector to support national programmes of strategic importance would be made in recognitions of the continuing obligation of the state (LBVD) to supply them. But the strategy would make it possible for the private sector to assume the management of these facilities or to actually supply the services from privately owned facilities. This would be done through divestment or sub-contracting arrangements with the state. Thus for example, LBVD could own the diagnostic and vaccine production laboratories and a liquid nitrogen production capability, but could contract the operation of these facilities privately. At the same time however, LBVD would retain overall control of the national veterinary epidemiology programme (VEP) and public health (in respect of zoonoses and meat inspection), programmes as part of its unalienable responsibility. However, the investment strategy would not provide for or support any state investment in

productive assets such as intensive livestock and poultry farms or in processing facilities such as slaughterhouses or poultry processing plants. These would remain private sector initiatives.

11. Intensive commercial production units supply much of the products reaching the formal domestic and export markets. These units require unimpeded access to livestock resources and breeding material sourced domestically and from abroad, as well as access to modern production equipment, techniques and market information, and internationally competitive investment finance. They also require the freedom to negotiate import and export contracts without restriction and according to normal free market conditions. This will only be possible if government is able to ensure the enabling environment necessary by establishing an appropriate legislative background and policing capability, and by instituting and maintaining a supporting infrastructure. Part of the investment strategy proposed for the short-term therefore, would provide investment in reviewing sectoral policies and amending a number of important regulations relating to standards. The strategy envisages the continuation of a substantial and broadly-based traditional sector based on small production units which supply mainly to domestic markets with live cattle and pigs moving from these into the international trade. The traditional sector will continue to supply these local markets with a minimum of processing or added value. But border checkpoints, quarantine posts and investment in VEP and movement monitoring would provide the basis for formalising the export cattle and pig trade and initiatives (i.e. microfinance) introduced where possible, to encourage the traditional sector to expand its access to these markets.

12. Although it is argued that a number of strategic elements would be of value for poorer populations, two key elements of the strategy offer support specifically for pro-poor development. The first envisages access to micro finance for landless and impoverished households, to enable their involvement in livestock production. Development of a source of microfinance is described elsewhere in this report. The second would improve the capability of government to support the small-scale traditional sector through the support services it badly needs. These include; (a) relevant farm-level production information delivered through an improved and broadly available extension system; (b) effective, farm level disease control measures available nationally; and (c) a more broadly available but targeted system of artificial insemination. This element would have as its focus an extension delivery system whose outputs are based on locally determined production priorities rather than the centrally driven, commodity-specific extension of the present. Investment in a farm-based extension system is described elsewhere in this report.

13. Importantly and in support of both commercial and traditional producers, the main investment in government resources would be support to its core responsibility for the sector. This is the national disease control programme with effective disease monitoring and analysis providing the basis of effective disease prevention, control and eradication. Inevitably, key elements of this programme would be centrally determined and directed, but their impact would be felt both by commercial producers and producers at the smallholder level throughout Myanmar.

KEY DEVELOPMENT PRIORITIES

14. Priority initiatives over the short-term include:

- Re-examining policy for the sector and improving regulations to provide the background and enabling environment to support investment in livestock production and processing, establish standards and facilitate the development of domestic and export markets for livestock and livestock products. The role of LBVD would more appropriately shift from that of a field agency producing vaccines, conducting extension, and engaging in input and service delivery, to one primarily of regulating and setting standards while retaining responsibility for some strategic input supply and the highly important function of national-level disease control programming. A profile is presented for this activity in Section 2, with an expected duration of one year.
- Supporting LBVD with an effective operational capability for disease control and beginning a dialogue leading to removing the obligation for extension and other non-core activities where these can be transferred to a more appropriate unit of government. LBVD would then apply resources where they are needed most. This would be preceded by policy amendment emphasising animal health as the LBVD core responsibility. But it would also need to be complemented with a parallel amendment to agricultural policy in which livestock is recognised by extension services as an integral component of the farming system. Such a policy shift would also reverse the centrally directed system of extension to one based on locally determined priorities and initiatives, with all responsibility for farm extension as a whole, being transferred to a newly established extension unit under MOAI. A profile is presented for this activity in Section 2, with an expected duration of three years.
- The restructuring of livestock production extension services is a critical element to any sustained expansion in the sub-sector, but is currently not feasible given the resources and disease control mandate of the LBVD. Proposal for the development of an integrated farming-systems based agricultural extension system, including livestock are provided in the Agricultural Research, Extension and Education sub-sector strategy. Under this proposal, LBVD would focus on the development of appropriate extension messages and materials for use by the integrated extension service.

15. Second order, specific priority areas which can be developed over the longer term include:

- Improving smallholder farm income in dairy areas with high potential where more raw milk can be produced and collected from a broader, smallholder dairy production base. This is a pro-poor initiative which is conditional upon establishing an easier operating environment for commercial milk processors, an effective system of extension delivery and targeted and more efficiently delivered AI. Importantly, if more smallholders are to engage in dairy

production the generally available system of micro finance will have to be addressed.

- Improving the adoption of village vaccination against Newcastle disease in poultry. Fundamental to its success is the piloting and field research needed to establish workable modalities for village-based vaccination. This can be done on an area basis by utilising the LBVD staff. However, as with other livestock development initiatives, nation-wide vaccination requires an extension system made much more effective than the livestock-specific extension approach with which LBVD is mandated. A profile is presented for this activity in Section 2, with an expected duration of up to five years.

SUB-SECTOR INVESTMENT PROFILES AND COSTS

16. The table below summarises the estimated investment costs for all sub-sector project profiles presented in Section 2. The total provisional estimate of US\$11 million is spread over a maximum five year period. There is a single short-term activity, implemented over the first year at a cost of US\$275,000, although a separate profile includes costs in Years 1-2.

Indicative Investment Costs (US\$'000)

Investment Proposal	Short-Term Year 1-2	Medium-Term Year 3-5	Total (US\$'000)
1. Review of Livestock Sub-Sector Regulations and Policy	274.5		274.5
2. Strengthening of National Disease Control Capacity		2,650.0	2,650.0
3. Expansion of AI and support for small-holder dairy production	369.0	6,578.0	6,946.0
4. Establishment of a Village-Based Newcastle Disease Programme		1,133.0	1,133.0
TOTAL	643.5	10,361.0	11,004.5

6. FISHERIES INVESTMENT STRATEGY¹

VISION FOR THE FISHERIES SECTOR

1. The fisheries sector will provide sustainable maximum quantities of high quality fish and generate direct benefits to rural and urban populations in the form of increased health and prosperity as well as sustainable national income from exports.
2. Institutionally, the fisheries sector will be well managed, without conflicts between resource users or between these and Government. The Department of Fisheries will play a catalytic role in fisheries management, in which resource users groups (including fishing communities) participate actively. Aquaculture operations will be sustainable and not harmful to the environment and will contribute to the diversification of income and greater availability of fish for local and export markets.

OPPORTUNITIES AND POTENTIALS

3. Myanmar is blessed with a long shoreline along the Bay of Bengal and the Andaman Sea as well as with an important river system and numerous inland lakes and reservoirs. Fisheries resources have therefore traditionally played an important role as a source of food, income and employment.
4. In the (offshore) marine capture fishery, apart from shrimps which are processed locally, most of the catches are exported whole to neighbouring countries. This occurs because there are relatively few fish processing plants which could generate added value by producing fisheries products for the international export market. Given the high cost of labour in developed countries, there should be considerable scope for an expansion of fish processing. With increased technical capacity and the introduction of international quality control standards, facilities and processing procedures based on HACCP standards could be developed. In areas where facilities exist, the by-catch from trawling can be converted into fish meal.
5. The inshore marine fishery is small-scale in nature and provides livelihoods to many in the capture, processing and marketing chain. Although this sub-sector produces mainly for national consumption and border trade, there is considerable scope for improved fish handling and processing as well as for the introduction of new processing methods.
6. The fish resources of the lakes and rivers and of the adjacent floodplains provide livelihoods to millions of people. The natural productivity of practically all inland waters can be significantly enhanced by the introduction of fingerlings or fry of non-native fish species. Inland fishing rights are currently leased through an auctioning system, but this restricts access by local communities. Fishing in the relatively few “open” waters (areas where fishing rights are not leased) is a last resort activity for the numerous landless, increasing pressure on these resources.

¹ The following section is developed from Working Paper 5 “Marine and Inland Fisheries” contained in Volume 3 of this study and was prepared by Frits Roest, Fisheries Specialist for the Agricultural Sector Review.

The fisheries sector could be an important tool in the achievement of greater socio-economic development and a more equitable distribution of resources in rural areas if community-based fisheries management were introduced as an alternative to the leasing system. Fishing in reservoirs, officially banned at present for fear of unsustainable practices, could also have significant positive impact on rural poverty.

7. Private and community fish farming has great potential, and there has been some promotion of aquaculture by Government in medium to large sized fish ponds, or in rice fields. However, there appears to be a lack of tradition of small fish ponds which has been shown in many other countries to be a valuable means of diversifying rural farming practices. Important advantages can be derived from integrating aquaculture with other smallholder farming system components, including diminishing the risks associated with small-scale farming. Pond water cannot only be used for crop irrigation and livestock watering in the dry season, but can also yield fish; increasing the availability of protein for household consumption and offering an income source when traded.

8. The coastal zone has a high potential for the development of semi-intensive shrimp farming and cage culture of high value fish species, on the condition that environmentally sound planning and management is applied.

CONSTRAINTS TO FISHERIES DEVELOPMENT

9. In order to achieve the vision presented for the fisheries sector, a significant number of constraints need to be overcome. Because of the crucial role of Government in bringing about the changes required, the most urgent constraints to be tackled are institutional ones, related to the absence of fisheries planning and management capabilities at all levels, the lack of environmental planning and monitoring capabilities, and the lack of support to the aquaculture sector.

10. Compared to its counterpart dealing with the agricultural sector, the Department of Fisheries has received very little recognition from Government. As a result, budgets are very low and staff underpaid and lacking key skills. In addition, most of its very limited resources are geared towards ensuring the generation of revenue from the sector itself through licensing, leasing and collecting export taxes. There is an urgent need for a redefinition of Department of Fisheries tasks and a creation of new competences, taking into account requirements for the development of adequate policies and legislation, fisheries planning and management, as well as community-based management, and environmental planning and monitoring.

11. Currently, little is known concerning the size of the marine resources, as very few surveys with research vessels have been done. This lack of recent reliable information places the Government in a dilemma, as recent downward revisions for maximum sustainable yield would indicate that present catch levels are above sustainable levels, both offshore and in the inshore fisheries. As a result of budget and human resource limitations, the Department of Fisheries lacks the necessary fisheries management capabilities to respond to this concern; it has not been involved in resource monitoring, relevant data collecting, or fish stock assessment and other fisheries research.

12. For the inland waters, there is a need to modernize the leasing system in place and replace it with a system of community-based management, in order for local communities to have

more equitable access to the resources. This requires new policies and legislation to be developed and new competences to be developed for the Department of Fisheries.

13. Large-scale mangrove clearing for charcoal production and the creation of paddy fields has had a significant negative impact on the coastal environment as well as on the abundance of inshore fisheries resources. Plans exist for the introduction and/or expansion of semi-intensive shrimp culture in the environmentally highly sensitive mangrove areas, without adequate Governmental planning, monitoring and impact assessment capabilities. This makes it imperative that the Department of Fisheries urgently develop competencies in environmental planning (impact assessment) and impact monitoring.

14. In contrast to other countries in South East Asia, very few small-scale fishponds exist in rural areas. Their incorporation in the farming system would provide ample additional opportunities for the diversification of production of food and income.

STRATEGY FOR FISHERIES DEVELOPMENT

15. The strategic approach for the sustainable development of the fisheries sector consists of providing simultaneous support to selected target groups (small-scale fishing communities, individual farmers and/or shrimp farmers) and to Government. It is consistent with an overall role for Government in creating and ensuring an enabling environment for development and stresses the pro-poor growth potential offered by the sub-sector.

16. The approach consists of a phased combination of policy improvements and investments. The following general steps can be defined:

- building awareness of the main issues facing the fisheries sector through the organization of one or more national thematic workshops or, alternatively, through the organization of a national survey to identify the detailed requirements for assistance;
- creating an appropriate enabling policy, legal, regulatory and supervisory environment to promote the establishment of community-based fisheries management; and
- strengthening the institutional capacities of the Department of Fisheries (in fisheries planning, resource monitoring, fish stock assessment, relevant statistical data collection, environmental planning and monitoring).

Priorities for Fisheries Development in Myanmar

17. A strategy for the enhanced and sustainable contribution of the fisheries sector to the reduction of rural poverty consists of three priority elements:

- (i) the transformation of all small-scale fisheries into community based fisheries;
- (ii) the incorporation of small fish ponds into overall farming systems in Myanmar; and

(iii) the institutional strengthening of the Department of Fisheries.

18. It should be stressed that many S.E. Asian countries have considerable experience in community-based fisheries, in small-scale fish ponds, and in fisheries management. It therefore makes sense to draw upon S.E. Asian experience in designing and implementing such a system. In this respect it is noteworthy that Myanmar is already member of the NACA Stream Initiative and of SEAFDEC. While this is definitely an advantage from which much can be learned, full benefits can only be derived after Myanmar actually starts reorganizing and managing its own fisheries, and fills educational gaps precluding full participation in technical consultations.

19. The transformation of the current lease system into a system of community-based fisheries management aims to involve resource user groups directly in the management of the resource, and requires the Government to undertake a totally new facilitating role. It includes the initial drafting of legislation enabling communities to assume their responsibilities in the management of the fishery, the encouragement of the formation of organized user groups, their initial training, and the setting up of a consultative process between these groups and the Government. Government fisheries development policies are to be developed along these lines and the necessary technical support capabilities developed.

20. The absence of small fish ponds (less than 400 m²) in rural Myanmar was noted by the Myanmar Aquaculture and Inland Fisheries Mission in December 2002. This mission remarked that “this may reflect a cultural reluctance to farm fish ... or possibly uncertainty over the legality or potential of small scale fish culture. Another possibility is that wild fish are sufficiently available to lowland rural people to render fish culture in small ponds unattractive. *Identification of the underlying reasons for this would have significant implications for aquaculture development in rural areas especially where the rural poor are targeted. It is recommended that this be clarified and documented*”.

21. The situation of the fisheries in Myanmar is characterized by weak Government involvement in the planning, management and development of the sector. After the creation of the new fisheries legislation in 1989 which provided an impetus for the development of the fisheries sector, Government has been mostly involved in income generation from exports and leases and has not paid adequate attention to the development of the sector. In order for the Department of Fisheries to play a more prominent role in the future, it is necessary that competence be developed and/or updated in all major fields, particularly in fisheries resource monitoring and management (including research and relevant data collecting), fisheries policy and planning (fisheries economics), and that, more structurally, the Department of Fisheries becomes involved in policy formulation for the sustainable development of the fisheries sector (fisheries co-management, development and application of environmental capabilities, environmental and biodiversity impact assessments, creation of enabling environment for the generation of jobs and of added value from the exports of finished fisheries products).

Phasing and Implementation

22. Phasing and implementation of the initiatives should be planned in such a way that benefits from training, workshops or consultant services are maximized. Nevertheless, despite the need to develop technical competence in DOF through training, action is very urgently required and therefore should start immediately in:

- resource monitoring;
- organization of a national workshop on semi-intensive shrimp culture; and
- the consultancy needed to determine requirements for the introduction of small-scale fish farms.

23. A number of relatively small steps need to be taken before more detailed relevant support can be proposed. Among these are the nationwide survey of small-scale fish ponds and the elaboration of a strategy for the upgrading the Department of Fisheries.

24. Since the Government's role is important in all three proposed priority areas, a precondition to further development is the adoption by Government of the present analysis of the fisheries situation and a resulting orientation towards a more equitable distribution of the natural resources, as well as improved planning, management and development. In case of the transformation of the lease fisheries into community-based fisheries management, Government must show the political will to devolve responsibilities and promote the formation of interest groups/NGOs which will provide the basis for community-based development. This should take the form of written policies and realistic long-term plans, in which Government commits itself to change. Equally important is the recognition of the importance of the sector and of the Department of Fisheries, which should be provided with an adequate budget, in agreement with Article 53 of the Myanmar Fisheries Law of 1989.

Short-Term Actions and Investments (12-18 months)

(a) Introduction of Co-management in all Small-Scale Fisheries

25. Since this field is new to Myanmar, an important step in the adoption of the strategy will be an initial nationwide workshop attended by both Department of Fisheries staff and the private sector, in which the principles of community-based fisheries are explained and discussed. Recommendations should be made concerning the way in which fisheries legislation be modified in order to enable co-management. There will be ample room for learning from outside experiences.

26. At the same time, it is important that two senior DOF staff attend the 7 weeks' training programme "Towards participatory fisheries management" offered annually at the International Agricultural Centre, Wageningen, The Netherlands or a similar course elsewhere.

27. It is suggested that the two staff members attend the course in participatory fisheries management (held in October-November) prior to holding the workshop and developing the proposed assistance project. During this initial phase, all preparations should be finalized for a 2-year pilot phase

(b) Survey to Confirm and Identify Reasons for Absence of Small Fish Ponds

28. The identification of the underlying reasons for the absence of small-scale fish ponds should be the starting point for any development of small-scale aquaculture in Myanmar. A representative national survey should be undertaken by an expert familiar with the opportunities

offered by, and requirements for, small fish ponds. In addition to identifying the reason for the absence of such small fish ponds, this survey should also assess the potential for pond development and the estimated cost of their construction. Based on the outcome, a detailed further project profile should be developed.

29. If the need for such ponds is indeed apparent in Myanmar, targeted rural populations (those with appropriate land resources and low income levels) should be provided with assistance to create and manage small-scale productive aquaculture ponds. These could be new ponds, or they could comprise modifications to existing paddy fields, either as part of rice/fish cultivation or as a conversion to purely aquaculture operations.

30. Depending on the findings and recommendations of the mission, the following elements are likely to be present in the final design:

- development of extension service (advice on species selection, fingerling size, feeding, breeding, disease prevention and control, malaria control);
- phased introduction of small-scale aquaculture in key regions;
- provision of correct-sized fingerlings of suitable species;
- training of local management groups; and
- financing options for pond excavation and stocking.

(c) Institutional Strengthening

31. As one of the key short-term activities, it is necessary that a human resource development strategy be developed for the Department of Fisheries, listing matching short and long-term training courses and opportunities in the S.E. Asian region as well as outside the region. The following overview is provided of training and staff skills development requirements.

32. **Development of a resource monitoring capacity:** This is a key component requiring considerable training. Because of the immediate need to initiate a monitoring programme, the services of an international consultant will be required for at least four months. His/her duties will include: the drafting of a resource monitoring programme (possibly including observers on board fishing vessels, the introduction of logbooks, setting up of a relevant data collecting system), the retrieval of relevant information on catches and the corresponding levels of fishing effort for individual species from the inspection data books. I would also include assistance in the design of a new marine fisheries resources survey foreseen with the joint SEAFDEC research vessel.

33. Additional requirements include a 2-3 weeks' training course in the use of fish stock assessment software (FiSAT), in order to illustrate why data are collected and how they can be utilised, and the preparation, printing and distribution of marine and freshwater fish species identification booklets. The latter will be important for the correct identification of fish catches by species and provide useful assistance in the development of a biodiversity assessment capability.

34. Follow-up activities will be required in the form of consultancies, e.g. for the analysis of resources survey data and to ascertain data quality. Earlier unsuccessful attempts to provide short-term support in fisheries statistics have failed largely because of the lack of counterpart

capabilities. As a result, the emphasis of external support should be on basic training of fisheries officers and staff.

35. **Fisheries management capacity.** An effective management of the fisheries of Myanmar requires advanced overseas training in theory and practice of fisheries management (objectives, tools, mobilization of research, monitoring and evaluation, acquisition of socio-economic data) as well as the development of economic skills to improve the policy making and planning capabilities (e.g. the ability to perform economic analysis of various fisheries and aquaculture operations. Additionally, training of two senior staff is required in community based fisheries management.

36. **Fisheries and aquaculture research.** The development of a fisheries and aquaculture research capability can best be achieved through targeted training within the S.E. Asian region, in collaboration with international organizations like SEAFDEC and NACA. Among the capabilities to be developed should be the assessment of the freshwater fisheries potential and options for its enhancement. Two staff should specialize in this field, through training and through attending conferences where experiences can be exchanged with fellow scientists from other countries. After this training period, further guidance should be provided by the fisheries management unit.

37. **Development of environmental capabilities.** The need for participation of DOF in proper environmental planning is evident, particularly in relation to the continued expansion of semi-intensive shrimp farming and the introduction of cage culture of high-value species in the coastal environment. In this respect, a proper approach would consist of training of DOF staff (in environmental impact assessments, biodiversity impact assessments and environmental planning, establishing shrimp farming zones, site selection, management of risks associated with semi-intensive shrimp farming), combined with the organization of a major national workshop where Government and private sector are exposed to experiences from elsewhere. This workshop would draw on the experience of neighbouring Thailand in the development of fisheries and coastal resources and of the institutional and policy issues related to their management (e.g. through involvement of the Faculty of Natural Resources, Prince of Songkla University, Thailand. Participation of two international experts (shrimp farming, environment) and four regional experts (NACA, SEAFDEC, 2 external Thai consultants) is also recommended.

38. **Enhancement of the status and performance of the Department of Fisheries.** Preparation of new work profiles and tasks for DOF officers is essential, and a publicity campaign to increase awareness of fisheries management issues and small-scale aquaculture opportunities is recommended. An overall training strategy will be developed. DOF will be required to provide more focused support to private sector development (private hatcheries, generation of added value and enhanced creation of employment from fisheries products for exports, development of an independent private quality laboratory), as well as development of an extension service and communication skills.

Medium-Term Investments (2-4 years)

(a) Participatory Fisheries Management

39. Transforming the commercial lease system into a functional community-managed fishery is necessarily a long-term process. The initial workshop and training of senior staff should have paved the way for an implementation phase of three years, during which pilot-scale activities would be started in key geographical areas. It is extremely important that Government and private sector develop sufficient mutual trust for this mechanism to work.

40. After a successful initial pilot phase, the experience should be multiplied and also extended to the reservoir fisheries and the inshore marine fisheries fishery.

(b) Small-Scale Fish Pond Development

41. After an inventory of needs and the listing of detailed requirements, undertaken in Phase I, it should be decided whether a full-fledged project of providing support for the development of local fish ponds should be launched.

42. An effective implementation would require a substantial modification of the approach and capacity of the Aquaculture Division of the Department of Fisheries, including the creation of an effective extension service, an expanded fingerling production capacity, access to some form of financing for infrastructure development (preferably on a reimbursable basis to participant farmers) and the ability to supervise and monitor private sector contractors providing pond excavation services (if farmers, working in groups, cannot construct these themselves). It would also require significant policy changes in some areas, including greater flexibility in permitting paddy farmers to make the transition to aquaculture on some or all of their land.

(c) Institutional Strengthening

43. It is too early to anticipate the results of the training strategy which will have been developed in Phase I. However, as training in resource monitoring, fisheries management, fisheries and aquaculture research and environmental capabilities occurs, DOF should make appropriate plans for the effective deployment of trained personnel. The proposed short-term consultancy for the enhancement of the status and performance of the Department of Fisheries should have provided results which will allow Government to take action and the training strategy will allow Government to submit detailed requests for funding to the donor community.

Long-Term Investments (5 years or more)

44. Long-term actions will basically depend on the success of the short- and medium-term actions. It is very important that all experiences be properly evaluated and documented for further reference. Where pilot efforts in participatory fisheries management are successful, expansion should occur, but it is difficult at this point to foresee the rate at which such successful experience can be replicated in other areas. Similarly, a successful integration of fish ponds into local farming systems is expected to lead to the expansion of project activities to other areas.

Where results of pilot experiences are very positive, however, and financing sources well developed, it may prove possible for later development to be handled by the farmers' communities themselves and not require further attention.

45. Adequate recognition of the budgetary and investment requirements of DOF by the Government, resulting in appropriate funding levels, combined with the outcome of the institutional strengthening component undertaken previously, should translate into a properly functioning Department successfully applying its newly acquired techniques and expertise.

SUB-SECTOR INVESTMENT PROFILES AND COSTS

46. Investment profiles for projects arising from the sub-sector strategy are presented in Section 2. Below are summarized total indicative costs for profiles developed for the fisheries sub-sector, broken down by phasing. The majority of the US\$6.3 million total is expended in the short-term (US\$2.2 million) and in the medium-term (US\$2.8 million). Only one project extends beyond 5 years.

Profile	Short-Term (0-2 yrs)	Medium-Term (3-5 yrs)	Long-Term (6-10 yrs)	Total (US\$'000)
Institutional Strengthening of the Department of Fisheries	1,188.0	891.0	0	2,079.0
Support for the Transformation of Local Fisheries to Community-Based Management	250.8	1,226.5	1,342.0	2,819.3
Incorporation of Small-Scale Fish Ponds into Farming Systems in Myanmar	686.4	704.0	0	1,390.4
TOTAL	2,125.2	2,821.5	1,342.0	6,288.7

7. AGRO-INDUSTRY INVESTMENT STRATEGY¹

BACKGROUND

1. The Government of Myanmar has increasingly stressed the importance of a more diversified agriculture to achieve its goals of modernization and rural industrialization. This is consistent with similar strategies followed by other Asian rice economies during the 1970s and 1980s, where agricultural diversification was seen as a desirable response to changes in supply (the success of the green revolution resulted in food self-sufficiency and declining real rice prices) and demand (rising income and urbanization increased the demand for non-rice food products). Some of these economies have been successful at diversifying the agricultural and rural economy. However, it was also realized that agricultural diversification was a much more complex process than changing the output mix.
2. Agricultural diversification and rural industrialization as an enabling strategy for rural income growth and poverty reduction in Myanmar will require enormous investment and will take time. The constraints are of staggering complexity: the presence of a large population in rural areas characterized by widespread poverty; low productivity of agricultural labour; low level of infrastructure development; poorly integrated markets (in terms of formalized value chains); poorly functioning factor markets such as land and credit; and an underdeveloped rural industry characterized by a dichotomy between micro enterprises and large (usually state owned) enterprises. These constraints are aggravated by a still incomplete process of liberalization in the transition from a centrally-planned to a market-oriented system.
3. There are enormous challenges in pursuing the goal of accelerating agricultural growth in a sustainable and equitable way. Change in policy, investment allocation, and institutional development will have to create the conditions to implement such a strategy.
4. The link between agricultural and rural development has been already recognized by the government of Myanmar and is embedded in policy guidelines, decisions, and programmes. One major challenge in the future will be to effectively promote these linkages in a financially sustainable way. That will require the participation of all stakeholders (rural households, private corporate sector, SEEs, NGOs, and civil service) in order to ensure better coordination.
5. Effective participation of all stakeholders should result in a mobilization of human and economic resources to attain the goals of rural development. By itself, the state will not be able to attain these goals, given the limited amount of resources available and institutional weaknesses. In fact, the strengthening of the orientation toward the market already offers the opportunity to tap the resources of the country. The state can facilitate this process, but cannot expect to do better than the private sector in the conduct of business.

¹ The following section is developed from Working Paper 6 “Agro-Industry and the Transformation of Agricultural Products” contained in Volume 3 of this study and was prepared by Tim Purcell, Agro-Industry Specialist for the Agricultural Sector Review.

A VISION FOR AGRO-INDUSTRY IN MYANMAR

6. A vision for agro-industry in Myanmar should identify the role that the industry will play in the greater context of the agricultural sector and agricultural development. Furthermore, it should inform and guide the subsequent strategy for the development of the sector. The vision for agro-industry in Myanmar can be encapsulated in a single summary statement:

A dynamic, competitive and profitable sector which increases the value of agricultural output while providing markets and the best possible prices to agricultural producers.

7. The vision is dependent upon three principles. Firstly, that agro-industry is best developed by the private sector. Limited government budgets, cumbersome regulations, the lack of knowledge and management capacity in the public sector, and the experience of failed SEEs, are all factors that constrain the government's ability to play an effective and profitable role.

8. Secondly, support for expanded production will not reduce poverty among farmers unless there are opportunities for them to sell their products to processors and other buyers at the best possible price in an unhindered open market. This does not imply that returns to farmers should be artificially inflated or managed through distortionary policies. Rather, they are those that arise as a result of the functioning of the market system, permitting farmers to make the choice of what crops to grow in order to make the best return. Furthermore, an efficient marketing system will ensure optimal prices for all participants in the value chain, whether they are traders, processors, exporters or retailers.

9. Thirdly, targeted commodity programmes run counter to the principle that individual decision makers (the farm household, traders, processors and all actors along the marketing or value chain), are in the best position to identify their own opportunities.

10. In light of these principles, government intervention in agro-industry (and in agriculture in general) should be confined to what government does best; provision of an enabling environment and regulatory oversight.

CONSTRAINTS TO THE DEVELOPMENT OF AGRO-INDUSTRY

Policy Constraints to the Development of Agro-Industry

11. A number of general policies clearly influence the functioning and effectiveness of agro-industry, including those related to access to foreign exchange, exchange rates themselves, trade restrictions, public subsidies for State Economic Enterprises (SEEs, referred to in other countries as State Owned Enterprises or SOEs), and directed production for strategic crops.

12. For entrepreneurs, however, the lack of consistency and transparency in policy making, involving seemingly ad-hoc policy announcements subject to constant revision, is probably a more serious problem. This lack of clarity and consistency renders business planning difficult at best, and greatly increases the uncertainty surrounding potential investments. Unless

there is a consistent and transparent process for policy formulation, and stability in the policy environment, private enterprise is unlikely to increase investment in agro-industry.

13. One factor contributing to this climate of policy uncertainty is the lack of both human and financial resources which limits the ability of Government to effectively analyse policy options and their impacts, and make appropriate policy recommendations. Unless Government strengthens this capacity at the technical level, it will have only limited confidence in the advice reaching policy makers.

Institutional Constraints to the Development of Agro-Industry

14. In terms of institutional constraints, government control of agro-industrial enterprises makes it difficult for those enterprises to adapt to rapidly changing market and supply conditions. For example, procurement prices for cotton and sugar are set at the beginning of each season and are not subsequently changed even if market conditions alter substantially. Government officials in charge of SEEs lack the authority, resources and incentives to introduce efficient business management practices, particularly since SEEs are ultimately not profit maximizing institutions. The operations of SEEs spill over onto the private sector, as subsidized inputs and heavily discounted sale prices impacts on the ability of the private sector to compete. While the rationale behind SEE operational practices is clear - to provide consumers with low priced goods - the effects are somewhat different. Producers face clear disincentives to produce enough output, producers and processors do not have any incentive to provide high quality outputs, and consumers do not get the products that they demand.

15. The regulatory environment impacting on agro-industry is complex and unclear. While the private sector is forced to comply with many different regulations, there is a lack of transparency on which regulations apply in any particular situation. In terms of some of the more important regulations, like those affecting the export market, no official documentary record of regulations exist; with policy and regulation changes announced only in the mass media.

16. More importantly, standards and norms pertaining to marketing and quality control are seriously lacking. Weights and measures used in marketing are a combination of Imperial (miles, gallons, pounds), Metric (litres, kilograms, tonnes), and native Myanma (basket, viss, pyi). Most agricultural commodities are sold on a volume basis (basket), and these volume standards vary not only across locations but according to the specific buyer or seller. Thus effective marketing standards cannot be enforced. The creating of a Quality and Standards Bureau, or the strengthening of those government departments supposedly in charge of these issues, needs to be carried out as a matter of urgency.

Private Sector Constraints to Agro-Industry Development

17. Within the private sector there are limited examples of partnerships and linkages between different levels of the marketing chain and within each level (vertical and horizontal integration). Contracts between farmers and processors are virtually non-existent, and when they do exist they are more honoured in the breach than in compliance. In part this arises from the lack of an appropriate Contract Law, as well as lack of enforcement of contractual obligations. However, change will be difficult unless participants within the value chain see greater benefit

from complying with contracts rather than breaking them. The evidence from other countries, both developed and developing, indicates that opportunities do exist for the poor to benefit from participation in agricultural value chains, as long as they can be organized into effective marketing groups. The challenge is to find out ways of implementing the creation of trust, partnerships and linkages to form value chains for agricultural products in Myanmar.

STRATEGY FOR AGRO-INDUSTRIAL DEVELOPMENT

18. The strategic approach to the development of the agro-industrial sub-sector in Myanmar is consistent with the themes of the Agriculture Sector Development Strategy to promote rural development in general:

- (i) a shift from a commodity and sub-sector approach to a market-orientated farming systems and community based approach,
- (ii) a continuation of the move away from centrally planned development towards locally determined priorities and institutions, and
- (iii) a change in the role of government from operations to ensuring an appropriate enabling environment, regulations and infrastructure.

19. This strategic approach will require a combination of policy improvements, institutional and capacity building and investments carried out in a sequenced manner. Broadly speaking, the actions will fall within three categories:

- (i) support to Policy Analysis and Policy Reform,
- (ii) support to Regulatory Reform and Institutional Reform in the SEE sector, and
- (iii) support to Private Sector Marketing and Agro-industry Development.

Support to Policy Analysis and Policy Reform

20. As noted above, effective policies require a capacity to undertake consistent, transparent and analytically rigorous policy analysis. The proposed investment strategy involves the creation of a policy analysis and advice unit within MOAI, the creation of a series of diagnostic tools for policy analysis and commodity forecasting, and the building of capacity within that unit for policy analysis and modelling and policy advice.

21. The policy analysis unit is designed to deliver high quality policy advice on sectoral and commodity issues to the Minister of Agriculture and Irrigation and the Minister of Livestock Breeding and Fisheries on a regular basis. The support package involves six interrelated components:

- (i) The establishment of a policy analysis unit within MOAI, including budgetary provision for personnel, equipment and consumables.
- (ii) A training needs assessment study carried out with MOAI staff to tailor a specific capacity building programme to the needs of the MOAI in general and the policy analysis unit in particular.

- (iii) The development of a multi-market model of major agricultural commodities for Myanmar (e.g. rice, oilcrops, pulses and beans, livestock, forestry products, fruits and vegetables, and industrial crops¹).
- (iv) The placement of an international advisor within the policy analysis unit for a period of 2-3 years to assist the unit in undertaking high level analysis for agricultural commodities.
- (v) The provision of short-term capacity building programmes in policy modelling techniques (approximately 3 per year) to assist the unit in undertaking high level analysis for agricultural commodities. These programmes will strengthen capacity in multi-market modelling as well as other economic and econometric modelling techniques.
- (vi) The establishment of a regular workshop and publications series designed to promote the activities of the policy analysis unit and obtain feedback from various stakeholders (government, private sector) on the desired policy questions to be analyzed.

Support to Regulatory Reform

22. Regulatory reform includes the creation and strengthening of a Quality and Standards Bureau to implement and enforce marketing standards for the domestic and export markets. In addition, it involves the strengthening of government capacity in the drafting of laws and regulations pertaining to marketing and agro-industry. While it is important to integrate regulatory reform in an overall agro-industry development strategy, this issue is cross-cutting with agricultural product marketing and as such the particular investment strategy is contained in the Agricultural Marketing Strategy.

Support to Institutional Reform in the SEE Sector

23. A diagnostic study and financial audit should be carried out of all SEEs under MOAI and MLBF control in order to allow policy makers to make fully informed decisions regarding these SEEs' future operations. It should be noted that the diagnostic study and financial audit is not a punitive exercise, and the purpose is to generate constructive recommendations for future operations. Once a diagnostic study and financial audit has been completed a reform or restructuring plan for SEEs can be designed and implemented, including the development of individual business plans and management capacity strengthening for any SEE retained under government control.

24. The diagnostic study and financial audit should cover the areas of governance, strategic planning, organizational structure, human resources management, pricing policies and procedures, purchasing and selling policies and procedures, products and demand, compliance review, financial and accounting systems, management information systems, and financial analysis. The financial audit should be conducted to international accounting standards in order to

¹ A fisheries model could be built separately.

gain an accurate representation of the individual SEE's financial situation. Full market costing of inputs and outputs, including depreciation of assets should be used. International donor support will be necessary for the diagnostic study and audit of each SEE.

Support to Private Sector Marketing and Agro-Industry Development

25. The greater integration of agro-industry within the agricultural marketing system in Myanmar is a key strategic objective. By promoting the development of a network of well-functioning value chains that are competitive and innovative, market efficiency would be increased and returns to all participants maximised. A single pilot region is proposed to demonstrate the approach; a longer term programme at national level would follow if appropriate.

26. It is proposed that the project be organized into five inter-linked components:

- (i) The formation of a Commercial Agriculture Network (CAN) to facilitate exchange of information between key stakeholders (producers, traders and processors) and service providers.
- (ii) The formation of a Commercial Agriculture Alliance (CAA) with a properly constituted Board and the formation of a Commercial Agriculture Fund (CAF) to provide a mechanism for different types of key stakeholders (producers, traders and processors) to work together by formulating and selecting investments that move commercialization to a higher level.
- (iii) The Strengthening of the existing Agriculture Market Information Service (AMIS) to provide a strongly needed service to stakeholders involved in commercial agriculture. This service will expand the AMIS role from just providing market information on prices to a limited audience, to include information specifically required by commercial agriculture and agro-industry on a much wider scale.
- (iv) Support for the establishment or strengthening of small farmer marketing groups (SMGs), particularly in the context of facilitating collaboration and long-term relationships with processors and other system participants.
- (v) The formation of an Institutional Capacity Development for Commercial Agriculture (ICDCA) component strengthens existing capacity and builds new capacity of service providers to adequately understand and respond to the needs of commercial agriculture.

27. Different components of the investment strategy address market failures related to the formation of commercial organizations, provision of information, and investment in new technology and infrastructure. The CAN, the CAA and the SMG components address the failure of diverse commercial stakeholders to organize themselves into larger units and to establish mutually beneficial relationships; the AMIS and ICDCA address the failure of supplying and disseminating information to improve production and marketing. The CAF and its managing Board address the failure of investing in new technologies and infrastructure providing public good benefits.

Support to Expanded Small-Scale Agricultural Machinery Usage

28. A further element of the agro-industry strategy is to increase the level of mechanization in agriculture by providing support to the private sector in investment in machinery hire and purchase¹. The lack of access to agricultural machinery – particularly small-scale equipment such as hand ploughs, seeders and pumps, contributes to problems of timeliness in agricultural operations and restricts local-level irrigation. For smaller farm sizes, individual ownership may be uneconomical and cooperative groups or contract service provision may be necessary for the benefits of even small-scale machinery to be realised by poorer farmers. However, it should be noted that the current low level of agricultural mechanization is due in part to the lack of demand, which in turn is a function of the well-developed utilisation of draught animals, the lack of access to credit for purchasing, and limited access to spare parts.

29. The proposed strategy involves the restructuring of the Agricultural Mechanization Department (AMD) and the devolving of its responsibilities for manufacturing and contract machinery operations to the private sector. Unless AMD stops subsidizing its contract machinery operations by only charging for operating costs, there is limited chance that the private sector will be able to expand their own contract machinery operations. Secondly, the strategy increases support to private sector operations. Finally, support is offered to farmer groups and contract service providers. The proposed strategy has several interlinked components:

- (i) the divestment of machinery manufacturing and commercial contract machinery activities of the AMD to the private sector;
- (ii) the modification of existing legislation and procedures for importing agricultural machinery and related items;
- (iii) restructuring of AMD to focus on monitoring and regulation of the sub-sector, and the provision of training and support functions to cooperative farmer groups and agricultural contractors in the technical aspects of mechanization and in hire service management; and
- (iv) a pilot programme, with revolving hire-purchase fund, to facilitate and support the acquisition of small scale farm machinery by farmers, cooperative groups and contract service enterprises in 12 Districts.

SUB-SECTOR INVESTMENT PROFILES AND COSTS

30. The above strategic elements are developed in the form of four investment profiles which are presented in Section 2. The indicative cost of these proposals is summarised below. In total, the four profiles suggest an investment cost of US\$11 million over a period of five years. There are no long-term investments proposed at this stage.

¹ This investment strategy is formulated in response to a request from MOAI and FAO for such a strategy to be included as part of the agroindustry investment proposals.

Investment Proposal	Short-Term Year 1-2	Medium-Term Year 3-5	Total (US\$000)
1. Support to Policy Analysis and Policy Reform	939.4	193.6	1,133.0
2. Support to Institutional Reform in the SEE Sector	907.2		907.2
3. Support to Private Sector Marketing and Agro-Industry Development		8,240.0	8,240.0
4. Support to Small Scale Agricultural Mechanization	118.8	1,108.3	1,227.1
TOTAL	1,965.4	9,541.9	11,507.3

Impacts on Poverty Reduction and Pro-Poor Development

31. The expected impact on poverty reduction and pro-poor development is expected to derive through four channels:

- (i) broad-based policy reform arising from high quality policy advice delivered by a strengthened policy unit within MOAI;
- (ii) reduction in market distortions arising from privatization of SOEs and the strengthening of economic management of SOEs remaining under government ownership;
- (iii) employment generation, social mobilization and organization of smallholder farmers into larger groups, and additional income opportunities in a more dynamic rural economy arising from strengthening linkages in commercial agriculture; and
- (iv) increases in agricultural productivity arising from increased mechanization of agriculture.

Impacts on Social and Gender Development

32. The main theme of the strategy for agro-industry development is to ensure an increased efficiency in agro-industrial operations which would allow enterprises to pay higher prices for raw materials, and provide more stable markets for that output. However, the strategy recognizes that the majority of farmers are operating at subsistence level and that the vulnerability of rural households is one of the main causes for the absence of an integrated production/processing/ marketing system.

33. Most of the poor and vulnerable groups have few assets and little education. As a consequence, their main source of income is low-skill wage labour. However, employment opportunities are limited in rural areas and their capacity to organize and interact with other stakeholders in the production and marketing system is limited. Their low education and social status usually prevents them from gaining access to markets (for labour), and to credit and programmes that might improve their condition. The limited access to social services aggravates the plight often arising from their exposure to different types of risk.

34. Even though women represent a large share of the labour force in agriculture, there is limited active participation of women in commercial agriculture. Women entrepreneurship in commercial agriculture is limited and the involvement of women in formal trading is quite rare in Myanmar with only few women playing a leadership role in activities related to trade, marketing, processing and post-production activities. When involved in these activities, usually women are employed as wage labour (in processing plants, in grading produce and storage operations), rather than as managers or entrepreneurs.

35. The strategy is formulated under the awareness that many poor farmers and rural households will benefit directly from the growth of commercial agriculture primarily as wage earners, either as labourers on farms or in the post-production system. Those with access to land may benefit from higher prices. In some cases, poor households might be able to escape poverty through the establishment of micro enterprises and the provision of services related to agribusiness.

8. IRRIGATION AND WATER RESOURCE INVESTMENT STRATEGY¹

IDENTIFIED OPPORTUNITIES AND CONSTRAINTS TO PRO-POOR SECTOR DEVELOPMENT

1. The estimated overall water resource potential of Myanmar is in the order of 1,323 km³. The potential for surface water resource development is 827 km³, with the four main river basins alone carrying six times as much water as is currently extracted for irrigation and other uses. A further 500 km³ of groundwater resources are estimated to be available. However, in many cases the usefulness of groundwater resources is limited due to their being non-renewable, saline or brackish, and hence not suitable for irrigation. If only renewable groundwater suitable for irrigation development is considered, the potential is reduced to 28.3 billion m³. Notably, there is evidence that the Ayeyarwady delta is underlain by a series of both deep and shallow freshwater aquifers. They extend across the delta from Patheingyi to Yangon at a depth of from 366 m to 1,890 m. If this artesian source could be developed, free-flowing water could be used to irrigate a large portion of land in this area especially during the dry season².

2. Despite the abundance of water resources at national level, the Agricultural Water Resource Study undertaken as part of this review³ notes critical levels of demand on both surface and groundwater resources in several districts. Eleven districts of the dry zone and the Ayeyarwady delta are found to be medium to severely water-scarce. In four out of eleven districts water scarcity is found to be severe⁴. In the most critical case – Mandalay District – available data appears to indicate that total withdrawals of water for all uses exceed available supplies⁵, although this can probably be attributed to the limitations associated with the applied methodology. Other districts where water scarcity prevails include Meiktila (75%), Kyauks (75%) and Shwepyithar (47%). Despite methodological limitations, it can be concluded that current gross water withdrawals for irrigation in these areas are, in general, above sustainable levels; in part because much of the extracted water is not effectively utilized. There is tremendous scope for much improved utilization of available water.

3. The study has also identified critical levels of water scarcity with the respect to groundwater use. Again, the Mandalay district has reached a utilization level of 100%. Other districts identified as severely water-scarce include Eastern Yangon (99%), Western Yangon

¹ The following section is developed from Working Paper 4 “Irrigation and Water Resource Management” contained in Volume 4 of this study and was prepared by Wilfried Hundertmark, Water and Irrigation Management Specialist for the Agricultural Sector Review.

² WRUD has no capacity to drill below 300 m, so knowledge of this aquifer is limited. Further study, including deep drilling, may well be of value.

³ See Annex 1 to Working Paper 4 (Volume 3).

⁴ The water scarcity indicator (L_U) expresses the relative resource utilization of all uses over the total available water resources. If L_U is greater than 40%, a country or an area is classified as severely water-scarce. L_U of 20 and 40% indicate medium to severe, and more than 10% but less than 20% is regarded as moderate water scarcity.

⁵ Withdrawals for irrigation are estimated on the assumption of an overall (basin) efficiency of 40%. This is higher compared to the project efficiency, which is in the order of 35%. This approach is justified by the fact that water that is withdrawn from the primary source is recycled and used several times, thereby the efficiency of water use is increased proportionately to the fraction that is recycled.

(98%) and Sagaing (55%). In addition, two districts in Shan State – and thus outside of the central dry zone – are also severely water-scarce with respect to groundwater; Lashio and Kyaungton. Within the dry zone, most districts are classified as medium to severely water-scarce with indicators in the range of 23-39%.

4. The potential additional area that could be irrigated from renewable fresh groundwater resources is estimated at nearly 718,200 ha (1.7 million acres). About one third of this area is located in the Divisions of Ayeyarwady and Sagaing (35%). The portions other states/division would take are as follows: Kayin (12.6%), Bago (11.5%) Magwe (10%) and Mon State (8.7%). In the country's 30-year master plan, an area of some 230,000 acres of land has been targeted for the development of groundwater projects. In addition, the study has identified a further 415,000 acres (168,000 ha) of land considered suitable for groundwater development.

5. Government investment strategy with respect to the sub-sector has been strongly oriented towards increasing the available water supply through the development of storage and pumping capacity. However, less attention has been paid towards the development of downstream irrigation capacity. As a result much of the originally projected downstream development has not occurred. Of the 289 formal irrigation schemes completed to date, only 628,000 ha of a total projected command area of nearly 1.4 million ha (45%) have been fully developed¹. As the storage capacity considerably exceeds associated irrigation development, much of the released water remains unutilized.

6. A majority of farmers, particularly smallholders, are still without full access to irrigation. Official statistics suggest that the irrigated area is less than 2 million ha (4.9 million acres) which is equivalent to 18.8% of the net sown area (10.6 million ha.). Conservative estimates suggest that the potential for command area expansion is in the order of at least 164,000 ha. For this area no investment in further large-scale storage facilities would be required. If fully developed, and assuming that irrigated area per farmer is typically one acre, some 400,000 small farmers could benefit from this approach.

7. Even where water is delivered, the performance of most irrigation systems is far below expectations. The production of irrigated food crops could be much increased if existing irrigation facilities would be managed more effectively and efficiently and water resources utilized more productively. Cropping programmes are not well matched with existing hydraulic facilities, poor maintenance increases system losses, and much water delivery is non-productive. As a result, and even with the limited areas currently developed, many users at the lower end of distribution systems find water deliveries inadequate for programmed crops.

8. A number of terms are used in discussing irrigation systems development, including modernization, expansion and intensification. As a common understanding of these terms is essential for effective strategy development, they are defined below:

- modernisation of systems implies the creation of a water service and delivery system that is capable of irrigating a productive and diversified cropping system as required;

¹ Other estimates from the irrigation Department place average command area coverage at nearer 65%.

- expansion implies a substantial increase in the number of smallholders with access to irrigated land and irrigation facilities such as canals, wells, small-scale irrigation systems and water harvesting structures; and
- intensification implies much improved productivity and water use efficiencies on the field, schemes and basin level “more agricultural output per water input.

9. Budgetary constraints are presented as the main reason for slow and incomplete command area development. However, if farmers were to make a contribution towards the development of irrigation facilities either in the form of financial or in kind contributions, part at least of the budgetary restrictions could be eliminated. International experience suggests that farmers are willing to participate in irrigation development if this is justified through the creation incremental benefits from irrigated production. However, current legislation and policies in Myanmar offer little incentive for the farmer to take a more active role in irrigation system development and management, including cost recovery.

10. The inability of farmers to take autonomous decisions at their respective level leaves unexploited many of the opportunities for more productive use of existing resources and facilities. For example, directed cropping is a major obstacle to efficient and productive use of available water resources. The formation of autonomous water user groups and associations offers a feasible option for poor farmers to become more powerful and self-sustained. In addition, the traditional collective decision taking seen in many Myanma communities is seen as an important opportunity for collective action in irrigation system operation, maintenance and management.

11. There has been little progress in the development of small-scale irrigation facilities at the community level. For example, irrigation from wells using sprinkler- or drip-based systems have not yet taken on an important role in irrigated production. However, the potential for such small-scale irrigation development is enormous, especially in the field of supplementary irrigation from groundwater in conjunction with surface irrigation. Another example is water harvesting in areas which are prone to drought. Although technologies are readily available, their adoption has been constrained by insufficient awareness and poor water user organization at the community level. In order to facilitate the adoption of small-scale irrigation systems it is regarded as important that the role of the private sector in both investments and support is much strengthened through a special small-scale irrigation development programme. Investment into small-scale irrigation system by the private sector is a regarded as a key area for the utilization of an identified groundwater resources especially in the delta region and in mountainous area where access to surface irrigation is limited.

12. The review of the sub-sector has identified a huge gap in the field of on-farm irrigation support and extension services provided to farmers and water users. Current on-farm water management techniques adopted by farmers are solely focused on the production of irrigated rice, mostly supplementing monsoon rains. Control of water supply and evacuation through surface and subsurface drainage are rarely found. The absence of adequate irrigation support service capacity must be regarded as an important constraint for the poor farmers to take advantage of access to land and water resources and irrigation facilities. If the knowledge and the adoption rate of improved on-farm water management was improved the productivity of water in rice could be much increased and food security enhanced;

13. Insufficient infrastructure development, especially of electricity supply systems has been identified as a constraint towards the development of pumped irrigation from wells and streams in rural areas. The promotion of decentralized power supply networks could facilitate investment into small-scale pumping schemes.

VISION

14. By the year 2015, the number of poor smallholder farmers with access to irrigated land, irrigation facilities and water is double the 2000/2001 level and the agricultural production from irrigated systems will be significantly increased. Formal irrigation systems will be capable of facilitating the provision of water services for a variety of adopted on-farm irrigation management practices suitable for a multiple cropping system; the level of water user involvement in the operation, maintenance and management of formal irrigation schemes will be enhanced; the area irrigated by small-scale irrigation systems will take a considerable share in the production of agricultural output; competition of the use of water resources will be co-ordinated at the national/basin level; to the extent possible, adverse environmental risks and effects of agricultural water use will be monitored and mitigated.

STRATEGY FOR IRRIGATION AND WATER RESOURCE DEVELOPMENT

15. The proposed Irrigation Strategy provides a framework for officials and investors of both private and public institutions in Myanmar's irrigation sub-sector. The strategy covers a fifteen year planning horizon starting in the year 2000/2001. The strategy is promoting the development of an enabling environment, which is pro-poor, and thereby encouraging to the smallholders' ambition to overcome their identified constraints towards an agricultural production system, which is autonomous in crop decision taking, collective in irrigation management and efficient in water use. The strategy then moves on with the proposal of investment programmes focusing on the modernisation and expansion of existing irrigation projects, the adoption of small-scale irrigation systems such as community-based sprinkler and drip systems as well as the conjunctive use of groundwater systems and the promulgation of water harvesting techniques.

16. An overarching theme of the future irrigation will be an increase of water user involvement and share of responsibility in the operation, maintenance and management of irrigation systems associated with a gradual disengagement of the government. The proposed investment strategy cannot be implemented without a much strengthened policy and legal framework, strategic planning and management capacity at all levels including the national, basin, scheme and field level¹. Much attention will be given to capacity building in effective support and extension service provision to smallholders. Training of extension worker in water management is identified as a key element in capacity building. Finally, the implementation of the strategy will be firmly integrated into a national water resource management approach, which in turn is based on principals of sustainable management of the water resources available within the main basins of Myanmar.

¹ Work has started in this area through collaboration between the Irrigation Department and UNESCAP for the development of an irrigation action plan.

17. By providing improved access to land, water and irrigation facilities to smallholders their desire to adopt irrigation technologies will be encouraged. The strategy is based on the recognition of current constraints and their step-wise removal. For example, if farmers wish to diversify their cropping systems from a rice-dominated into multiple rice-based systems, irrigation facilities must be designed in a way that this change is facilitated. Roughly the currently irrigated area is estimated to be 5 million acres. Assuming an average farm size of about 5 acres each, it can be concluded that one million rural farm households are currently involved in irrigation. If each farming household comprises of five members, then the number of people involved in irrigation is five million. Or, one acre of irrigated land serves one poor rural inhabitant.

18. Within this strategy the water sector is sub-divided into four levels, all of which are important for the overall performance of agricultural water use: firstly there are a number of issues that can only be addressed at the national level including water legislation, tariffs and a regulatory framework for irrigation and water resource development. The national level is also the most appropriate level for prioritising the use of water by sub-sector such as domestic, industrial and agricultural use. Besides the national level, the basin is regarded as the most appropriate domain for addressing water resource management issues such as the supply and use of available water resources. Within a basin the most important domain for water management is the irrigation scheme, which can either be a formal or informal development of irrigation facilities that are utilized individually or by formal and informal water user groups. Another layer of intervention is the farm and field level, which is the domain where the success failure of most irrigation and water management interventions is decided.

19. Following the concept of integrated water resource management interventions targeting one level e.g. the field level are likely to have an impact on to the performance and the qualification of another level e.g. the scheme or basin level. For example, a change of the field level irrigation system from submerging to furrow irrigation must be complemented by improved water services and deliveries at the scheme level. The same shift of field irrigation from submerging to furrow must be based on the priority needs of the improved pro-poor farming system development concept. Equally, the implementation of many irrigation schemes, including the construction of significant storage facilities, implies an important conversion of the basin hydrology which may have adverse effects on the sustainability of water use. The construction and operation of dams, weirs and large pumping stations must be evaluated against both the expected benefits as well as the possible long-term environmental risks at the basin level. The hydrological implications of major interventions into the basin hydrology and flood regime must be fully assessed and understood. Only if clarity and certainty over these aspects is reached should normal project implementations continue.

20. The proposed sub-sector investment strategy is based on the recognition that much of the financial and human resources need to be allocated towards improved downstream development less emphasis on the water supply side. This major shift from supply towards demand management is seen as crucial for a much increased outreach number of poor farmers being involved on irrigated food production. Taking a basin approach implies that water resource and irrigation development strategies be firmly based on a proper understanding of the available water resources and their current level of use; decisions must be taken at the basin rather than the level of administrative units; possible implications of interventions on the basin hydrology and geo-hydrology must be fully assessed and evaluated in order to safeguard environmental soundness and sustainability.

21. The centrally and hierarchically organized irrigation development and planning process would be replaced by demand-driven upward planning mode which is co-ordinated at the level of basins. Upward, means much increased water user participation in system development, operation, maintenance and management. This involves the creation and strengthening of legally autonomous water user associations (WUAs), to which management responsibility and ownership of irrigation facilities, including land and water rights, are transferred, either fully or in part; the transferring of responsibility for operations, maintenance and financial management of the system to WUAs; and the creation of an enabling environment for participatory irrigation management¹.

22. At present, farmers contribute very little towards the cost of water nor to the recovery of investment costs. The proposed strategy intends to provide a platform for increased level of farmers' contributions towards the recovery of investment costs and the financing of operation and maintenance of irrigation. Like in other countries within the region, this strategy suggests a fundamental shift in policy from an agency-driven management mode, which top-down towards a farmer-driven system, which is bottom-up.

23. Service-orientation in irrigation deliveries (provide access to readily available water at agreed times, quantity and quality, increase reliability and equity of irrigation deliveries) facilitation of the water deliveries according to needs (i.e. service orientation in water supply management); improved reservoir management through harmonization and prioritised irrigation releases;

24. Provision of effective support services in irrigation management and on-farm water management through integration of service provision at the farm, scheme and community level; private sector involvement in small-scale irrigation development

25. Current irrigation facilities and capacity would be utilized more efficiently and land currently used by rainfed production system be converted into irrigated/water managed land with much improved water control.

Objectives and Development Targets

26. The strategy is concerned with the implementation of the following objectives through multi-level investment programmes and policy reform:

Objective 1: To critically review the current system of directed cropping focusing on the production of high water consumptive monsoon and summer through a liberalized cropping policy which is less water demanding and more water use efficient.

Target: In the short-term, the net sown area occupied by summer paddy is halved and replaced by other irrigated upland crops.

In the medium-term the multi-cropped area has tripled from currently 550,000 ha to 1,500,000 million hectare

¹ Initial experiments with the formation of WUAs are currently underway at the Ngamoyeik scheme, with the stated intention of expanding this approach in the future, if successful.

<p>Objective 2: To establish an enabling policy and legal framework for the involvement of water users in the planning, implementation, operation and maintenance of modernised and expanded irrigation systems.</p> <p>Target: In the short to medium-term national and district irrigation capacities are aware of the concepts of participatory irrigation management and a stakeholder consultation process on PIM has led to the formulation of a national policy and legal framework for the involvement of water user in irrigation system development and management.</p>
<p>Objective 3: To reduce government expenditure for system operation, maintenance and cost recovery establish a legal framework for a new, volumetrically-based water charging system to be collected from water users.</p> <p>Target: In the short to medium-term current water fees are fully revised and a new, volumetrically-based water charging system is agreed and adopted by stakeholders and water users²³.</p>
<p>Objective 4: To initiate pilot projects on the modernisation and upgrading of existing irrigation systems in order to facilitate much improved water control and service provision to much diversified cropping systems on farmer-managed schemes.</p> <p>Target: In the short to medium-term, two to three-years pilot projects on the modernisation and management of irrigation facilities are fully completed and evaluated against the assessed needs of smallholders farming systems and water user associations involved in participatory irrigation management; guidelines for expansion are readily available for up-grading of existing irrigation projects.</p>
<p>Objective 5: To engage private contractors in irrigation modernisation, expansion and intensification through the provision of support service and capacity building and subsequent contracting of public investment projects.</p> <p>Target: In the short-term at least five contracting firms are matching minimum technical and financial requirement for bidding for public and private irrigation project implementation; In the medium-term, at least ten contracting firms are involved in large and small-scale irrigation development projects.</p>
<p>Objective 6: To modernise and upgrade existing irrigation and drainage infrastructure in order to facilitate the irrigation of multiple and diversified cropping systems on participatory managed schemes based on guidelines and recommended best management practices evaluated at pilot stage.</p> <p>Target: By 2010 one third and by 2015 two thirds of the currently irrigated project area is fully modernised and equipped with hydraulic infrastructure capable of irrigation with no additional investment into the construction of new water supply facilities such as dams, weirs and pumping stations.</p>
<p>Objective 7: To increase the water use efficiency and productivity of available and non-utilized water resources through downstream development, irrigation intensification and system modernization (turning irrigable into irrigated land); to expand to additional irrigable land on under-utilized irrigation projects, equipped with irrigation infrastructure and fully connected to water supplies.</p> <p>Target: By 2010 an additional third of the currently irrigated area is fully developed and equipped with hydraulic infrastructure and operational with no additional investment into the construction of new water supply facilities such as dams, weirs and pumping stations.</p>
<p>Objective 8: To limit government expenditure on operation, maintenance and management of irrigation and drainage facilities, transfer of management responsibility of modernised and upgraded downstream areas to strengthened and autonomous water user associations.</p> <p>Target: As project upgrading and modernisation develop management responsibility is transferred to strengthened water user associations; by 2015 all upgraded irrigation projects are managed with a high degree of autonomy in water user involvement.</p>

²³ The introduction of volumetric charging for irrigation water would entail the installation of appropriate measuring devices, and the training of both Government staff and farmers in their use.

Objective 9: To promote and support the development of small-scale water management systems capable of supplementing water needs of diversified smallholder production systems from both surface and subsurface water resources and largely through the private sector involvement and collective management.

Target: In the short-term master plan studies into the development of small-scale irrigation facilities taking water from surface and subsurface resources are completed and agreed between water users and local authorities

In the long-term the area equipped with small-scale irrigation facilities is double of what is currently accounted for as private irrigation (additional 245,000 hectares), and strengthened water users associations have taken on their share of management responsibility.

SUB-SECTOR INVESTMENT PROFILES AND COSTS

27. Investment profiles for projects arising from the sub-sector strategy are presented in Section 2. Below are summarized total indicative costs for the irrigation and water management profiles, broken down by phasing. As not all of the US\$190 million in proposed investments extend into the long-term (beyond 5 years), costs are higher for the medium-term (3-5 years) than for the long-term (6-10 years).

Profile	Short-Term (0-2 yrs)	Medium-Term (3-5 yrs)	Long-Term (6-10 yrs)	Total (US\$'000)
Irrigation Management Policy Development	1,823.8	0	0	1,823.8
Irrigation Modernization and Expansion Programme	3,228.5	58,877.5	58,877.5	120,983.5
Small-Scale Irrigation and Water Management Programme	3,654.2	34,311.3	25,781.1	63,746.6
Capacity Building in Irrigation and water Resource Management	1,265.0	1,251.8	0	2,516.8
TOTAL	9,971.5	94,440.6	84,658.6	189,071.3

9. AGRICULTURAL RESEARCH, EXTENSION AND EDUCATION INVESTMENT STRATEGY²⁴

VISION

1. The vision proposed for the agricultural research, extension and education sub-sector is that of an institutional structure and human resource capacity able to contribute to significant growth in farm productivity and income, and ensuring food and nutrition security through high yielding varieties, good quality seed, demand driven technologies and human resource development.

OPPORTUNITIES AND CONSTRAINTS

2. Myanmar has a large network of research and extension institutions and physical facilities strategically located in all agro-ecological regions of the country, with considerable land areas available in the form of research, seed or extension farms. The research and extension system for crop production is relatively well staffed, with some 10,000 staff assigned to the Extension Division and 650 personnel with the Central Agricultural Research Institute (CARI). Other researchers work for individual state enterprises responsible for specific crops (e.g. oil palm, rubber, coffee, sugar cane). A number of the personnel within the system have received post-graduate training, some at international level. Yezin Agricultural University (YAU) is well located and has qualified and experienced teaching staff and a research farm with access to irrigation. They have recently added a Ph.D. programme. In addition, there is a network of seven State Agricultural Institutes (SAI) teaching to Diploma level.

3. Despite these strong features, however, Myanmar has seen little or no increase in agricultural productivity for major crops in the last decade. Yields are consistently lower than those of neighbouring countries or the regional average across almost all crops. Only in two main crop categories – rice (89% of the regional average) and beans/pulses (65-150% of regional average) do national yields approach regional averages, and the beans/pulses group are among those least influenced by traditional research and extension programmes. Livestock production is largely traditional and characterised by high losses of animals from disease, while aquaculture has been developed only significantly in coastal areas for semi-intensive shrimp production. The research, extension and education sub-sector must bear at least part of the responsibility for this relatively poor performance.

4. A number of factors can be identified which have limited the sub-sector's ability to support growth in yields and productivity in recent decades. In the case of livestock and fisheries, the overwhelming problem has been one of lack of resources. Neither possesses an active field extension service, although some livestock extension agents do work in the area of animal health. Research resources for both are also very limited. Even in crops, however, research programmes are, for the most part, commodity based and production oriented. Most projects fail to form

²⁴ The following section is developed from Working Paper 7 "Agricultural Research and Extension" contained in Volume 3 of this report and was prepared by Dr Pramod K. Agrawal, Research and Extension Specialist for the Agricultural Sector Review.

building blocks in a programme targeted to reach a well-defined objective. Research and extension programmes normally do not take into account farmers' needs and constraints, and similar activities are repeated year after year without a clear objective. In part, this occurs because they are usually centrally planned at headquarters. Those who plan do not have the in-depth experience and knowledge of the local agro-ecological and socio-economic conditions, and those who implement in many instances do not understand the technical design of the programmes. The consequence of this approach is a low adoption rate for technical recommendations, even when they are available.

5. The extensive use of research, seed and extension farms for commercial production in order to augment limited budgets, and the scarcity of farm infrastructure (tractors, storage, irrigation), limit the land available for research and trials. Limited mobility and motivation of research and particularly extension staff can occur as a result of low salaries and benefits, and competing demands to undertake unrelated tasks. Many farmers lack access to high quality seed. The libraries of research, extension, and training institutions are outdated and lack most important agricultural scientific literature

6. Most institutions lack systematic mechanisms for coordination and linkage with other research agencies or extension services. The current initiative of the MOAI to consolidate research organization at the Department level is an important initial step in the right direction that needs to be supported but does not take into account extension or non-crop activities.

7. The YAU has strategic importance in preparing skilled scientists for strengthening the research and extension systems. However, the skills and knowledge of teaching staff are generally outdated, while the institution lacks modern facilities and equipment and has an outdated curriculum. The State Agricultural Institutes, responsible for training to the Diploma level, face even more severe constraints in terms of budget and human resources.

8. Overall numbers of research and extension staff may seem adequate, but most institutions have few skilled experts. Those research staff possessing advanced degrees are, for the most part, assigned to managerial posts and do not implement research projects. Similar problems affect extension services. Specialized training programmes based on farmers' needs and constraints, agro-ecological and socio-economic conditions, and realities of research and extension organizations, are virtually non-existent.

STRATEGY FOR RESEARCH, EXTENSION AND EDUCATION DEVELOPMENT

9. The strategy for the sub-sector performance optimization has three main elements, each described below

Creation of a Unified Institutional Framework for Agricultural Services

10. The current pattern of a large number of independent research and extension service operations covering different aspects of agricultural production, with little coordination or communication is inefficient and tends to produce a commodity specific focus. Establishing an effective institutional framework which will permit multi-disciplinary collaboration in research, extension and education and avoid duplication of efforts is an immediate priority. Key areas such

as livestock and aquaculture have almost no field staff, while agriculture has over 10,000; none of whom is able to advise farmers on livestock or aquaculture issues. Nor are extension officers able to provide assistance for crops covered by other MOAI departments; still less for non-farm activities such as handicrafts or agro-processing. In addition, agricultural education curricula are not developed in association with research and extension services and have little relation to the needs of these institutions.

11. The existing agricultural extension and research network is impressive but dedicated almost entirely to crops; extension and research for livestock and fisheries is very weak. Other areas of rural economic activity are barely covered at all (e.g. rural enterprises, handicrafts). Some form of multi-disciplinary collaboration is required, and the preferred strategic option must be the creation of a single, unified agricultural services institution, whether within MOAI or independent.

12. A major focus of any new multi-disciplinary agricultural services institution would have to be on developing a participative process for identifying and prioritizing research, extension and education needs. This would be a significant contrast from present approaches, whereby decisions are largely or completely taken at central level, with little input even from regional research and extension stations, and none from farmers themselves. The design of the new institution would therefore have to take explicit account of the need for communication with, and input from, these sources, and endeavour where possible to incorporate farmers in programmes of applied field research.

13. As part of this process, CARI should be restructured into three to four divisions, representing crops grown in humid lowlands, uplands and dryland areas, based on a farming system approach rather than the present single commodity focus. In addition CARI would continue to be responsible for developing and testing new seed varieties and producing breeder and foundation seed for subsequent multiplication. The research role of various SEEs and industries may be removed and responsibility for these crops given to CARI within a unified agricultural services structure.

Strengthening and Expansion of Agricultural Education Services

14. Given the role of agricultural education in preparing technical experts for a wide range of agricultural development activities – both in the public sector and with private enterprises - it is considered critical for the future of agriculture in Myanmar that technicians and professional emerging from this system be trained to the highest level possible. A central element of the sub-sector strategy must therefore include attention to the strengthening and expansion of the agricultural education system, including identifying key support areas required by the various existing educational institutes (YAU and the State Institutes), as well as evaluating the justification for expanding the SAI network to divisions or states which are currently not served by an SAI.

15. Strengthening needs to be assessed would include curricula, human resource skills, physical facilities, information and data access (including upgrading of libraries and internet access) and laboratories. Education programmes should be more closely tied to the needs and requirements of the research and extension services in order to ensure graduates with appropriate capabilities and skills. Faculty and teaching staff should receive upgrading and be exposed to

current research and thinking in the agricultural field, including an improved understanding of modern approaches to extension.

Expand Improved Seed Production and Availability

16. Lack of improved seed is one the key constraints to increased productivity in the agricultural sector. In most crops, less than 2% of seed utilized for planting purposes is from genetically improved stock. Yet the public sector lacks both the human and physical resources to produce the major quantities of seed that would be required and, in fact, are unable currently to even produce sufficient foundation and registered seed for end multiplication purposes. In order, therefore, to expand the production and availability of such improved seed, it will necessary to significantly increase the role of the private sector, as is the case in most other countries.

17. In recognition of the limited ability of many smallholder farmers in Myanmar to afford high-level certified seeds except for specific crops (e.g. hybrid sunflower or maize seed), two concurrent approaches are proposed: (a) encouraging and supporting the private sector to increase production of fully certified seed; and (b) developing a Quality Assured Seed (QAS) programme for small farmers who would multiply improved seed which, even though not fully meeting the requirements for seed certification, represented a big gain in genetic potential from retained seed used by most farmers at present.

18. Under these approaches, a major role of the Seed Division would be the supervision of private seed multipliers (whether farmers or companies) and the issuance of QAS labels or full certification. This role would substantially modify the role of the Seed Division to one of technical assistance and quality control, and would require greatly increased mobility for SD staff, in making regular visits to seed producers. In the medium term, the Seed Division may continue to play a major role in the production of registered seed (parent stock to certified seed). However, in the longer run, even this task could probably be more effectively and efficiently carried out by skilled and experienced private seed firms operating under close supervision. The development of new seed varieties and the testing of imported varieties, as well as the production of breeder and foundation seed, would remain the responsibility of CARI.

Phasing

No.	Elements	Year 1	Years 2-4	Year 5 onwards
1.	(1) Study to establish a unified institutional basis for agricultural research, extension and education (2) Restructuring of CARI into farming system based research units for crops grown in the Humid Lowlands, Dryland and Upland areas (3) Pilot programme for reorganized agricultural services provision within a single institution (4) National level integrated agricultural services implementation	*	*	*
2.	(1) Study and plan of action for expanded improved seed production (2) Restructuring and strengthening of SD and training of SD staff (3) Pilot private sector QAS and certified seed production (4) National level implementation of private sector seed production	*	*	*
3.	(1) Evaluation of strengthening needs of State Agricultural Institutes and YAU (2) Implementation of modernized course curricula and investment in improved facilities including equipment (3) International training of faculty and teaching staff (4) Construction of new State Agricultural Institutes	*	*	*

SUB-SECTOR INVESTMENT PROFILES AND COSTS

19. Investment profiles arising from the sub-sector strategy are presented in Section 2. They do not include the cost of investments to expand the production and availability of improved seed, as this is included in the crop production sub-sector. Indicative costs for the remaining agricultural research, extension and education investments are approximately US\$11.6 million. The second investment (Strengthening of Agricultural Education) has only a single, five year, second phase and this cost is pro-rated over the medium and long-term period.

Profile	Short-Term (0-2 yrs)	Medium-Term (3-5 yrs)	Long-Term (6-10 yrs)	Total (US\$'000)
National Multi-Disciplinary Agricultural Services	245.3	2,520.1	5,956.5	8,721.9
Strengthening of Agricultural Education	109.0	2,276.0	1,517.0	3,902.0
TOTAL	354.3	4,796.1	7,473.5	12,623.9

10. AGRICULTURAL MARKETING INVESTMENT STRATEGY²⁵

IDENTIFIED OPPORTUNITIES AND CONSTRAINTS

1. The domestic agricultural marketing system in Myanmar appears to be generally efficient and effective. There is considerable evidence of competitive access for farmers to a choice of primary (village level) collectors and even town wholesalers or millers across most crops and commodities studied. The Central Crop Exchanges act as wholesale clearing houses for grains, seeds and pulses and charge margins of only 1-1.5%, allowing a rapid and low cost flow of products to millers, exporters and wholesalers in major population centres. However, the system is not equipped to deal adequately with fresh and perishable commodities and the higher losses and market margins in these segments of the market reflect, at least in part, a less efficient clearing mechanism for these products.
2. The costs and returns analyses prepared for each commodity underline the wide variation in returns to the production of major annual crops and livestock products in Myanmar, indicating that while some farmers are generating as much as US\$1,000/ha from intensive irrigated vegetable production, others are obtaining less than US\$65/ha from dry season catch crops such as sunflower or pigeon pea. It is worth noting that returns to rice tend to be at the lower end of the scale, with summer paddy in particular offering one of the lowest cost/benefit margins recorded among principal crops.
3. Clearly, such a wide range of returns, and the low profitability associated with many 'staple' crops, suggest that a large number of farmers are engaged in the production of crops which are not financially attractive. This occurs for a number of reasons, including: (a) directed production - almost all producers with access to state-developed irrigation are required to grow summer paddy; (b) climatic or soil suitability, restricting high value crops in some areas; and (c) a lack of access to capital (e.g. for small-scale irrigation, imported seeds, agrochemicals etc.) which precludes many farmers from exploiting high value alternatives. From a marketing point of view, therefore, considerable gains – in terms of both household earnings and food security, as well as national income - would accrue from any actions that permitted farmers to expand production of high value crops.
4. The poorer performance of the market system when dealing with fresh and perishable items (including meat and fish) is apparent from the relatively higher marketing margins associated with such perishable products, as well as in estimated system losses, which reach as high as 25-30% for garlic and onions. If these more perishable products are to gain in importance, it will be necessary to provide alternative marketing channels to the central crop exchanges utilised so effectively for grains, oilseeds and pulses.
5. The question of weights, measures and standards is also of more importance for a diversified production base than it is for grains, seeds and pulses. Local measures vary widely and

²⁵ The following section is developed from Working Paper 8 "Agricultural Marketing" contained in Volume 3 of this study and was prepared by Aidan Gulliver, Mission Leader of the Agricultural Sector Review.

there is considerable scope for manipulation of measures to benefit unscrupulous market participants.

6. Without doubt, however, the most important constraints and opportunities facing agricultural marketing are those arising from the existing policy environment, particularly with respect to international trade. Despite a commitment to move towards liberalized markets, the Government is still very active in controlling both importation and exportation of agricultural inputs and commodities. This has been most obvious at the level of rice, which was a Government export monopoly for many decades until 2003, when private sector trading was allowed as part of an overall liberalization package for rice²⁶. Nevertheless, citing fears of price increases in rice for urban consumers, the Government ‘temporarily’ reintroduced the ban on private rice exports in January 2004. In addition to rice, trading restrictions also currently apply, or have been applied over the last decade, to edible oil exports and imports, edible oil seeds, some pulses, cotton, and rubber.

7. The limitation or outright prohibition of exports of a number of agricultural commodities is justified by the Government on the basis that there is insufficient production of these crops to meet domestic needs. As a result, exports are only permitted when domestic demand has been filled. The result of such export controls has been to limit prices on the domestic market, as no alternative markets can be accessed. Although this may bring short-term benefits to urban consumers, it is damaging for both producers and consumers in the longer term. With depressed returns on domestic markets, producers reduce input usage and cropping intensity, resulting in stagnant yields and low uptake of new technologies. In addition, they will often (if permitted) shift to alternative crops, reducing supplies still further. As a result, the longer term trend will be towards declining supplies and increased prices – even while exports are prohibited. Much of the strong growth in the relatively low value pulses, for example, has occurred as a result of a shift in production from higher value oilseeds, as export markets for these have been progressively limited and increased import volumes have increased downward pressure on markets.

VISION AND STRATEGY

8. The core vision for agricultural marketing in Myanmar is one where:

‘Producers and other market participants operate freely and without hindrance within a regulatory framework that establishes and enforces norms and standards for domestically and internationally marketed agricultural inputs and products. Government intervention in the market is limited to the provision of public goods and services, while specific taxes levied on marketing are limited to revenue collection to defray such costs’

9. The underlying basis for such a vision is the belief that the market is a far more effective mechanism for providing signals to producers as to the optimal type, timing and quantity of production than any planning process conducted by Government. As farmers respond to market signals by diversifying their activities, accessing new markets and changing production

²⁶ A further key liberalization measure in this package was the ending of compulsory procurement - typically of 12 baskets or 250 kg - by Government agencies at prices generally less than half that of open market prices.

technologies, they will increase household incomes, reduce food insecurity, and accumulate resources for further intensification and expansion of activities. The market is thus the key driving force for all agricultural and rural development, offering both the incentives and the means for farmers to improve their efficiency and overall output.

10. Under such a strategy, the role of the State is focused on providing a framework which will enable market operations to be conducted equitably and efficiently. Such a framework will likely include a variety of instruments (legal, informative, infrastructural, facilitatory) to: (a) render it difficult for individual participants to gain unfair advantage, commit fraud or otherwise influence market behaviour (prices, volumes); (b) provide or support investments and services which are of broad value to all market participants, including infrastructure, communications, sanitation, security and information; and (c) establish common standards that allow all market participants – including foreign buyers – to clearly understand the characteristics of the product concerned.

11. The agricultural marketing system should not be treated as a special source of revenue for the Government. Specific taxes or other levies imposed on the system will almost inevitably lead to certain market channels or activities being favoured over others and distort market behaviour. Instead marketing system tax payments should be limited to two broad types: (a) revenue collection that forms part of a broad economy-wide collection process (e.g. VAT, road taxes) and is thus applied to marketing system activities in the same way as to other economic activities; and (b) specific user levies to cover costs associated with the provision of public goods specifically for market participants. These might include levies for use of physical facilities, market cleaning and sanitation, access to information, or quality inspection and certification.

DEVELOPMENT AND INVESTMENT PRIORITIES

12. In order to achieve these goals, an agricultural marketing strategy would focus on the following priority actions:

- The elimination of all direct and indirect Government controls on production, so as to permit producers to select those crops or commodities which provide the best returns under the circumstances in which the producer operates. Clearly, market demand and prices are among those circumstances, but they also include agro-climatic conditions, the level of risk that the producer is willing to accept, labour availability, and access to capital;
- The ending of differential treatment of domestic and export marketing in Government policies and decrees; instead treating all marketing channels as a means for allowing products to move as rapidly and efficiently as possible from production areas to areas of demand, whether these be local, in Yangon, or in Singapore;
- Support for the creation of a widespread and efficient rural financial system, which would provide operating and investment capital both to maximise response to market demand (e.g. small-scale irrigation and water management, crop diversification, and increased input use), as well as to expand the capacity

of rural traders and processors to purchase, treat, store and transport farm production;

- The development, dissemination and enforcement of national norms and standards for agricultural products entering the marketing system. Such moves would have to be accompanied by significant publicity efforts to reach farmers and small traders, as well as Government officials engaged in verification and enforcement, and should probably be undertaken in a gradual phased approach, concentrating initially on products entering export channels;
- The improvement of marketing infrastructure for those products not adequately dealt with through Central Crop Exchanges. This might include Government financing of wholesale market facilities, as long as control and operation of these facilities did not remain within Government hands;
- Increased attention to the role marketing in extension materials and programmes, including the replacement of production maximisation with profit maximisation as the key target for farmers; and
- The expansion of current market information services, both in terms of information collected and the means by which the information is disseminated, in order to ensure the maximum usefulness of the information.

SPECIFIC DEVELOPMENT INITIATIVES

13. Almost all of the above priorities can be addressed through specific investments. Those activities addressed elsewhere in this document (e.g. those related to directed production, rural finance and extension services) will not be considered further in this section. It is proposed that the remaining activities be grouped into three broad initiatives, as follows:

Assessment of the Impact of Trade Liberalization on Household Incomes and National Wealth

14. Under this activity a study would be conducted in order provide senior decision makers within the Government with a detailed and reliable analysis of the impact of existing trade restrictions on both poverty and food security at the household level (both urban and rural), as well as national export earnings. After identifying the importance of those crops and commodities affected by trade restrictions, the study would assess the impact of export liberalization for these commodities with respect to: (a) current domestic commodity prices; (b) household earnings of producers growing these commodities and the number of households affected; (c) household CPI costs for consumers; (d) net changes in Government income and foreign exchange earnings. The study would also analyse likely supply response from such changes, considering such aspects as: (e) anticipated changes in production patterns as a result of the ending of trade restrictions; (f) the impact of such production changes on farm household incomes; (g) the net change in foreign currency earnings for Myanmar; and (h) significant changes in the domestic availability of staple products (e.g. rice and oilseeds).

15. The resulting analysis would comprise a key instrument in encouraging a re-assessment of market policies followed by the Government in recent decades and allow decision makers to clearly determine the results of proposed policy changes.

Strengthening of Wholesale Market Infrastructure

16. Current marketing channels, although well developed for non-perishable items, are relatively unsuitable for fresh and perishable items. This category of product, already important, is expected to gain an increasing share of production as production patterns are liberalized, and farmers shift to higher margin crops.

17. In order to reduce post-harvest losses among perishable crops, as well as to encourage open, competitive trading and the collection and dissemination of market information, it would be beneficial to encourage the use of central wholesale markets. It is considered important that such markets are located at points of maximum trading flow (probably Mandalay and Yangon initially), are operated by the market users themselves (probably in association with the local Township authorities), and provide open access to all market participants willing to pay for the services provided. User control of administration and charges would be essential to avoid unnecessary bureaucracy and to ensure that only those services for which users were willing to pay, would be offered.

18. As the proposed markets would be focused on the wholesale, rather than retail, trade, emphasis would be placed on providing adequate secure space for vehicular access and parking, weighing, commodity storage, market administration and sanitation, as well as allowing space for future growth. It is likely that the markets would also be configured to permit the possibility of private or joint public-private development of market related facilities (e.g. cold storage, washing and grading, and processing) where demand exists. Space should be included for MOAI offices covering such areas as plant health, market information and extension as well as a simple analytical laboratory.

19. These requirements would place the markets on the outskirts of the towns involved, near major highway connections, rather than within centres of population. If successful, private sector operators offering food, accommodation and related services would develop spontaneously around market sites. Justification for Government involvement in wholesale market provision is based on the lack of private sector capacity for such investment, and the need to ensure that market operations are not controlled by a single enterprise or group.

Establishment and Enforcement of National Agricultural Marketing Standards

20. Myanmar possesses a bewildering variety of weights and measures, which often vary both geographically and as the commodity moves through the marketing chain. This confusion in measures is coupled with the almost complete absence of recognised grades or quality standards. Even where such standards do exist, however (Central Crop Exchanges and the MAPT define certain standards for rice, oilseeds and pulses) they are generally based on characteristics clearly visible to the human eye – such as percentage of broken grains, or colour - and thus exclude such potentially important factors as moisture content, protein content, chemical contamination etc. For

livestock and dairy products, the situation is even worse, with no effective controls at all, whether at slaughter, processing or sale.

21. While the absence of grades and quality standards is prejudicial to the operation of the domestic agricultural marketing system, it is critical for the ability of Myanmar to establish and maintain quality export markets. In general, Myanmar exports fall at the bottom end of international price scales specifically due to perceived poor quality controls. In some cases, such as meat and dairy products, the absence of proven and independently verified health controls makes exports impossible. Nor is the problem restricted only to exports. Myanmar annually imports large quantities of edible oil, but has no standards which such imports must meet, nor any means of enforcing them if they did exist.

22. The absence of standardised weights and measures also restricts the usefulness and accuracy of market information services, as these must deal with measures unfamiliar to market participants in other parts of the country and which may, in any case, vary within a single market. An expansion in current market information systems, which would likely comprise an element in any national agricultural marketing standards effort, would be instrumental in promoting the acceptance and use of the new standards, as well as being a beneficiary.

Phasing and Implementation

23. All of the priority actions to be undertaken with the agricultural marketing sub-sector require immediate short-term studies and subsequent debate and approval at national Government level, requiring a period of approximately one year. Subsequent implementation actions normally require from 3-4 years and can all be completed in the medium-term.

SUB-SECTOR INVESTMENT PROFILES AND COSTS

24. Investment profiles for projects arising from the sub-sector strategy are presented in Section 2. Total indicative costs for marketing related investments total approximately US\$6.1 million, with the largest investment being that related to strengthening of wholesale marketing infrastructure.

Estimated Profile Investment Costs (US\$'000)

Profile	Short-Term Years 1-2	Medium-Term Years 3-5	Long-Term Years 6-10	Total
Support for Agricultural Marketing Policy Reassessment	187.0			187.0
Strengthening of Wholesale Marketing Infrastructure	153.0	3,283.0		3,436.0
Establishment of National Agricultural Marketing Standards	178.2	2,310.0		2,488.2
TOTAL	518.2	5,593.0	0.0	6,111.2

11. RURAL FINANCIAL SERVICES STRATEGY²⁷

VISION

1. The vision of rural finance development in Myanmar is that of a sector providing sustainable, broad-based, market-oriented financial services that will play a crucial role in catalyzing economic growth and reducing poverty in rural Myanmar. Provision of rural finance will be substantially increased by a variety of sustainable rural financial institutions, including the Myanmar Agriculture Development Bank (MADB), microfinance institutions (MFIs), private banks, and credit cooperatives. Provision of rural financial services will be demand-driven, resulting in a range of financial services provided, including loans, savings facilities, money transfers, and insurance. These services will be provided for a variety of rural activities, such as farming, livestock raising, rural enterprises, and other off-farm income-generating activities for both the landed and landless rural populations. Rural finance institutions will be encouraged to efficiently allocate resources to the most productive investments and income generating activities. At the same time, emphasis will be placed on reducing the high transactions costs that are inherent in making small loans to the poor, thus encouraging the provision of sustainable microfinance services as a key element in the Government's poverty reduction strategy.

OPPORTUNITIES FOR RURAL FINANCE

2. Myanmar has several strengths on which it can build and opportunities that can be realized. MADB has the potential to play an increased role in providing broad-based, market-oriented rural financial services. It has a relatively large branch network, with branches in nearly two thirds of Myanmar's 325 townships. It has established substantial public trust, which is a significant asset to any financial institution. It has staff who is dedicated to their jobs and to MADB's mission to deliver quality financial services to farmers. And it maintains a relatively strong credit culture. MADB documents state that its future plan includes the laudable goal of financial self-sustainability. Revisions to MADB's policies and operations, to transform it into a demand-driven and market based rural finance institution, would increase its potential to achieve this goal by building on MADB's strengths and substantially enhancing MADB's performance, thus improving its outreach, sustainability, and positive impact on Myanmar's rural economy.

3. Although Myanmar's microfinance sector is at an early stage of development, it already has some successful microfinance projects that are demonstrating the potential of microfinance in Myanmar. These include, but are not necessarily limited to, the three UNDP microfinance projects in the Delta, Dry Zone, and Southern Shan State. Such projects could be expanded and replicated, as well as serve as valuable models and lessons for Government policy makers and new microfinance practitioners.

4. Several private banks have expressed a desire to conduct microfinance activities in rural areas, and two successfully piloted programmes to channel microfinance to community-based organizations were formed under UNDP's Human Development Initiative Project before

²⁷ The following section is developed from Working Paper 9 "Rural Finance" contained in Volume 3 of this study and was prepared by Brett Coleman, Rural Finance Specialist for the Agricultural Sector Review.

being directed by CBM to halt this activity. International experience, however, has shown that commercializing rural and microfinance is the best way to achieve financial deepening and deliver affordable financial services on a sustainable basis to farmers and rural entrepreneurs. The desire of a number of banks in Myanmar to carry out microfinance activities could, therefore, be nurtured as a way to increase outreach on a sustainable, market-oriented basis. Allowing land-use rights to be used as collateral would greatly enhance incentives for rural lending, and Myanmar's thorough and detailed land records (in contrast to many of its neighbours) could allow this relatively quickly²⁸.

5. Finally, financial services (rural or otherwise) tend to follow economic opportunities—market-oriented financial institutions will constantly seek out borrowers with profitable ventures to invest in. By creating an enabling environment for agriculture and the rural economy, through policy improvements and sector investments discussed in other chapters of this Agriculture Sector Development Strategy, the Government will enhance the profitability of agriculture and rural enterprises, thus spurring the incentives to provide financial services to this sector. Increased outreach and sustainability of demand-driven, market-oriented rural finance institutions will in turn lead to increased farm investments, adoption of improved agricultural technologies, increased crop yields, investments in rural small enterprises, increased and improved livestock raising activities, and therefore higher rural incomes and reduced rural poverty.

CONSTRAINTS TO RURAL FINANCIAL DEVELOPMENT

6. To achieve the vision for rural finance and to realize the opportunities above, substantial constraints will need to be overcome. Current availability of formal rural financial services is low—while 70% of the population is engaged in agriculture, which produces 57% of GDP, only 1 to 3% of formal bank credit is provided to the sector. Thus far, provision of rural finance has focused on credit only and has been supply-driven, based on MADB's lending plan. This policy has been well-intentioned; however, MADB's funding base is limited by (i) legal limits on the capital and reserves that it may accumulate, (ii) savings policies, including low interest rates and limits on savings withdrawals, that discourage savings, and (iii) Government budgetary constraints that limit MADB's borrowing from the Myanma Economic Bank (MEB). As a result, MADB's lending has been limited and shrinking, in inflation-adjusted real terms, for several years. MADB's lending has also been restricted to agriculture (primarily rice) to the exclusion of rural enterprises, livestock raising and other rural income-generating activities. MADB has been further constrained by limited staff banking skills. Because of MADB's mandate, there has not been a strong emphasis on recruiting experienced bankers at senior levels, or business and accounting majors at entry levels. Nor is there a formal training programme for staff.

7. Other formal financial institutions have been discouraged from providing rural financial services for a number of reasons. Formal banks, other than MADB, have been prohibited from lending for agricultural production. Interest rate ceilings, coupled with recent rates of inflation, have resulted in negative real interest rates—negative deposit rates discourage the savings mobilization that is necessary to fund lending operations, and negative lending rates

²⁸ The Department of Settlement and Land Records registers deeds, administers land policy, and maintains various land statistics.

discourage lending by making it inherently unprofitable. Banks are further discouraged from lending to rural households, by their inability to accept agricultural land-use rights as collateral. Such land is generally rural households' most important asset, and prohibition of its use as collateral represents a severe restriction on access to loans by rural households.

8. The lack of a clear legal framework for MFIs is a further constraint to the provision of rural finance. Microfinance is provided by a few international NGOs and local associations. However, their status is generally defined by project agreements that must be negotiated and signed with the Government. Such agreements generally define the area of operations, pricing (i.e., interest rates) allowed, and products and services offered. Revisions to such terms require further agreement with the Government. As a result, MFI operations are sometimes legally uncertain, and growth is unnecessarily constrained. Some microfinance projects, especially those implemented by local associations, also suffer from lack of experience and training in microfinance. As a result, despite best intentions, they follow practices that have proved unsuccessful in other contexts.

9. A further constraint to the growth in provision of rural finance by a variety of rural and microfinance institutions is the limited capacity in the Central Bank of Myanmar (CBM) to regulate and supervise them. Depositors are most concerned with the security of their deposits, which in turn requires a strong central bank responsible for licensing and supervising financial institutions, and which can intervene appropriately and decisively when necessary to maintain the integrity of the financial system. The banking crisis of 2003 underlines the need to strengthen CBM's capacity in this respect.

PROPOSED STRATEGY

10. The strategic approach to develop rural finance in Myanmar is consistent with the themes of the Agriculture Sector Development Strategy to promote rural development in general: to encourage the provision of financial services for rural households' farming and livelihood systems, rather than for production of specific commodities; to support locally determined priorities through the provision of demand-driven services, rather than supply-driven services; and to further support the Government's role in ensuring an enabling environment for provision of rural financial services, rather than the Government's conducting direct operations in providing such services.

11. This strategic approach will require a combination of policy improvements and investments carried out in a sequenced manner. Broadly speaking, the actions to take will fall within three categories:

- building awareness of, and consensus on, rural and microfinance best-practice applicable to Myanmar;
- creating an appropriate enabling policy, legal, regulatory, and supervisory environment to promote the establishment and growth of a variety of sustainable, market-oriented financial institutions to serve the diverse needs of the rural population of Myanmar; and
- expansion, replication, and/or strengthening of existing rural finance institutions and microfinance initiatives.

Priorities for Rural Finance Development

12. International experience has shown that macroeconomic stability, including low inflation, is a prerequisite to the proper functioning of the financial sector, of which rural and microfinance are an integral part. Hence, establishing and maintaining macroeconomic stability must be the highest priority in a strategy to develop rural finance; indeed, it is a precondition if the full potential of rural finance is to be realized.

13. As part of establishing macroeconomic stability, resolving the banking crisis is also a high priority. Rural and microfinance cannot be separated from the rest of the financial sector. A healthy rural and microfinance sector depends on a healthy financial sector, which in turn depends on macroeconomic stability. Restoration of public confidence in the banking sector will be encouraged by improved bank supervision, prudential requirements, and by eliminating current restrictions on deposit-taking and lending.

14. After macroeconomic stability, the highest priority must be to remove interest rate controls. Provision of financial services can be sustainable only if financial institutions are allowed to pay interest rates on savings that attract sufficient deposits to fund lending operations, and to charge interest rates on loans that cover costs and allow for profitability. Price controls are inconsistent with the Government's policy of market-based provision of goods and services, and this is equally true of financial services. Moreover, international experience has shown that subsidized lending disproportionately benefits the non-poor, who generally have better access to subsidized loans. By contrast, market-determined interest rates will promote equitable growth by ensuring the sustainability and growth of financial institutions and by allocating resources to the highest-return investments, including investments of the poor.

15. Similarly, directed lending (i.e., lending to a favoured sector) must be phased out. Such lending is, again, inconsistent with market-based allocation of resources, results in financing of low-return investments, is disproportionately captured by the non-poor, and crowds out alternative, sustainable financial services. Demand-driven lending by strong, market-oriented financial institutions carrying out proper credit assessment will encourage investments in high-return activities, including those made by the poor.

16. Another priority will be to improve the legal and regulatory framework for the provision of rural finance. This will include (i) removing the current prohibition on agricultural lending by formal banks, (ii) allowing agricultural land-use rights to be used as collateral, and (iii) preparing and approving enabling microfinance regulations that encourage the establishment, expansion, and replication of sustainable, best-practice MFIs. Building the capacity of CBM staff will be a priority, both to enhance their understanding of best-practice rural and microfinance so they can prepare an appropriate regulatory and supervisory framework, and to carry out the crucial role of supervising an expanded financial sector.

17. With an improved legal and regulatory framework, investments in a variety of financial institutions can follow, including both private and public initiatives. Such investments may include restructuring of MADB (including reorganization and transformation to a market-oriented, financially self-sustainable rural finance institution; upgrading of staff skills; and upgrading of physical facilities, including its management information system [MIS]); and expanding or replicating existing sustainable, best-practice MFIs.

PHASING AND IMPLEMENTATION OF INITIATIVES

Short-Term (2004-06)

Policy Improvements

18. Certain policy improvements should be undertaken as soon as possible to ensure the effectiveness of other investments and activities proposed in this strategy. These include: (i) reducing inflation²⁹; (ii) relaxing interest rate controls; (iii) allowing agricultural land-use rights to be used as collateral³⁰; (iv) resolving the banking crisis; and (v) ending the prohibition on lending by other banks to the agriculture sector. However, proper sequencing of these actions will enhance their effectiveness. It is recognized that the low interest rate policy has been implemented as part of a strategy to promote industrial development, and a sudden jump to positive real interest rates at current rates of inflation may be disruptive to some parts of the economy. Hence, interest rate caps could gradually be eased at the same time that inflation is being reduced, with full interest rate liberalization occurring over a 2-year period of time.

19. Similarly, ending the prohibition on bank lending to agriculture should not be interpreted to allow banks to engage in unsecured microfinance lending in the immediate future - the recent banking crisis indicates that a cautious approach is sensible, and bank lending for microfinance should await development of a legal framework for microfinance. As an interim measure, however, banks could be allowed to lend to established MFIs with a strong and transparent track record. Moreover, banks should be allowed to lend for agriculture on the same collateralized basis that they are allowed to conduct current lending operations. Allowing land-use rights to be used as collateral (coupled with ending the prohibition on agricultural lending) will likely be the strongest incentive to increase provision of rural financial services. However, to allow banks to play their appropriate role in servicing rural areas, it is crucial to resolve the bank crisis as an immediate priority. This would require enhanced bank supervision, clearly distinguishing between solvent and insolvent banks, winding up insolvent banks and providing liquidity support to solvent banks, and ending current restrictions on deposit-taking and lending.

Building Understanding of Rural and Micro-Finance

20. In order to build awareness and knowledge of best-practice rural and microfinance, a campaign to build improved understanding should be carried out. This should include senior policy makers responsible for designing, approving, and implementing measures to realize national policies of economic liberalization and market-oriented development, including those in the financial sector. The campaign would include a series of workshops held in Yangon and the various states and divisions, as well as study tours to other countries in the region to learn from their experience in developing the rural finance sector. This awareness-building campaign would

²⁹ Although this strategy recognizes macroeconomic stability, including low inflation, as the highest priority in creating a supportive enabling environment for rural finance, it offers no advice on how to achieve it. Instead, it is understood that the International Monetary Fund (IMF) and other fiscal and macroeconomic experts are providing advice in this area, which is focused on reducing budget deficits that are currently financed by inflationary borrowing from CBM.

³⁰ It would be possible for the Government to legally maintain state ownership of all land, while simultaneously granting permanent or long-term "land use" rights that can be mortgaged or transferred.

result in an official policy document on rural and microfinance development, and create the knowledge foundation to carry out appropriate reforms and investments in rural and microfinance. This campaign would last approximately 6 months and would require assistance from international donors.³¹ Further details of the awareness-building campaign are presented in the attached Investment Profile.

Diagnostic Study of MADB

21. Either in conjunction with, or immediately after the awareness-building campaign, a diagnostic study and external financial audit of MADB should be undertaken in order to allow Myanmar's policy makers to make fully informed decisions regarding MADB's future operations. Details of the diagnostic are outlined in the attached Investment Profile and should cover the following with respect to MADB: (i) governance; (ii) strategic planning; (iii) organizational structure; (iv) human resources management; (v) pricing policies and procedures; (vi) credit policies and procedures; (vii) risk management policies and procedures; (viii) products and demand; (ix) compliance review; (x) financial and accounting systems; (xi) management information systems; and (xii) financial analysis. The external financial audit should be conducted to international accounting standards in order to gain an accurate representation of MADB's financial situation. International donor support will be necessary for the diagnostic study and audit, which could be completed in 6 months.

Medium-Term (2006-09)

Improving the Legal, Regulatory, and Supervisory Framework for Rural and Microfinance

22. Following the awareness-building campaign, staff from CBM and other relevant Government ministries and agencies should be well qualified, with additional international technical assistance, to prepare an enabling legal, regulatory, and supervisory framework for rural and microfinance through a participatory process with key stakeholders. Details are outlined in the attached Investment Profile. This framework should be embedded in an overall financial sector development policy that supports effective financial intermediation, reduces financial transaction costs, facilitates the use of appropriate loan collateral, and develops a proper regulatory and supervisory framework for the different types of financial institutions. Regulations should facilitate the experimentation and adoption of new financial technologies and development of attractive financial products. The policy should recognize that successful financial intermediation is dependent upon transparency and accountability, so financial institutions should have updated and accurate information systems in place that are available to management, bank supervisors, and policy makers to assist them in policy revision for improved delivery of financial services.

23. The framework should include allowing for multiple MFI models and products with minimum starting regulations, MFI management autonomy, and private ownership. Enabling regulations need to explicitly create a legal space in which MFIs can operate. Regulations would cover (i) appropriate minimum capital requirements (generally less than requirement for a bank), (ii) appropriate collateral requirements (generally allowing unsecured lending by MFIs),

³¹ Time periods given for this and other initiatives are for implementation only, and do not include time required to fully design the project and terms of reference and to conduct contract bidding.

(iii) appropriate prudential and non-prudential regulations and supervision (with prudential regulation required to protect depositors and the integrity of the financial system),³² and (iv) appropriate provisioning requirements (generally higher than those of a bank). The legal and regulatory framework should also end the prohibition on bank lending for agricultural production and on the use of agricultural land-use rights as collateral if these are not already enacted under the short-term actions above. Conduct of the participatory process and preparation of regulations would take approximately 6 to 9 months and would benefit from international technical assistance. In addition, CBM staff's capacity to implement the new regulations, and to supervise deposit-taking MFIs, will need to be built through training and hands-on experience assisted by international experts. This should go hand-in-hand with an overall effort to increase CBM's capacity and autonomy as supervisor, regulator, and lender of last resort for financial intermediaries in Myanmar to protect the integrity of the financial system.

Restructuring of MADB

24. The diagnostic study of MADB should lead to the preparation of a restructuring plan to transform MADB into a financially self-sustainable, market-oriented rural financial institution that provides a range of rural financial services for a diverse clientele on a demand-driven basis. While the details can only be prepared following the diagnostic study, it can be expected that the restructuring plan include some reorganization, phasing out of interest rate subsidies and directed lending, improved credit policies and procedures, improved pricing of services, diversification of client base and lending products, improved risk management, introduction of a corporate planning process, implementation of improved loan provisioning and classification, increased management autonomy, revisions to human resources policies and practices including recruitment and training of staff, upgrading of physical facilities and MIS, and capitalization conditioned on meeting performance targets. Preparation of the restructuring plan could be completed within 3 months of the completion of the diagnostic and audit. Implementation, however, would likely be an on-going multi-year process, although major activities could be completed within 2 to 3 years.³³

Expanding, Replicating and Strengthening MFIs

25. With an enabling legal, regulatory, and supervisory framework in place, there will be ample opportunity and incentives for investment in MFIs. This could take the form of expanding or replicating existing best-practice, sustainable microfinance programmes. The licensing regime should encourage, and MFIs and their sponsors should endorse, an emphasis on long-term financial self-sustainability as a goal from the outset of all microfinance initiatives. MFIs should be professionally managed and staffed by qualified, trained personnel.

26. Investments in MFIs can be expected primarily from international donors, and possibly from private investors. As each will have their own process of project development, no investment profiles are attached - for example, UNDP could be expected to take the lead, based on

³² The regulatory framework should recognize the difference between “credit only” MFIs (which lend from their own capital or from borrowed funds, but not from deposits) and “deposit taking” MFIs (which take voluntary deposits for the purpose of on-lending). Only the latter need to be subject to prudential regulations and supervision. Subjecting the former to such supervision would unnecessarily stretch CBM's capacity.

³³ A similar diagnostic study and restructuring exercise could be undertaken for the state-owned Small Loans Enterprise. While such an exercise would be beneficial, it would be of less urgency than for MADB.

its successful implementation of its three microfinance projects in the Delta, Dry Zone, and Southern Shan State, and will be well placed to design expansion and replication plans. However, it can be expected that MFI investments will take the form of (i) marketing studies and needs assessments to establish the basis for MFI operations in a particular area; (ii) technical assistance to establish an MFI, develop institutional development plans, build appropriate systems (e.g. accounting and reporting, policies and procedures, financial management, and internal controls), and introduce demand-driven products and services; (iii) training for management and staff; and (iv) providing grants or loans for seed capital, information technology systems, research and development, and marketing.

Long-Term (2009-15)

27. Long-term actions to take will largely depend on the results of short- and medium-term actions. However, if the earlier actions are successful, Myanmar should begin to develop a mature or maturing rural and microfinance sector within a few years, including an increased number of MFIs and banks providing microfinance services. In this case, long-term actions would include developing of credit reference systems to improve the access of MFIs and banks to updated credit information on clients. This will reduce the costs of MFIs and banks to screen and manage borrowers.

28. An increasing number of licensed MFIs may also stretch CBM's supervisory capacity, so CBM may consider identifying and training supervisory intermediaries to extend the outreach of prudential supervision in line with the growth of MFIs, ultimately delegating supervision while retaining overall oversight of the sector.

29. Moreover, a mature microfinance sector can expect a gradual phasing out of start-up grants and subsidies such as those described above. However, MFIs may still require training, technical assistance, information services, and other types of assistance. Commercially oriented service providers may therefore be created to service MFIs.

30. Ongoing improvements to the policy and regulatory environment can also be expected. A Microfinance Forum, consisting of microfinance practitioners and policy makers, should be created to ensure a continual dialogue to maintain and enhance the enabling environment for microfinance.

SUB-SECTOR INVESTMENT PROFILES AND COSTS

31. Investment profiles for projects arising from the sub-sector strategy are presented in Section 2. Total indicative costs for rural finance related investments total approximately US\$31 million, with most of the costs associated with the recapitalization of MADB which would cover a five year period. All other investments are short-term initiatives.

Estimated Investment Profile Costs (US\$'000)

Profile	Short-Term	Medium-Term	Long-Term	Total
1. Building Understanding of Rural and Microfinance	277.0			277.0
2. Diagnostic Study and Strengthening of MADB	405.0	29,801.0		30,206.0
3. Developing an Enabling Legal, Regulatory, and Supervisory Framework for Rural and Microfinance	361.5			361.5
TOTAL	1,043.5	29,801	0	30,845

12. SECTOR WIDE STRATEGY AND INITIATIVES

COMMON STRATEGIC ELEMENTS

1. Overall, and in line with the Terms of Reference received at the commencement of the Agricultural Sector Review and Investment Strategy Formulation exercise, the focus of the individual sub-sector strategies and associated investment profiles has been on those initiatives and investments which would be most successful in generating pro-poor economic growth in the agricultural sector. In Myanmar, where large farmers and corporate agricultural enterprises account for a relatively small share of rural economic activity, and poverty or near poverty is widespread throughout rural areas, almost all sustainable increases in rural household income can be considered as pro-poor.

2. However, an important distinction must be drawn between increased productivity (a technical measure) and increased household incomes (a financial measure). One will not necessarily lead to the other. For example, if productivity increases are generated for crops or other activities which represent a poor or sub-optimal use of resources, they may produce only minor increases in household incomes and hence have a limited pro-poor impact and be a poor use of investment funds. Similarly, if the benefits of productivity increases are captured by players other than the producers (e.g. Government, State Economic Enterprises or foreign investors) there will be little increase in rural household incomes.

3. It is for this reason that all of the nine sub-sectoral strategies described in this volume emphasize so strongly the need for changes in the context within which the rural sector functions before consideration can be given to strengthening specific technical areas. In fact, although important technical constraints such as improved seed availability or wholesale market facilities are addressed, profiles which propose investment to promote individual crops or species are completely absent, as they would simply increase the tendency towards the 'directed production' so representative of the current rural policy environment. Instead the need is to ensure the ability of farmers to choose and undertake those activities which are best suited for their particular situation, and to ensure a public sector support capacity which responds to those choices. Many of the elements of this approach thus echo the key development themes of a broad-based farming systems approach, locally determined priorities, and a focus on an enabling role for Government, described in the initial section of the document.

4. In reviewing the individual sub-sector strategies already presented, seven common strategic elements have been identified which are described briefly below. Together, they represent the principal components of an overall sector strategy. They are:

Assessment and Review of Current Policies

5. In almost all instances, the sub-sector strategies place the initial emphasis on the review of specific policies which affect, and often limit, development within the sub-sector and the achievement of broad agreement on required adjustments to such policies prior to proceeding to significant levels of investment. Such policy areas range from directed production in the crop

production sub-sector, through licensing of fisheries rights and support for State Owned Enterprises, to limitations on the activities of private banks in rural finance operations.

6. In general, the strategy adopted by most of the sub-sectoral specialists has been to recommend a detailed analysis of the identified critical issues by a joint team of international and national experts over a period of from 3-6 months, followed by a process of dialogue with stakeholders. It is hoped, and expected, that the outcome of such analysis and discussions will be new or revised legislation and modifications to operational procedures which will provide the basis for future investment and growth within the sub-sector.

Institutional Strengthening and Reorientation

7. Many of the proposed strategies stress the importance of accompanying investments with a major reorientation and strengthening of those institutions and agencies relevant to their implementation. Without attention to the mandate, operational focus, facilities and human resource capabilities of these institutions, they will have neither the orientation nor the capacity to contribute the support required for development within the sub-sector. Institutional strengthening is seen as particularly important for the fisheries and livestock sub-sectors, but also requires attention in areas such as education, research and extension, poverty assessment, rural finance, and water resources management.

8. Such strengthening frequently includes upgrading of human resources through both national and international training, as well as improvement of physical facilities, mobility and information management capacities. In many cases the strengthening process requires a prior consideration of the appropriate role of the institution involved, as part of a long-term shift towards the role of the Government as an enabler of development which is generally prioritised and implemented at local level. The institutional strengthening process presupposes the ability and commitment of the Government to continue such increased levels of support to key sectoral institutions beyond project implementation periods (typically 5-8 years).

Focus on those with Limited Access to Resources

9. Realistically addressing rural poverty and accelerating economic growth requires particular attention to those with inadequate access to resources; particularly natural resources (land and water), but also financial and human resources. The highest levels of poverty, at least in central areas of the country, appear to be associated with landless households or those with marginal holdings (below 2 acres). In many areas, lack of access to water during the dry season is also a contributing factor to poverty.

10. Increasing agricultural productivity will be of little assistance to this group. Instead they need to be provided with support which either increases their access to key resources or provides them with alternative means of income generation. In the sub-sector strategies a number of priorities are identified; most importantly the opening up cultivatable waste land to small farmers (rather than major corporations). In addition such initiatives as improving access to alternative income sources (e.g. through development of dairy and aquaculture), and providing support for small-scale irrigation development are considered to specifically address this group.

Improving Rural Financial Services

11. Inadequate access to rural financial services is without doubt one of the most critical constraints to rural economic growth and development and affects almost all of the sub-sectors reviewed. The absence of financing limits small farmers' access to both operating funds for the purchase of seeds, fertilizer and other inputs and to capital investment in livestock, irrigation equipment, post-harvest facilities and many other areas. Currently, most farmers do not have access to any form of formal finance, and those who do receive loans from the MADB generally obtain only a fraction of the cost of production for the activity. In the absence of formal financing, many farmers have no other recourse than to moneylenders and pawn shops, where interest rates are extremely high.

12. However, the absence of rural finance is not primarily the result of a lack of capital, although MADB does face severe capital constraints. Rather it is policy induced, through such measures as restrictions on all formal private sector lending to the sector (other than MADB) and a range of controls on the operations of MADB and its sister bank, the MLFDB, which greatly limit their effectiveness. The few microfinance programmes operating in Myanmar face serious impediments to their activities, including constraints to expansion and ceilings on lending rates.

13. The principal strategic approach recommended for rural finance is support for an informed dialogue which demonstrates the economic costs of existing policies, offers policy alternatives, and assists Government in formulating new approaches to management and oversight of rural financial services. Strengthening of MADB operations is also proposed – once appropriate policies are in place - including substantial recapitalization of the bank.

The Central Role of Local Communities

14. The central role that could be played by local communities in rural development is also an underlying theme in many strategies. In the case of fisheries, livestock production, irrigated agriculture, research and extension, and rural finance, for example, the potential contribution of strengthened community groups and associations is seen as significant. This is especially the case in Myanmar where there is a long tradition of mutual support linked to Buddhist precepts.

15. Although a number of the sub-sectors propose development strategies to support local communities in playing a larger role in economic development, the Social and Community Development sub-sector proposes specific initiatives to strengthen community participative structures and procedures in general. These commence with efforts to gain a better understanding of the nature and scope of rural poverty and funding of locally-determined development initiatives.

Markets and Household Income Generation

16. The crucial role of open markets is widely reflected in a number of sub-sector strategies. Given that income generation requires the sale of products, unfettered access to markets is a prerequisite for poverty alleviation. Unusually among developing countries, Myanmar appears to have generally efficient domestic markets for key commodities, but

Government intervention in international trade in particular limits the ability of farmers to exploit market opportunities and receive the highest prices. Crop diversification is also constrained by marketing issues, although in this case it is largely weaknesses arising from the lack of national standards and poor wholesale facilities for non-traditional crops. These issues are addressed in the Agricultural Marketing sub-sector strategies.

Pilot Implementation Programmes

17. Most sub-sector strategies include the use of pilot implementation efforts, typically extending over a period of 3-4 years, which would not only test proposed investment approaches under field conditions, but would also allow an opportunity to assess the practical impact of the policy adjustments and institutional strengthening activities discussed above.

SUMMARY OF PROPOSED INTERVENTIONS

18. Table 1 below summarises the complete list of the 32 investment profiles developed to realise the proposed investment strategies. The total cost of all proposed investments is slightly over US\$418 million, spread over a maximum of 10 years, although the majority of the profiles are projected to require a duration of five years or less. The size of the proposed investments varies widely; from US\$134,000 in the case of the horticultural export study, to US\$121 million, in the case of the modernization and expansion of irrigation at national level.

19. As might be expected, the largest proposed investments are associated with the irrigation and crop production sub-sectors, each with proposed investments of more than US\$100 million. Together, these two sub-sectors account for almost US\$310 million, or more than 75% of the entire investment proposed for the sector. The principal project profiles are:

- Cultivable Wasteland Reclamation (US\$72.5 million);
- Dryland Area Development (US\$36.3 million);
- Irrigation Modernization and Expansion (US\$121 million); and
- Small-Scale Irrigation and Water Management (US\$63.7 million).

20. By contrast the fisheries and agricultural marketing sub-sectors contain proposed investments totalling less than US\$10 million per sub-sector, while the livestock, agro-industry, social and community development, and rural financial services sub-sectors provide project profiles with total investments of between US\$10 million and US\$40 million per sub-sector.

21. In Table 2 these investment profiles are grouped by focus, drawing on the common strategic elements defined above. However, not all the above elements are used for profile classification as some comprise either implementation approaches (e.g. the use of pilot phases), or derive largely from a single sub-sector, despite being of sector-wide significance (e.g. rural finance). A number of profiles are applicable to more than one focus, especially those combining policy review or institutional strengthening with another aspect, and therefore may appear twice; the total number of profiles listed in Table 2 is therefore 40.

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TABLE 1: INVESTMENT PROFILES SUMMARY

SUB-SECTOR	INVESTMENT PROFILE TITLE	SHORT TERM	MEDIUM TERM	LONG TERM	TOTAL
		(US\$000)			
Social and Community Development	Rural Poverty Reduction Policy and Institutional Development	682.0	610.5	0.0	1,292.5
	Establishment of Rural Socio-Economic Database and GIS System	517.0	848.1	338.8	1,703.9
	Strengthening of Local Capacity for Community Based Development	95.7	965.8	748.0	1,809.5
	National Community Based Development Fund	2,453.0	7,463.5	14,147.1	24,063.6
	Sub-Sector Total	3,747.7	9,887.9	15,233.9	28,869.5
Crop Production	Cultivable Waste Land Reclamation	462.0	2,001.0	70,000.0	72,463.0
	Dry Land Area Development	242.0	2,029.0	34,000.0	36,271.0
	Production Planning and Directed Production Study	352.0	0.0	0.0	352.0
	Production and Utilisation of Improved Seed	166.7	1,458.6	10,000.0	11,625.3
	Horticultural Export Study	134.2	0.0	0.0	134.2
Sub-Sector Total	1,356.9	5,488.6	114,000.0	120,845.5	
Livestock	Review of Livestock Sub-Sector Status and Policy	570.0	0.0	0.0	570.0
	Strengthening of National Disease Control Capacity		2,650.0	0.0	2,650.0
	Expansion of AI and Support for Smallholder Dairy	369.0	6,633.0	0.0	7,002.0
	Establishment of a Village Based Newcastle Disease Programme	0.0	1,133.0	0.0	1,133.0
	Sub-Sector Total	939.0	10,416.0	0.0	11,355.0
Fisheries	Institutional Strengthening of the Department of Fisheries	1,353.0	1,144.0	0.0	2,497.0
	Support for the Transformation of Local Fisheries to Community Based Management	250.8	1,226.5	1,342.0	2,819.3
	Incorporation of Small-Scale Fish Ponds into Farming Systems	686.4	704.0	0.0	1,390.4
	Sub-Sector Total	2,290	3,075	1,342	6,706.7
Agroindustry	Support to Policy Analysis and Reform	939.4	193.6	0.0	1,133.0
	Support to Institutional Reform in the SOE Sector	907.2	0.0	0.0	907.2
	Support to Private Sector Agribusiness Network Development	0.0	8,240.0	0.0	8,240.0
	Small-Scale Agricultural Mechanization	118.8	1,108.3	0.0	1,227.1
	Sub-Sector Total	1,965.4	9,541.9	0.0	11,507.3
Irrigation and Water Resources	Irrigation Management Policy Development	1,823.8	0.0	0.0	1,823.8
	Irrigation Modernization and Expansion Programme	3,228.5	58,877.5	58,877.5	120,983.5
	Small-Scale Irrigation and Water Management Programme	3,654.2	34,311.3	25,781.1	63,746.6
	Capacity Building in Irrigation and Water Resource Management	1,265.0	1,251.8	0.0	2,516.8
	Sub-Sector Total	9,972	94,441	84,659	189,071
Agricultural Research, Extension and Education	Creation of a National Multi-Disciplinary Agricultural Service	245.3	2,520.1	5,956.5	8,721.9
	Strengthening of Agricultural Education	109.0	2,276.0	1,517.0	3,902.0
	Sub-Sector Total	354	4,796	7,474	12,624
Agricultural Marketing	Support for Agricultural Marketing Policy Reassessment	187.0	0.0	0.0	187.0
	Strengthening of Wholesale Market Infrastructure	153.0	3,283.0	0.0	3,436.0
	Establishment of National Agricultural Marketing Standards	178.2	2,310.0	0.0	2,488.2
	Sub-Sector Total	518	5,593	0	6,111
Rural Financial Services	Building Understanding of Rural and Micro Finance	277.0	0.0	0.0	277.0
	Diagnostic Study and Strengthening of MADB	405.0	29,801.0	0.0	30,206.0
	Developing an Enabling Framework for Rural and Microfinance	361.5	0.0	0.0	361.5
	Sub-Sector Total	1,044	29,801	0	30,845
SECTOR TOTAL:		22,187	173,040	222,708	417,934

TABLE 2: INVESTMENT STRATEGIES BY FOCUS

Policy Review and Reassessment

Rural Poverty Reduction Policy and Institutional Development
Production Planning and Directed Production Study
Review of Livestock Sub-Sector Regulations and Policy
Support to Agroindustrial Policy Analysis and Reform
Irrigation Management Policy Development
Creation of a National Multi-Disciplinary Agricultural Service
Support for Agricultural Marketing Policy Reassessment
Building Understanding of Rural and Microfinance
Developing an Enabling Framework for Rural and Microfinance
Support for the Transformation of Local Fisheries to Community Based Management

Institutional Strengthening

Establishment of a Rural Socio-Economic Database and GIS System
Strengthening of National Disease Control Capacity
Institutional Strengthening of the Department of Fisheries
Support to Institutional Reform in the SOE Sector
Capacity Building in Irrigation and Water Resource Management
Strengthening of Agricultural Education
Establishment of National Agricultural Marketing Standards
Diagnostic Study and Strengthening of MADB
Production and Utilisation of Improved Seed

Local Community Development

Strengthening of Local Capacity for Community Based Development
Establishment of a National Community Based Development Fund
Establishment of a Village Based Newcastle Disease Programme
Support for the Transformation of Local Fisheries to Community Based Management
Small-Scale Irrigation and Water Management Programme
Developing an Enabling Framework for Rural and Microfinance

Natural Resource Access or Alternative Income Generation

Cultivable Wasteland Reclamation
Dryland Area Development
Expansion of AI and Support for Smallholder Dairy Production
Incorporation of Small-Scale Fishponds into Farming Systems
Establishment of a Village Based Newcastle Disease Programme
Support for the Transformation of Local Fisheries to Community Based Management

Technical Support

Horticultural Export Study
Production and Utilisation of Improved Seed
Expansion of AI and Support for Smallholder Dairy
Support to Private Sector Agribusiness Network Development
Small-scale Agricultural Mechanization
Irrigation Modernization and Expansion Programme
Strengthening of Wholesale Market Infrastructure
Establishment of National Agricultural Marketing Standards
Creation of a National Multi-Disciplinary Agricultural Service
Small-Scale Irrigation and Water Management Programme

22. It can be seen that ten profiles, or almost one third of the total, relate primarily to policy review and reassessment. All sub-sectors contain at least one profile addressing this issue. Institutional strengthening is also addressed by all sub-sectors.

23. The number of profiles in any category is not necessarily a good indicator of the importance of that category. Most policy and institutional strengthening projects (with the exception of that involving the recapitalization of MADB) are relatively limited in cost. By contrast, although there are only ten profiles (31%) categorized as addressing primarily or largely technical issues, they nevertheless account for a total cost of US\$227 million, or 55% of total investment costs.

PHASING OF INTERVENTIONS AND THEIR COSTS

24. While it is hoped that the publication of this review and strategy will coincide with, and be instrumental in contributing to, a resurgence of investment within the agricultural sector of Myanmar, it is not considered prudent to rely solely on the immediate availability of large amounts of foreign investment.

25. In order to facilitate immediate actions to support sector development, even if large scale investments are problematical, the profiles have for the most part been structured so as to be implementable in phases. Where there is no phasing, it is generally because the investment concerned is too small or of too limited a duration for this to be considered worthwhile. Three broad phases were defined and agreed upon by the sub-sector experts prior to preparation of the investment profiles, in order to facilitate comparison across the entire sector. These are:

- **Short-Term:** Investments or phases that are completed in less than two years (often less than one year). These generally correspond to studies and reviews intended to contribute to one of the following - policy formulation, institutional needs assessment or major project preparation.
- **Medium-Term:** Investments or phases that could be completed in approximately three to four years (depending on the presence of a prior short-term phase). These are often pilot phases intended as precursors to long-term projects, but may include institutional strengthening and other efforts in which a three to four year period is considered adequate for achievement of project goals.
- **Long-Term:** Phases that would always follow a prior pilot or preparatory phase and may have a duration of up to five years. Only approximately one third of projects are foreseen as requiring a long-term phase.

26. It is important to bear in mind that, although investment details and costs can be defined fairly clearly for short-term investments, many medium and long-term investments will depend heavily upon the results of the previous phase(s). As a result, the components and cost of long-term phases are often based upon assumptions that may be modified substantially when studies and pilot exercises are completed.

27. The total cost of short-term investments or phases is approximately US\$22 million and they encompass 29 of the 32 total projects (the others commence as medium-term investments). Profiles are structured such that initial short-term activities can be funded, and implemented, independently of later stages. Under this scenario, the cost of short-term interventions ranges from US\$96,000 in the case of preparatory work for local capacity building for community development, to over US\$3 million for preliminary work for each of the two major irrigation projects. However, 19 of the short-term investments have budgets of less than US\$500,000 and could therefore be readily undertaken by the Government with relatively limited financial support from bilateral donors or international technical agencies such as UNDP or FAO. Eight have costs of less than US\$200,000 and could probably be undertaken without any outside financial support at all, if desired.

28. The total cost of medium-term investments or phases is US\$173 million. In addition to the two short-term irrigation investments, most of the medium-term phases of proposed profiles exceed US\$500,000 and would require bilateral or multi-lateral agency financing in the range of US\$1-10 million. Three projects or phases exceed this amount, however, and would almost certainly have to comprise elements of major international loan agreements.

29. Long-term phases have expected costs exceeding US\$220 million. Four of the ten interventions have costs exceeding US\$25 million and would require multi-lateral financing, especially when the cost of prior pilot phases is included.

IMPLEMENTATION PRIORITIES

30. Clearly, all investments supporting policy review and reassessment must be regarded as priorities, as agreement on adjustments to current policies and procedures are an essential prerequisite to further investment. Fortunately, it is this category of intervention that usually has the lowest cost, and these studies can generally be implemented for a cost of less than US\$200,000. Of almost equal importance are those studies intended to provide a detailed plan for institutional strengthening, and these also can usually be implemented at a relatively low cost. Both types of investment can generally be completed in a year or less, although much will depend on the time required to approve and implement the agreed upon changes.

31. In thematic terms, the most important projects are those generating cross-sectoral impacts derived from investments in the following four areas:

- (a) **Rural Financial Systems:** This area is considered vital for the intensification and diversification activities implied in many other proposed investments. Three of the four proposed investments are considered of the highest priority and action should be taken to implement the first phase of these as rapidly as possible. They are:
 - Building Understanding of Rural and Micro Finance (US\$277,000);
 - Diagnostic Study of MADB (US\$405,000); and
 - Developing an Enabling Framework for Rural and Micro Finance (US\$362,000).

- (b) **Social and Community Development:** The achievement of sustainable rural growth will depend heavily on developing effective policies on poverty reduction, as well as the initiation of approaches to address that poverty. Key Phase 1 investments in this area therefore include:
- Rural Poverty Reduction Policy and Institutional Development (US\$650,000); and
 - Strengthening Local Capacity for Community Based Development (US\$95,700).
- (c) **Agricultural Research, Extension and Education:** The development of an effective mechanism for the provision of multi-disciplinary rural services based on overall farming systems, rather than individual commodities, will provide important support to rural populations in the development process and affect all productive sectors. The following Phase 1 activity is thus seen as critical:
- Creation of a National Multi-Disciplinary Agricultural Service (US\$245,000).
- (d) **Agro-Industry:** The development of an effective policy analysis capacity within MOAI would contribute to a better understanding of policy impacts across the rural sector and contribute to more effective decision making. The following Phase I activity is thus seen as of major importance:
- Support to Policy Analysis and Reform (US\$939,000).

32. Of secondary priority would be the implementation of the remaining policy review and institutional strengthening needs assessment studies, covering crop production, livestock, fisheries, agro-industry, agricultural education, agricultural marketing and the implementation of the MADB strengthening following on from the project proposed above. It may well be the case, however, that specific international financing agencies prefer to contribute primarily within a single sub-sector, and so would be more willing to finance medium-term and long-term activities in these selected areas than attempt to cover additional short-term tasks.

SECTION 2: SUB-SECTOR INVESTMENT PROFILES

1. SOCIAL AND COMMUNITY DEVELOPMENT PROFILES

1. Four strategic priorities have been developed to investment profile level for the Social and Community Development sub-sector, covering:

- Rural Poverty Reduction and Institutional Development (US\$1.3 million);
- Establishment of a Rural Socio-Economic Database and GIS System (US\$1.7 million);
- Strengthening of Local Capacity for Community-Based Development (US\$1.8 million); and
- The Establishment of a National Community-Based Development Fund (US\$24 million).

Each profile is broken down into short, medium and long-term phases, with the exception of the first project which covers only the short and medium-term.

PROFILE 1: RURAL POVERTY REDUCTION POLICY AND INSTITUTIONAL DEVELOPMENT

Summary

2. The project aims to assist GOM in (i) formulating a rural poverty reduction policy based on reliable data, (ii) establish a high profile national body responsible for coordinating poverty reduction programmes/projects and (iii) localisation of MDGs in Myanmar context. The project is expected to utilise international and national expertise in rural poverty in developing national capacity. An indicative cost of the project is US\$1.3 million over a total period of 4-5 years.

Background

3. Rural poverty in Myanmar is widespread and localised in various parts of the country. However, there is no national consensus on the depth and width of poverty, especially in the rural areas. A number of small-sample studies have been carried out by various national and external agencies capturing some of the key poverty related indicators and these studies provide conclusive evidence regarding the existence of poverty but available information and data do not shed adequate light on distribution of poverty for the country as a whole. This problem partly stems from the fact that officially Myanmar does not have a recognised poverty line. In addition, there is no designated institution responsible for addressing poverty related issues.

Rationale and Objectives

4. The Agriculture Sector Review indicates that 30% of the rural households are landless and three-fourths of the landless live in rural areas. Similarly, child malnutrition is significantly high, especially in rural areas. In 2000, 11 of 16 States/Divisions had more than 40% of under five children underweight and 13 of 16 States/Divisions had more than 40% of under-5 children stunted. The 2003 Participatory Poverty Assessment undertaken by HDI projects, as well as studies undertaken as part of the ASR mission in selected villages, indicate that more than two-thirds of households are either poor or very poor. The poor and very poor households tend to be concentrated in relatively more remote and inaccessible areas and in a number of villages they exceed 80%. A vulnerability mapping exercise using available data indicated that 35% of townships were very highly or highly vulnerable and another 22% were moderately vulnerable. For most of the rural poor households food alone accounted for at least 60% of total expenditure (80% for the very poor households). Poverty also tends to be concentrated on small farms relative to medium or large farms. In absence of a national policy for poverty reduction, particularly in rural areas, it is very difficult for the GOM to formulate effective poverty reduction interventions and determine appropriate resource allocations.

5. A clear and well-defined national poverty reduction policy will have five specific objectives:

- It will assist GOM to determine social and physical infrastructure investment priorities and resource requirement.
- It will assist the GOM, divisional/state and township administrations in judiciously allocating available resources in a targeted manner based on prioritised needs rather than ad hoc decisions.
- Myanmar is a signatory to the Millennium Summit which set Millennium Development Goals (MDGs). It will provide a framework for monitoring progress made in attaining the agreed goals and facilitate localisation of MDGs in the context of Myanmar.
- It will provide an institutional basis for policy coordination and monitoring of poverty reduction programmes including international commitments.
- It will provide a framework for coordinating inter-sectoral and inter-agency activities.

Principal Elements and Phasing

Component I: Participatory Rural Poverty Assessment at the National Level (Short-Term)

6. For the reasons discussed above, it is important to determine rural poverty rates and distribution in Myanmar. Evidence to date is based largely on localised studies which cannot reliably be generalised for the whole country. The project will commission a national participatory poverty assessment study to be undertaken by a team of national and international consultants who will work closely with General Administration Department (GAD). Given the

administrative mandate of GAD over districts, townships and village tracts, their role would be important. The team will develop an appropriate methodology and participatory assessment tools. The study design would be representative of all relevant agro-ecological zones and cover all States and Divisions of Myanmar. The villages for the assessment will be selected using a stratified random sampling method and it is expected that at least two villages per township (648 villages in total) will be covered. For triangulation purpose, the team would also analyse the most recent Household Income and Expenditure Survey data set collected by Central Statistics Office (CSO) and Agricultural Census currently underway. The study would be expected to cover household and community level asset structure, gender differentiations, resource endowments, state of material and child health, access to and use of physical infrastructure and social services, indebtedness, food security (both quantitative and qualitative dimensions), housing and living environment, social capital and other relevant poverty indicators.

7. The final output from this component will be a ranking of villages and, by implication, a ranking of all 324 townships. The study is expected to be completed in 12 months period. A total of 12 man-months of international consulting input (a Participatory Poverty Assessment Specialist) and 48 man-months of national consultants (36 man-months of Participatory Rural Appraisal and 12 months of quantitative analysis) will be required. The component envisages capacity building through human resource development of the township administration in carrying out participatory poverty assessment.

Component II: Preparation of a National Poverty Reduction Policy Paper (Short-Term)

8. It is expected that the participatory poverty assessment at the national level along with disaggregated analysis of 2003-2004 Agricultural Census and 2003 HIES datasets will provide a better picture of incidence of poverty in Myanmar. Information thus obtained will form the basis for developing a National Poverty Reduction Policy Paper (NPRPP). Under this component, the Prime Minister will appoint a Senior Coordinating Minister who will head an inter-agency taskforce mandated with drafting the NPRPP. The taskforce will have at least half of its membership from private and non-governmental sectors. The taskforce will ensure that the NPRPP is based on facts and figures generated under the first phase.

9. The NPRPP would be expected to provide a clear policy framework for poverty reduction taking into account the country's international commitment of meeting MDG targets by 2015. Such a framework will include modifications of existing (or formulation of new) policies, as required, as well as ensure policies are also owned by State/Division level Commanders. The paper will identify and prioritise both vulnerable population groups (including ethnic minorities, female headed households, households that are dependent on child labour, and HIV/AIDS affected households) and locations, and propose enabling measures so that those trapped in the vicious cycle of poverty can see light at the end of the tunnel. These enabling measures are likely to include such aspects as improved household level access to resources, bridging gender gaps, increased human and working capital, social and physical infrastructure, safety nets, a strengthened role of traditional community based organisations etc.

10. The final output of this component will be a clear and detailed NPRPP for Myanmar based on valid assumptions and reliable information/statistics. The task force is expected to complete its work in six months and will require logistic support as well as national level analysts,

for a total of 12 months national consultant input. Assistance of an international rural development expert (2 man-months) is also envisioned.

Component III: Establishment of Myanmar National Commission for Poverty Reduction (Medium-Term)

11. A national oversight body and think tank, the Myanmar National Commission for Poverty Reduction (MNCPR), would be established under the Prime Minister's Office to ensure inter-ministerial coordination and be responsible for monitoring implementation of the national rural poverty reduction policy. The Commission would be headed by the Prime Minister and comprise Ministers responsible for Agriculture and Irrigation, Livestock and Fisheries, Forestry, Education, Health, Energy, Finance and Revenue, National Planning and Economic Development, and Construction and Home Affairs. The Commission will approve the National Poverty Reduction Policy Paper prepared by the NPRPP Taskforce.

12. The Commission will be supported by a MNCPR Secretariat under the Prime Minister's Office. The Secretariat will undertake day-to-day functioning of the Commission and provide an institutional location for policy assessment and formulation on poverty issues. It will have six specific roles: (i) monitoring and evaluation of rural poverty data; (ii) poverty mapping by integrating physical data with socio-economic data on GIS maps at the township level; (iii) regularly updating poverty maps; (iv) coordinate public awareness campaigns involving relevant government agencies and NGOs; (v) in concert with participating ministries, develop a plan and timetable for actions to ensure progress towards MDG indicators; and (vi) monitoring progress made in attaining the agreed goals and day-to-day coordination of inter-sectoral and inter-agency activities. The Secretariat will also serve as a national focal point for poverty reduction and will directly link with multilateral and bilateral organisations, including INGOs and NGOs. It is envisioned that the Secretariat will be the national depository of data/statistics/information relevant to poverty assessment and these two roles will enable it to hold broad ranging discussions/seminars/workshops on wide ranging, multi-stakeholder poverty issues and provide a permanent forum for these issues.

13. For effective functioning, the Secretariat would require a staff of at least 5 high calibre and experienced national experts to assume the lead role in rural poverty assessment and analysis. The Project will initially support the direct costs associated with these experts as well as operating costs for Secretariat functioning over a three year period. However, the Government would be expected to assume these costs after completion of the project period. The project will also seek services of an international poverty specialist with experience in mapping and analysis for a period of 12 months over the duration of the component.

Indicative Costs

14. Indicative costs for the proposed investment are presented below.

Project Component	Short-Term Year 1-2	Medium-Term Year 3-5	Total
A. National Participatory Rural Poverty Assessment			
1. Advisory Services			
a. International Consultant (US\$15,000 x 12)	180,000		
b. National Consultants (US\$1,500 x 48)	72,000		
2. PPA study contracts to NGOs (US\$500/township)	162,000		
3. Local travel	35,000		
4. Administration and other costs	10,000		
5. Training (at US\$5,000/course x 15)	75,000		
6. Computers/Printers/Communication	20,000		
Sub-total	554,000		554,000
B. National Poverty Reduction Policy Paper			
1. Advisory Services			
a. International Consultant (US\$15,000 x 2)	30,000		
b. National Consultants (US\$1,500 x 12)	18,000		
2. Administration	5,000		
3. Travel	3,000		
4. Training/Workshops (US\$5,000 x 2)	10,000		
Sub-total	66,000		66,000
C. Establishment & Operation of Myanmar National Commission for Poverty Reduction			
1. Advisory Services			
a. International Consultants (10 months)		150,000	
b. National Experts (5 x 3 yrs)		180,000	
2. Administration and honorariums for Commission members (US\$25,000/year)		75,000	
3. Travel (US\$15,000/year)		45,000	
4. Training/Workshops (US\$5,000 x 6)		30,000	
5. Computer/GIS equipment		75,000	
Sub-total		555,000	555,000
Contingency (10%)	62,000	55,500	117,500
TOTAL	682,000	610,500	1,292,500

PROFILE 2: THE ESTABLISHMENT OF RURAL SOCIO-ECONOMIC DATABASE AND EXPANSION OF GIS INFORMATION

Summary

15. The proposed project aims to create a continuously updated socio-economic database so that meaningful rural poverty reduction strategies, policies, programmes and projects can be formulated for maximum benefit of the rural, disadvantaged and vulnerable population. The project will assist in (i) consolidating existing databases currently maintained by various agencies, (ii) periodically collecting rural poverty related statistics currently not collected by any agency;

and (iii) build capacity of key line agencies in undertaking economic and social impact assessment. The project will also strengthen the existing GIS database created under the ASR with additional socio-economic indicators. The project will improve overall analytical capabilities of relevant agencies and would cost around US\$1.5 million over a period of 10 years.

Background

16. The collection, management, analysis and reporting of reliable rural statistics in a timely manner and at regular intervals are crucial in understanding rural social structure and poverty in Myanmar, while the design of effective policies requires a good statistical foundation and information base. *At present, most key rural statistics are not available in Myanmar* and are almost completely absent at township level. The activities proposed under the Participatory Poverty Assessment in Phase 1 of Profile 1 will increase understanding of poverty in Myanmar, but will occur on a one time basis only and not provide a long-term solution to monitoring rural poverty. Nor will it cover a wider range of socio-economic indicators that are needed for national development planning. Currently, only limited socio-economic statistics collected by various agencies/departments are published by CSO in its Statistical Yearbook, which has a publication time lag of about three years. However, considerable data could be extracted from existing sources if higher authorities gave authorisation for its dissemination on a timely basis.

Rationale and Objectives

17. The collection and interpretation of disaggregated reliable statistics, particularly for rural areas, is vital for understanding the nature of poverty and formulating context specific poverty reduction intervention programmes. It would assist policy makers in allocating available resources based on local needs rather than as a result of *ad hoc* administrative or political decisions. The timely collection, analysis and reporting of statistics with particular focus on rural deprivation is important in establishing a baseline which can be monitored over time in the context of relevant development interventions. Combined with training of Government staff in impact assessment, the availability of such data would serve in monitoring and evaluating sectoral and cross-sectoral programmes directed at poverty reduction and general welfare of rural population and assist township and provincial government authorities in allocating resources based on needs and local priorities. Furthermore, such information would assist GOM in developing pro-poor growth strategies and policies, as well as setting up Myanmar specific MDG indicators, which can be monitored over time and reported to the international bodies. The project will have three specific objectives:

- to develop capacity and capabilities of local institutions in collecting, consolidating, analysing and reporting data from various agencies;
- to develop capabilities of local institutions in undertaking social and economic impact assessments of development interventions; and
- to establish a Rural Socio-Economic Database for the whole country which can be updated online and shared by relevant agencies for further analysis.

Principal Elements and Phasing

Component I: Consolidation of Rural Socio-Economic Statistics (Short-Term)

18. Various agencies collect socio-economic data in Myanmar but there is a need to coordinate and consolidate statistics obtained by various agencies. Only part of this data is made available by CSO through their annual reports. The project will assist GOM to consolidate available statistics from various multilateral (UNDP, ADB, FAO, WFP, HDI, UNICEF, UNAIDS, UNODC, WHO etc.), bilateral (JICA, AusAID, and embassies of India, China etc.), and governmental organisations (including CSO and relevant Ministries and their Departments) by township and disaggregated by gender and level of deprivation. A fundamental assumption for the project is that all relevant agencies will be forthcoming in sharing their database and contribute to the national exercise. The GOM will provide necessary administrative instruction for this to happen at all levels (townships, districts, divisions/states and at national level).

19. This phase of the project will be carried out by an independent agency under contractual agreement with the project. The output from this component will be a user-friendly menu-driven rural socio-economic database that the participating agencies can update online on a regular interval and use for further analysis. It is envisaged that the rural socio-economic database will be combined with existing GIS database to develop township level GIS maps encompassing both physical and socio-economic attributes.

20. The project will also provide support for regular maintenance of the database under the overall responsibility of CSO. Additional support will be available for periodic training of staff engaged in database management and rural socio-economic analysis. Services of an international Poverty and Vulnerability Database Consultant for a period of six months (split inputs) will also be required.

Component II: Establishment of Rural Socio-Economic Data Base (Short/Medium-Term)

21. Inevitably there is going to be a need to collect additional statistics, particularly for rural poverty monitoring purposes. Wherever possible, however, efforts will be made to utilise existing data. This phase will include a data gap analysis to identify key parameters for which reliable data in disaggregated form are not available. Additional baseline data collection will be contracted out to private social survey agencies or NGOs and these agencies will collect data at agreed intervals. Data would be collected from carefully selected agro-ecologically representative sample areas, which could be adopted for wider generalisation at least at the township level. Collected data will be added to the rural socio-economic database and combined with GIS database for generating more detailed GIS maps including expanded set of socio-economic indicators.

22. An expanded socio-economic database will comprise output under this component, and would be housed with the Central Statistical Organisation (CSO). Support will be provided for procurement of computers, printers and peripherals as well as engaging a contractor to undertake initial baseline study. Additional funds will be made available for training staff from CSO and other relevant agencies in cost-effective methods of data collection, analysis and

reporting using international trainers. Two CSO staff will be sent for further international training in management of socio-economic statistics.

Component III: Capacity Building of National Institutions in Undertaking Participatory Social and Economic Impact Analysis (Medium/Long-Term)

23. The proposed project will finance human resource development to enhance the capacity of key line Ministries and Departments in the area of social and economic impact assessment. An initial assessment will be undertaken to identify key staff in relevant line Ministries and Departments. The project will identify a list of key staff in each participating agency who will receive a three week social and economic impact analysis training in the first instance and a two-week follow-up training on an annual basis for five years. This will keep the responsible staff abreast of recent developments in social and economic impact analysis in the Asia-Pacific region.

24. The main output under this component would be a cadre of trained staff in various agencies who would be able to assist their institutions in conducting social and economic impact assessment on a regular basis. Such knowledge and skill will be highly valuable in ascertaining the success and appropriateness of socio-economic development interventions in the country. The project will provide services of an international Participatory Socio-economic Impact Analysis Specialist and a National Participatory Impact Assessment specialist. The project would provide funds for conducting impact assessment training at the national and provincial level. A total of 200 staff at the national level and 500 at the provincial and township levels will be trained.

Indicative Costs

25. Indicative costs for the proposed investment are presented below. The total profile cost is approximately US\$1.5 million, with the majority of that cost (US\$850,000) falling in the medium-term category.

Project Component	Short-Term Year 1-2	Medium-Term Year 3-5	Long-Term Year 6-10
A. Consolidation of Rural Socio-Economic Statistics			
1. Advisory Services - International Consultant (US\$15,000/mm x 6)	90,000		
2. Subcontract for undertaking consolidation of statistics	100,000		
3. Travel	5,000		
4. Administration	5,000		
5. Training	15,000		
6. Computers/Printers/Communication	20,000		
Sub-total	235,000		
B. Establishment of Rural Socio-Economic Data Base			
1. Contract for additional data collection	50,000	150,000	
2. Administration and operations	10,000	30,000	
3. Travel	5,000	15,000	
4. Training/Workshops (US\$15,000 x 3)	15,000	30,000	
5. International training (2 x US\$15,000)	30,000		
6. Data processing equipment	100,000	20,000	
7. Publications budget	25,000	50,000	
Sub-total	235,000	295,000	
C. Capacity Building of Local Institutions in Participatory Social and Economic Impact Analysis			
1. Advisory Services			
a. International Consultant (US\$15,000 x 12)		120,000	60,000
b. National Consultant (US\$1,500 x 36)		36,000	18,000
2. Social and Economic Impact Analysis Training - 700 staff at national, division/ state, township levels (US\$500/person)		250,000	100,000
3. Administrative support		30,000	50,000
4. Travel		20,000	30,000
5. CSO Publications		20,000	50,000
Sub-total		476,000	308,000
Contingency (10%)	47,000	77,100	30,800
TOTAL	517,000	848,100	338,800

PROFILE 3: STRENGTHENING OF LOCAL CAPACITY FOR COMMUNITY-BASED DEVELOPMENT

Summary

26. The proposed project would strengthen capacity at all levels of Government through human resource development and developing a cadre of core professionals in decentralised participatory planning, monitoring and evaluation (PPME). The project will (i) assess the scope for decentralisation of PPME functions and support the adoption of PPME based policies, (ii) train national, provincial and township level government staff and community leaders in PPME, and (iii) support local implementation of PPME approaches. The project is expected to cost US\$1.8 million over 10 year period, of which US\$96,000 would be for the initial study phase.

Background

27. Rural community development programmes have proven to be effective only when there is full-scale participation of all stakeholders, and crucially the local communities. Development interventions designed on the basis of a top-down model do not necessarily address the needs of the people and often may not even serve the national interest. Myanmar has had a long history of top-down planning and Government staff at all levels tends to follow instructions from superiors with little awareness of modern participatory planning system for community development. There is a need to promote an environment under which, where possible, decisions are delegated to lower levels (from national to division/state level, from division/ state to township and from township to village tracts). Delegation of authority to lower level administrative structure provides greater local accountability and helps ensure resource allocations based on need rather than ad hoc directives.

Rationale and Objectives

28. Myanmar can greatly benefit from a decentralized planning process which provides greater participation by average Myanmar citizens, including the rural poor and other vulnerable groups in the society. Citizens in local communities are themselves in the best position to chart their own destiny and are the best custodians of local resources (human, capital, natural). Active involvement of the wider community in the planning process is crucial for rural poverty reduction in Myanmar. However, the country has little experience in decentralised planning and would first require capacity building both within government and subsequently at local community level. The main objectives of the proposed project would be to:

- develop a cadre of skilled staff to lead and facilitate participatory planning exercises;
- enhanced awareness of the advantages associated with private-public partnership projects based on participatory planning; and
- promote a decentralised planning system at all levels and eventually implement decentralised local governance system throughout the country.

Principal Elements and Phasing

Phase I: Decentralisation Feasibility Study (Short-Term)

29. As a first step, the project will commission a study to ascertain the extent and nature of responsibilities that could be transferred from central and provincial governments to township authorities and local communities. The study would require political will at the national level and commitment to delegate authority to relevant bodies where feasible. The study would identify key stages and timing for delegation of authority.

30. The study would be undertaken by a taskforce comprising equal numbers of officials of government departments (notably Finance and Revenues and General Administration) and of representatives of civil society (experienced and retired civil servants included). It is expected

that the taskforce will undertake extensive consultation at all levels to ensure that the process under which authority would be delegated is clearly understood by all. A senior-level National Coordinator (preferably a retired Director-General or equivalent rank) would be financed by the project to coordinate the taskforce.

31. Two workshops and seminars providing experience of decentralization efforts in other countries, and discussing their implications for Myanmar, would be presented.

32. It is envisaged that the study would be completed within six months and a report presented to the Government. However, the emergence of a clear policy on decentralization will require considerable open internal discussion and political commitment on the part of the authorities.

Phase II: Establishing and Implementing a Participatory Planning, Monitoring and Evaluation Approach (Medium/Long-Term)

Component 1: Human Resource Development and Capacity Building

33. It is important that Government staff at different levels (national, divisional/state, township and village tract) are adequately trained in participatory planning so that local needs and priorities are clearly identified, resourced, implemented, monitored and evaluated by the core stakeholders (beneficiaries included). The project will initially provide an intensive participatory PPME training to a core group of eight trainers at the national level. These staff would then train division/state, district and township level staff, reaching half of all districts (34) within the three year period. A training plan will be prepared prior to commencement of training. It is recommended that the Heads of local authorities (township leaders) receive the first national level training. This is considered to be critical in promoting participatory PME at the township as well as village tract levels.

34. Under this component, the project output will be a cadre of staff trained in PPME. The project will fund direct costs associated with delivering training in two stages. The first part of training would cover participatory planning and budgeting and the second part would cover participatory monitoring and evaluation. The component will require the services of an international participatory planning and budgeting expert and a participatory monitoring and evaluation expert, each for a period of six months.

Component 2: Support for Implementation

35. Training will be followed by support for the implementation of PPME at local level. This will require a specialised PPME support unit to work with local authorities. The unit will oversee initial PPME efforts, review PPME documents, and evaluate performance against targets. The unit will be provided with computer equipment for maintaining records and producing reports.

36. The final output of this component will be sustainable pro-poor growth oriented local rural community development plans which will be taken up by the GOM for funding. Only limited external technical assistance is envisioned for this component. However, support will be required in terms of computers and peripherals and mobility.

Indicative Costs

37. Indicative costs for the proposed investment are summarised below.

Project Component	Short-Term Year 1-2	Medium-Term Year 3-5	Long-Term Year 6-10
A. Decentralisation Feasibility Study			
1. National Task Force Coordinator (US\$2,000 x 6 months)	12,000		
2. Briefing seminars on comparative decentralization experience with international presentations (2)	60,000		
3. Taskforce administration costs	15,000		
Sub-total	87,000		
B. Establishing and Implementing a PPME Approach			
1. Advisory services			
a. International consultants (18 months)		180,000	90,000
b. National trainers/support staff (8 staff)		240,000	320,000
2. Training of trainers (two courses)		10,000	10,000
3. Training of national level authorities (4 courses x US\$5,000)		20,000	
4. Training courses for local government authorities (64 courses x US\$2,000)		128,000	
5. Vehicles and operations (4)		150,000	100,000
6. Supplies (US\$10,000 p.a.)		30,000	50,000
7. Publications		30,000	30,000
8. Computer and peripherals		60,000	30,000
9. Office staff and operations (US\$10,000 p.a.)		30,000	50,000
Sub-total		878,000	680,000
Contingency (10%)	8,700	87,800	68,000
TOTAL	95,700	965,800	748,000

PROFILE 4: ESTABLISHMENT OF A NATIONAL COMMUNITY BASED DEVELOPMENT FUND

Summary

38. The potential for the creation of a successful and sustainable community-based development fund in Myanmar is substantially higher than other countries in the region because of the strong culture of community spirit in undertaking development activities. A well-designed community-based development fund will go long way in addressing community level constraints and thus enabling residents to overcome deprivations. The project will promote the community-level identification and implementation of micro-projects (including both social and economic infrastructure). The project will: (i) prepare a detailed design for a viable community development fund project, including a manual of operations, a management structure, and a decision-making, monitoring and evaluation process; and (ii) establish such funds in twelve pilot

townships, which would subsequently expand to over 130 townships nationally, incorporating lessons drawn from the pilot communities. The project is expected to cost US\$20 million of which approximately 80% would go directly to the communities for undertaking community based initiatives, with a further 6% to finance community support technicians helping communities to prepare and implement their proposals.

Background

39. The majority of community development activities in Myanmar are carried out by raising funds from local residents. While major community driven initiatives often focus on the renovation/repair of Buddhist monasteries, communities also raise funds for small infrastructure facilities (e.g. constructing health centre) at the village tract level. However, despite the generous attitude of the Myanmar people, especially in rural areas, many households cannot even meet their own needs, severely limiting community resource availability. The amount of funds currently channelled through township authorities is clearly inadequate to make up for this scarcity of community resources. As a result, local community/village infrastructure tends to be in poor state. This in turn limits market access for locally produced agriculture-based products, education and skill development of residents, the physical well-being of the local population, and gainful employment opportunities for disadvantaged and vulnerable population in local communities. There is an urgent need for increased funding for community-based development activities, including both productive and social investment.

Rationale and Objectives

40. Matching-grant funds for community-based development initiatives provide a strong basis for economic growth at the community level, as well as for the country as a whole over time. Such funds complement locally available resources, in the form of finance, material or labour, and enable communities to undertake sizable environmental, social and economic investment activities. Tangible investments in critical social and physical infrastructure development enable communities to become environmentally responsive and assists them towards economic sustainability, reducing dependency on external agencies. The project has two main objectives:

- to enable communities to play a major role in identifying, designing, implementing and operating, needs-based community level social and small-scale physical infrastructure (micro-projects); and
- to generate sustainable mechanism for undertaking community-based development initiatives that would be less dependent upon external funding.

Principal Elements and Phasing

Component I: Preparation of Community-Based Development Fund Design (Short-Term)

41. The proposed component would design an operational Community-based Fund scheme, including: (a) the type and size of investment categories that should be permitted under the fund; (b) beneficiary contribution levels; (c) support requirements for community needs

identification and investment profile preparation; (d) methodologies for the preparation and evaluation of full funding proposals; and (e) procedures for technical and financial monitoring and evaluation of investment implementation and impact. The modus operandi for the Fund would ensure that the Fund would be managed by locally elected community representatives who have a direct interest in a better future for themselves and their future generations. The Manual of Operation (MOP) for the Fund would also adequately ensure that the Fund is not hijacked by local elites or politicians. The design of the Fund would make provisions for a clear and transparent participatory decision-making process engaging all relevant stakeholders and institute accountability in its operation. The design document would be based on the principle of “by the community for the community” and allocation of funds will be guided by community needs and their willingness to proactively contribute in some form (cash, kind or both).

42. It is proposed that Fund resources would be used for environmental, social or physical infrastructure that would benefit the local community. Potential examples of environmental infrastructure are watershed management, drainage improvement, community management of common property resources and pollution control in local rivers and streams. Examples of social infrastructure include strengthening existing traditional community-based organisations in their scope of operation, while examples of physical infrastructure might include drinking water, access roads, culverts, product storage facilities, school buildings, health centres, community halls etc. The Fund would encourage communities to develop their own initiatives.

43. The output under this component would be a clear and succinct MOP covering the establishment of the Community Based Development Fund, its management structure, governance, and operational decision-making process, as well as the monitoring and evaluation of grants allocated to communities. Local authorities would have no administrative influence on the manner of the Fund’s operation, which would be the responsibility of an independent body appointed by the community.

Component II: Community-Based Development Initiatives (Short/Medium/Medium-Term)

44. It is envisaged that upon completion of the design document of the Community-Based Development Fund and its MOP, seventeen townships (one per division/state) would be selected under a pilot scheme for implementation. The project will provide US\$100,000 per township over a period of 2 years. At the end of this period an impact evaluation of the pilot scheme would be undertaken and if proven effective the scheme would be progressively expanded in other townships, to reach a total of 135 Townships (approximately one third of the national total). Although the appropriate level of funds under full implementation would have to be decided on the basis of results from the pilot phase, an assumption is made here of an amount of US\$150,000 per township over the entire period.

45. Funds are provided for training of communities participating in the programme, as well as for training support technicians who will assist communities in needs identification and proposal preparation. Funds are also provided for project supervision and monitoring.

Indicative Costs

Project Component	Short-Term Year 1-2	Medium-Term Year 3-5	Long-Term Year 6-10
A. National Community-Based Development Fund Design			
1. Preparation of Fund design and MOP:			
(a) International consulting services (5 mm at US\$15,000 p.m.)	75,000		
(b) National consulting services (8 mm at US\$1,500 p.m.)	12,000		
2. Transport and study related costs	10,000		
Sub-total	97,000		
B. Community-led Development Fund			
1. Oversight of Fund operation and support services:			
(a) International consulting services (12 mm)	120,000	60,000	
(b) National CDF supervision staff (4 professionals)	50,000	75,000	120,000
2. Training to community groups (@ US\$2,000 per township)	34,000	80,000	156,000
3. Training of community support technicians (US\$5,000/course)	20,000	30,000	15,000
4. Technical support to proposal preparation and monitoring	96,000	350,000	600,000
5. Support unit vehicles and equipment	150,000	50,000	100,000
5. Support unit operating costs	60,000	90,000	120,000
4. Community-led Investment Fund	1,700,000	6,000,000	11,700,000
5. Impact Assessment, Township Selection and Design Modification		50,000	50,000
Sub-total	2,230,000	6,785,000	12,861,000
Contingency at 10%	223,000	678,500	1,286,100
TOTAL	2,453,000	7,463,500	14,147,100

TOTAL INDICATIVE SUB-SECTOR INVESTMENT COSTS

46. Total profile costs for proposed social and community development investments are summarised in the table below. Total costs for the sub-sector are estimated at US\$25 million, of which just under US\$21 million are accounted for by the community-based development fund. Short-term costs (Years 1 and 2) are estimated to total US\$3 million.

Investment Proposal	Short-Term Years 1-2	Medium-Term Years 3-5	Long-Term Years 6-10	Total (US\$'000)
1. Rural Poverty Reduction Policy and Institutional Development	682.0	610.5		1,292.5
2. The Establishment of Rural Socio-Economic Database and Expansion of GIS Information	517.0	848.1	338.8	1,703.9
3. Strengthening of Local Capacity for Community Based Development	95.7	965.8	748.0	1,768.8
4. Establishment of a National Community-Based Development Fund	2,453.0	7,463.5	14,147.1	24,063.6
TOTAL	3,747.7	9,887.9	15,233.9	28,869.5

2. CROP PRODUCTION PROFILES

1. Five strategic priorities have been developed to investment profile level for the Crop Production sub-sector, covering:

- Cultivable Waste Land Reclamation and Redistribution Programme (US\$72.5 million);
- Dryland Area Development (US\$36.3 million);
- Production Planning and Directed Production Study (US\$352,000);
- Production and Utilisation of Improved Seed (US\$11.6 million); and
- Horticultural Export Study ((US\$134,200).

Two profiles comprise only short-term activities (Production Planning and Horticultural Export), while the remaining three profiles involve short, medium and long-term phases.

PROFILE 1. CULTIVABLE WASTE LAND RECLAMATION AND RE-DISTRIBUTION PROGRAMME

Summary

2. Myanmar has about 7.2 million ha of lands classified as cultivable wastelands, in theory convertible to agriculture but in practice considerable areas will be unsuitable for reasons of; excessive slope, poor soil, heavy forestation, environmental sensitivity etc. Nevertheless a significant area will be suitable for conversion to sustainable agricultural use and even if just 20% were converted it would represent an incremental crop production area of 1.4 million ha. There is clearly a massive potential for growth through area expansion.

3. Because of a lack of data and institutional uncertainties and environmental risks a measured three-phase approach to a possible reclamation programme is advocated. After a study, a modest pilot programme to cover some 5,000 ha. Is proposed, which if successful could be expanded to a large land reclamation and re-distribution project of about 200,000 ha. The indicative total programme cost is US\$72.5 million.

Background

4. Because of the sensitive nature of land reclamation and re-distribution and less than successful previous experience, a thorough background to the subject is provided. Official statistics indicate that the 7.2 million ha of cultivable wastelands are spread throughout all divisions/states but with low availability in Yangon and Kayah and high availability in Kachin, Kayin and Shan States. Distribution maps do not appear to be available and there has been no land capability survey of the areas. It is not known which areas are the most suited for reclamation and for what cropping patterns.

5. At present the Government only distributes cultivable wastelands to private entrepreneurs, companies and state enterprises. The rationale for distribution is not clear and the Settlement and Land Records Department were unable to provide data on how much had been distributed to date and for what purpose, or how much of the distributed area had actually been developed and sustained in production. Anecdotal information indicated that much of available wastelands in Ayeyarwady, Kayah and Bago Divisions had already been allocated but that a high proportion is not yet reclaimed and properly used.

6. “Procedures Conferring the Right to Cultivate Land/ Right to Utilise Land” were promulgated in 1998. Under this legislation a “Central Committee for the Management of Cultivable Land, Fallow Land and Waste Land” was established under the chair of the Minister of Agriculture and Irrigation. This committee has the power to allocate lands up to 5,000 acres to individuals or enterprises. Larger land allocations have to be approved by The Cabinet. Without going into details, wasteland is allocated with a usury right of 30 years, renewable in the case of perennial crops. It is a right - not a formal leasehold and cannot be used as an instrument of collateral. The land is supposed to be fully developed as per the application conditions within four years, if not it may be recovered. It is virtually rent-free and there are land revenue and tax concession. In theory the land may not be sub-let and cannot be traded, but in fact these are common practices.

7. The land is issued without a land capability survey or an environmental impact assessment. There is no monitoring or evaluation of subsequent land use. Whilst there is nothing in the rules to prevent the Central Committee from allocating small blocks to small-scale farmers under the same terms of the legislation it has not been policy to do so thus far. The reason advanced for not having done so, being that neither smallholders nor the landless have access to capital for reclamation.

8. Risks involved in a land reclamation project include:
- a lack of data on distribution and quality of waste-lands;
 - uncertain commitment on the part of GOM for re-distribution to the smallholder and landless and no provision at this time for security of tenure;
 - inadequate institutional support and a lack of monitoring and evaluation of the process; and
 - no methodology, experience or use of environmental impact assessments.

Programme Rationale and Objectives

9. The proposed programme responds to the Government of Myanmar objective of expanding the cultivated area to contribute to national economic growth. At the same time it could, if so designed, benefit the poor smallholder and landless through land re-distribution. The proposed programme has three principal objectives:

- increased crop production;
- job creation in rural areas; and
- poverty reduction through land distribution to the smallholder and landless.

10. A measured approach is advocated, involving three steps – study – pilot testing-major investment. Under both pilot and main projects it is envisaged that there would be beneficiary involvement in and contributions to land clearing and development costs in the form of labour or local materials.

Principal Components and Phasing

Component I. Cultivable Wastelands Development Potentials Study (Short-Term)

11. The Study should encompass the following:

- Review of the data available on cultivable wasteland distribution, area availability and land capability survey of the most promising areas to identify suitable project area options. It is envisaged that this could be achieved by using GIS technologies backed by ground-truthing surveys.
- Review of past wasteland allocation and the lessons learnt.
- Review of existing legislation to determine needs for modifications to enable distribution to smallholders or the landless.
- Review of institutional arrangements for land allocation, environmental impact assessment, beneficiary involvement, management, and the monitoring and evaluation of the process. The Study would propose steps to strengthen current institutional arrangements.
- Prepare a pilot reclamation and land distribution project of about 5,000 ha to benefit about 1,000 small farmers.

12. **Required Study Skills:**

- GIS and land capability survey.
- Specialist in land reclamation and re-distribution issues.
- Agronomist.
- Environmental specialist.
- Economist.

13. **Outputs:** A well prepared pilot project suitable for external funding.

14. **Indicative Cost:**

Item	Cost US\$
GIS and Land Capability Study	250,000
International Consultants (3 x 2 months + 1 x 3 months at US\$1,500 p.m.)	135,000
National Consultants (4 x 2.5 months at US\$1,500 p.m.)	15,000
Workshops etc.	10,000
Equipment/Transport etc.	10,000
Contingencies	42,000
Total	462,000

Component II. Cultivable Wastelands Development Pilot Project (Medium-Term)

15. 13. Details for pilot project preparation and scope would be developed under the above study. However an indicative component content and cost is provided for a 5,000 ha project with about 1,000 beneficiaries small and marginal and landless.

Main Components	Estimated Cost US\$
International TA (6 months at US\$15,000 p.m.)	90,000
National TA (36 months at US\$1,500 p.m.)	54,000
Detailed Surveys	150,000
Land Clearing	625,000
Land Development	500,000
Transport, office costs	200,000
Main project preparation	200,000
Contingencies	182,000
Total	2,001,000

16. **Outputs:** Pilot project outputs would include:

- well-grounded lessons to apply to a major project plus the preparation of an appraisable project covering about 10,000 ha;
- 5,000 ha new cultivable area with and incremental annual production of some 5,000 tonnes mixed grain per annum;
- incremental employment creation amounting to some 0.5 million person days per year, primarily on-farm labour; and
- about 1,000 disadvantaged small and marginal farmers and landless benefiting from land distribution.

Component III. National Level Expansion Programme (Long-Term)

17. Assuming successful pilot experience and confirmed availability of suitable waste lands, a project of some US\$70³⁴ million to reclaim, develop and distribute 200,000 ha is envisaged. From a project of such scale the following outputs are envisaged.

- incremental annual production of 200,000 tonnes of mixed food grains;
- incremental 20 million person days of farm labour; and
- 35,000-40,000 smallholder or landless beneficiaries under land re-distribution.

Indicative Overall Programme Phasing

Item	Phasing	Programme Cost US\$
Study	2004.	462,000
Pilot Project	2005-2008	2,001,000
Appraisal Main Project	2008	-
Main Project	2009- 2014	70,000,000
Total		72,463,000

PROFILE 2: DRYLAND AREA DEVELOPMENT AND NATURAL RESOURCE CONSERVATION AND MANAGEMENT

Summary

18. There are no significant dryland area development programmes in Myanmar to improve farm productivity and incomes in high-risk dry land and hilly areas. A significant segment of the most vulnerable and poorest farming households live in such situations. This proposal will initiate actions to address this lacuna through a community driven, farming system based area-development approach to address natural resource management issues and to improve farm incomes. Because of lack of experience of such projects and of the proposed approaches a three-phase programme is advocated. The first step a study of Myanmar and Regional experiences, followed by a pilot project covering a watershed of about 10,000 ha, and then if that proves successful a major project to cover some 200,000 ha. The indicative total programme cost is US\$36.2 million.

Background

19. Under dry-land situations farmers are generally poor and the most vulnerable to drought risk. Soil and water conservation and management is of particular importance in low rainfall rain-fed uplands and in hilly regions where moisture stress and erosion risks are most

³⁴ A provisional estimate of US\$300 per ha is used – based on current basic land clearance costs of MYK 50-125,000/ha. Actual costs will depend inter *alia* on clearance methods used and density of bush.

acute. Technologies are available to ameliorate such problems through appropriate agronomic practices and low cost water harvesting and anti-erosion measures.

20. Productivity levels would be improved through increased water availability and application of low cost appropriate technologies such as drought tolerant improved seeds, reduced (minimum) tillage, improved use of organic manures, improved crop by product use in livestock enterprises and increased nitrogen fixation using rhyzobium cultures in pulse based systems. Such actions implemented on a watershed basis would improve: crop yields and ease production troughs in bad years; resource conservation and sustainability; and improve livelihoods of the poor in dry-land areas. Constraints to success include:

- lack of significant in-country experience in community based management of soil and water conservation and management and a lack of participatory planning capacity at the field level;
- the apparently low priority currently accorded by national policy makers to the development of less well endowed dry-land areas and to soil and water conservation and management; and
- the advocated integrated farming system approach requires an integrated broad-based extension service, which, does not exist at this time.

Programme Rationale and Objectives

21. Because large numbers of the most disadvantaged farming families and landless live in dry land and hilly areas, this programme would have a strong poverty alleviation focus. Through adoption of an integrated approach encompassing overall farm development with improved soil and water conservation farm incomes would be increased and variations in annual production and incomes moderated. Given the high-risk aversion nature of farmers in these areas only low cost appropriate technologies would be proposed.

22. Farmer/community participation including cost sharing contributions in the form of labour and local materials would be essential. Project planning and management would be community driven through close consultation with beneficiary groups at all stages. A menu of technical agronomic and physical structure options would be available to communities and individual farmers from which to select the component mix most relevant to the particular landscape and farming system. . For example earth or brush check dams, contour bunds, grass strip bunds, contour planting etc. Project components content would thus be derived from community choice. The ultimate objective would be to improve productivity of some 205,000 ha of rain-fed crops and farm incomes of over 120,000 rural households³⁵. The programme would mitigate drought risk and improve food security and water and soil conservation.

³⁵ Land holdings tend to be relatively small in the relatively densely populated dryland areas, averaging only 1.5-2 ha per household.

Components and Phasing

Component I. Dry Lands Development and Resource Conservation Study (Short-Term)

23. The Study would include a review of Myanmar lessons of experience in watershed development and of regional literature on dry-land area development and resource conservation. Study tours to relevant countries in the region are suggested to review experience in low cost approaches that have worked and been sustained in similar conditions.

24. **Required Study Skills:**

- participatory planning specialist with experience in rural and watershed development programmes;
- agronomist with experience of dryland areas;
- natural resource conservation and management specialist with environmental impact experience; and
- economist.

25. **Study Outputs:** The outputs would be a report that identifies best practices for application in Myanmar both of appropriate technologies and approaches and the preparation of a pilot area development project with an identified and surveyed watershed of about 10,000 ha.

26. **Indicative Costs:**

Item	Costs US\$
International Consultants (3 x 2 months + 1 x 3 months at US\$15,000 p.m.)	135,000
National Consultants (4 x 2.5 months at US\$1,500 p.m.)	15,000
Study Tours - Dept. Staff and Domestic Consultants	20,000
Report Preparation and Workshops	20,000
Preparation of a Pilot Project	30,000
Contingencies	22,000
Total	242,000

Component II. Drylands Development Pilot Project (Medium-Term)

27. Details of pilot project components and scope would be developed under the above study. However an indicative component content and cost for a 10,000 ha project with about 2,500 beneficiary households is given below.

Main Components	Estimated Cost US\$
International TA (6 months at US\$15,000 p.m.)	90,000
National TA (36 months at US\$1,500 p.m.)	54,000
Community awareness training	100,000
Staff training.	50,000
Soil and water conservation measures	500,000
Extension and on- farm demonstrations	500,000
Vehicles, office expenses, other	250,000
Main project preparation	300,000
Contingencies (at 10%)	185,000
Total	2,029,000

28. **Outputs:** They would include:

- well-grounded lessons on which to base the preparation of a major project to cover about 200,000 ha;
- 10,000 ha of dry land would benefit from improved soil and water conservation and incremental crop production of about 1,5000 tonnes³⁶ mixed food grains per annum; and
- about 2,500 poor farm households would have improved farm incomes and food security in a more drought tolerant production environment.

Component III. National Level Expansion Programme (Long-Term)

29. Assuming a successful pilot experience a main project of about US\$34.0 million³⁷ to cover dry-land area integrated development on 200,000 ha is envisaged to benefit about 50,000 vulnerable farm households. The main outputs envisaged are:

- improved soil and water conservation on 200,000 ha and an estimated incremental annual production of 30,000 tonnes of mixed food-grains; and
- improved farm incomes and food security in a more drought tolerant production environment for some 50,000-farm households.

³⁶ Estimated yield increase of 15% at full development on base yields of 1,000 kg/ha on mixed food grains.

³⁷ Extrapolated from estimated pilot project costs per ha.

Overall Profile Costs

Item	Phasing	Programme Cost US\$
Study	2004.	187,000
Pilot Project	2005-2008	2,029,000
Appraisal Pilot Project	2008	-
Main Project	2009-2014	34,000,000
Total		36,216,000

PROFILE 3: STUDY OF THE NATIONAL CROP PRODUCTION PLANNING AND MANAGEMENT PROCESS AND DIRECTED CROPPING

Summary

30. This investment initiative is a two-stage proposal: the first to study the existing process and to assist GOM formulate an agreed new process embodying new sub-sector approaches including: (a) a shift from a commodity to farm system approach; (b) from central planning to a community driven approach; and (c) change in Governments roles emphasising poverty alleviation and enhanced private sector involvement. The second stage would involve consensus building during which the study team would agree on the details of the new process with Government and then prepare a costed capacity building project to facilitate and establish the new process in practice. The total cost of this programme is estimated at US\$350,000.

Background

31. Crop production planning is a highly centralised process managed through long and short-term crop area planting and production targets. Centrally derived targets are disaggregated from the top down to the township levels without consultation with involved communities. The crops most affected are rice and industrial crops cotton, sugar cane and jute. The drive to meet targets, against which departmental and individual performances are then measured, leads to enforced planting especially of rice in irrigated situations and industrial crops in the catchments of state owned mills. In addition the drive to meet rice self-sufficiency in all localities leads to rice being planted under unsuitable conditions with poor yields and returns to farmers. MAS extension services are almost exclusively concerned with meeting and reporting on these targets, especially for rice to the exclusion of other crops and important agronomic priorities such as water management, integrated crop nutrition and integrated pest management. No consideration is given to farming systems or optimisation of farm incomes. The current process for planning crop production and enforced planting is resented by growers, and discourages efficient use of resources, intensification and diversification.

Rationale and Objective

32. The enormous potentials for growth in the crop sub-sector described in the ASR documents can be unlocked only when the enabling environment is changed to provide incentives for producers to intensify and diversify production to optimise returns from location specific

resource conditions. This is one of the priority elements requiring adjustment within the enabling environment. One of the policies for the development of agriculture stated by MOAI is “to allow freedom of choice in agricultural production”³⁸. This policy is not yet fully implemented. The objectives of the proposed study are to develop recommendations to enable MOAI complete the process to allow full freedom of farmer choice and to formulate a new national crop production planning and monitoring system that aggregates national objectives from the bottom-up.

Principal Elements and Phasing

33. The study should be carried out as soon as possible and be completed in 2004. The investment phase could be implemented from 2005 onwards

34. **Study Skill Mix:** The following skills would be required:

- agricultural policy and planning specialist;
- monitoring and evaluation specialist with strong IT skills;
- community participatory planning know-how; and
- economist.

35. **Outputs:** The outputs of the study would be: (a) a re-formulated national crop planning and development process agreed with Government; and (b) a fully developed investment proposal and timed action plan to establish the new process.

Indicative Cost

Main Elements	Estimated Cost US\$
International Consultants (3 x 2 months + 1 x 3 months at US\$15,000 p.m.)	135,000
National Consultants (4 x 2.5 months at US\$1,500 p.m.)	15,000
Community consultation process	20,000
Report preparation and workshop	20,000
Local transport and related costs	10,000
Design of capacity building programme	120,000
Contingency (at 10%)	32,000
Total	352,000

³⁸ Myanmar Agriculture in Brief 2003. MOAI.

PROFILE 4: EXPANDED PRODUCTION AND UTILISATION OF IMPROVED SEED IN THE AGRICULTURAL SECTOR ³⁹

Summary

36. The proposed investment would support the expanded production and availability of improved quality seed through a phased approach which would (a) draft and obtain approval for a national seed policy and associated legislation; (b) implement institutional reorganisation, private sector enabling legislation and a pilot farmer-produced improved seed programme; and (c) scale-up the pilot farmer seed programme to national level. Total costs for this activity are estimated at US\$11.5 million.

Background

37. The production of improved seed in Myanmar is currently an almost exclusively State responsibility. The Central Agricultural Research Institute (CARI), a Division within the Myanmar Agricultural Services (MAS) Department of the Ministry of Agriculture and Irrigation (MOAI) undertakes the selection, testing and production of first generation breeder seed for all new varieties of improved seed, whether developed in Myanmar, or imported from abroad. CARI also generally takes responsibility for the production of the next generation foundation seed, although some breeder seed is produced by the Seed Division of MAS.

38. The Seed Division is responsible for the production of almost all registered seed from foundation seed, which is then used in turn to produce ‘certified’ seed⁴⁰. Certified seed is produced by both the Seed Division and the Extension Division of MOAI, using their own farms. Certified seed is the last product in the chain and used by farmers for growing commercial crops.

39. With the exception of some vegetable seeds and intermittent supplies of hybrid seeds for maize and sunflower – all imported - the private sector plays little role in seed production or multiplication in Myanmar. Furthermore, although there is limited on-farm multiplication of paddy seed through a programme supervised by the Extension Division, this is not a major source of seed, and does not occur for any other crops

40. As a result, certified seed production and distribution is very small in Myanmar and improved seed varieties generally do not account for more than 2% of all seed use. Only in the case of those crops using primarily hybrid seed (maize and sunflower) and for paddy (where a considerable proportion of CARI and Seed Division resources are concentrated) is this figure significantly exceeded. The remaining seed supply is obtained by saving the previous year’s harvest or buying seed from neighbouring producers. Simply by using certified seed for sowing, a yield increase of 10-20% from existing varieties could be obtained. Therefore, there would be very strong productivity benefits from instituting a reliable system to ensure and promote certified seed production and use.

³⁹ Profile prepared by P.K. Agrawal and Aidan Gulliver.

⁴⁰ As no legislation exists defining the requirements for certification of seed, such seed cannot legally be considered certified under international standards.

Rationale and Objective

41. Throughout Myanmar, farmers use seed saved from the previous harvest for sowing. The variety is unknown and the same genetic material (often a mixture of original source material) is used for many years. Storage conditions at the on-farm level are poor, and a substantial proportion of sown seed may not be viable, resulting in poor crop stands and low yields. This loss in viability is particularly the case for pulses and oilseeds, which are more susceptible to deterioration than cereals.

42. As saved seeds are rarely if ever subject to cleaning and sorting, and may be derived from already infected crops, they may also produce a crop with extensive disease and weed problems, leading to a further lowering of yield. However, the most obvious advantage of using improved seeds lies in their genetic capabilities. As varietal purity is difficult to determine at farm level, it is important to be sure of the origin of seeds used, in order to guarantee uniform genetic material which have the potential for increased yields.

43. Seeds are the cheapest input in modern agriculture. Yet high quality seed is the typically the most important single factor influencing agricultural production and productivity on existing land and certified seeds of already available improved varieties can easily give an additional yield of 10% to 20%. If only a 10% yield increase was realised through the use of certified paddy seed, for example, an additional production of approximately 2 million tonnes of paddy could be obtained without the use of any additional land. Were yield increases to be in the region of 20% (easily achievable if appropriate inputs are applied) this benefit would increase to almost 4 million tonnes.

44. Experience in many countries has shown that a public sector operated seed system is both very expensive to operate and typically unable to meet demand from growers. Generally the private sector plays an important role in developing, producing and distributing high quality certified seed varieties to farmers, under the supervision of the public sector. Their role is particularly strong for hybrid seeds, where relatively sophisticated breeding and laboratory facilities are required to ensure the quality of the product. In many developing countries however, it has been found that certified seeds of non-hybrid varieties are not generally of much interest to commercial breeders (as the genetic material can be reused for subsequent harvests), and successful efforts have been pioneered to fill this gap with the development of a lower grade, usually referred to as Quality Assured Seed (QAS), which can be multiplied under supervision at farmer level from certified seed, and is not required to meet all control procedures used for certified seed.

45. To substantially expand small farmer access to improved genetic material, therefore, a project is proposed which would address a number of key factors influencing the limited availability of improved seed in Myanmar. The objectives of the proposed project would be:

- create an enabling environment for the expanded participation of the private sector in certified seed research, production and sale;
- develop small scale farmer participation in the multiplication of low cost QAS seeds;

- restructure the MAS mandate and activities to focus specifically on seed breeding and testing, and the supervision of commercial and farmer level production, storage and marketing; and
- develop human resources through graduate, postgraduate and short duration training programmes in seed production technology.

Principal Elements and Phasing

46. A three phase approach is proposed consisting of the following principal elements: (a) the preparation of a national seed policy and draft legislation, including recommendations for restructuring of MAS seed responsibilities and the creation of an enabling environment for non-Government production; (b) the implementation of the recommendations including the preparation and implementation of a pilot programme of QAS production at farm level; and (c) an eventual national programme for QAS seed production. Each of these elements is discussed in more detail below.

Phase I: Seed Sector Policy Formulation (Short-Term)

47. A number of constraints have been identified in this document and previous studies⁴¹ to the effective functioning of the seed-sub-sector in Myanmar. These include an over-dependence on MAS as producer and distributor of improved seed, the weakness of the private sector, the very limited current on-farm seed production, and the lack of an effective supervisory capacity for seed certification and quality control. It is proposed that a national policy be formulated that would provide recommendations for dealing with these issues. Specifically, the policy would:

- Provide a declaration of the overall objectives and approach taken by the Government of Myanmar to the agricultural seed sub-sector.
- Propose policy, legislative and institutional changes to create an enabling environment for private sector seed companies operating in Myanmar, including measures related to intellectual property and farmers' rights, import restrictions and testing and approval of marketed varieties.
- Assess the requirements for an effective oversight and support to small producers who wish to engage in Quality Assured Seed production for local sale.
- Propose a restructuring of the current mandate, operations and staffing of the MAS Divisions concerned with seed (CARI, Seed Division and Extension Division) to shift their focus from seed production to seed breeding, varietal testing and approval, and monitoring and supervision of non-Governmental producers (companies and small farmers). This would include assessing the

⁴¹ See, for example, Myanmar Oilcrops Development Project - Project Preparation Report, FAO, February 2004.

feasibility of contracting out the production of registered seed to technically capable private sector multipliers.

- Consider the options available for MAS seed farms released from certified seed production, including expansion of breeder, foundation, and registered seed production, testing and certification of commercial seed and approval of QAS seed, and disposal to private buyers.
- Determine the appropriateness under the new policy of existing seed related infrastructure, including cleaning, grading, packaging and laboratory facilities.

48. It is anticipated that this phase would require a period of up to one year, including time for detailed discussion of report recommendations and subsequent amendments. International consulting and national counterpart input would be required in the areas of seed production, seed systems policy and agricultural economics

Indicative Cost

Item	Costs US\$
International Consultants (3 x 2.5 months at US\$15,000 p.m.)	112,50
National Consultants (3 x 2 months at US\$1,500 p.m.)	9,000
Transport, Logistics and Report Costs	15,000
Consultative Workshops	15,000
Contingencies	15,200
Total	166,700

Phase II: Implementation of Institutional Restructuring and Pilot QAS Project (Long-Term)

49. The exact nature of institutional restructuring activities will depend substantially on the recommendations arising from the national policy document. However, it is expected that they will involve most of the following elements: (a) strengthening of CARI's capacity to breed, evaluate and multiply new varieties to breeder seed level, including possibly transfer of some farms or land from the Seed Division or extension Division, as well as improved seed infrastructure, laboratory facilities, and information systems. Post-graduate and short-course diploma level training in seed breeding, seed technology and related areas would also be expected to be proposed; (b) reorganisation of the Seed Division mandate and role to focus on the production of foundation and registered seed and the supervision of private sector and farmer multiplication of certified and improved quality seed, including increased mobility for staff, information systems and testing laboratories, as well as institutional changes to divide the Division into three principal groups – Foundation Breeding, Field Supervision, and Quality Control and Certification. Academic and technical staff training in the above areas would be expected; and (c) Elimination of seed multiplication and distribution roles from the mandate of the Extension Division, with an increased role in assisting the Seed Division in working with farmer multipliers and linking extension messages to seed availability.

50. A second activity within this phase would comprise technical assistance to prepare required modifications to existing legislation and administrative procedures which would facilitate the activities of commercial seed companies operating within Myanmar. Although there is little physical investment foreseen in this activity, international experts on seed related legislation and quality control would be required to work with local counterparts in drafting these changes. If the policy study has recommended the private contracting of registered seed multiplication in addition to certified seed multiplication, the legislation should reflect this.

51. This phase would also include the preparation and implementation of a pilot Quality Assured Seed component, which would assess the feasibility of future national level coverage. The pilot project would examine the capacity of both farmers and Government agencies (Seed and Extension Divisions) in the production of QAS at local level, and test alternative seed pricing and distribution systems. It is proposed that the trial include at least 4 crops (including a cereal, an oilseed and a pulse) and cover sample areas in at least the three most important areas of the country – the Delta, the Dry Zone and the plateau region of Shan State with a minimum of 50 ha of seed production in each zone. The pilot should cover at least three production seasons over a minimum of two years to provide sufficient basis for evaluation. Investments would include transport and mobilization costs for Government staff, training, initial certified seed supplies.

Indicative Cost

Item	Costs US\$
Reorganisation	700,000
International TA (12 months at US\$15,000 p.m.)	180,000
National TA (30 months at US\$1,500 p.m.)	45,000
Equipment	150,000
Training	250,000
Travel and Operations	75,000
Legislative and Procedural changes	120,000
Pilot On-Farm QAS Programme	506,000
International TA (8 months at US\$15,000 p.m.)	120,000
National TA (24 months at US\$1,500 p.m.)	36,000
Programme Preparation	50,000
Strengthening of Participating MAS Units	150,000
On-Farm Costs	65,000
Travel and Operations	45,000
Appraisal	40,000
Contingencies	132,600
Total	1,458,600

Phase III – Expansion to a National QAS Programme (Long-Term)

52. The nature and scope of an eventual national programme would depend heavily on the evaluation of the pilot effort. However, looking at only nine of the principal non-hybrid crops grown in Myanmar⁴² yields an estimate of annual seed requirements in excess of 800,000 tonnes (some 75% for paddy). Based upon average yields for these crops an estimated total area of more than 400,000 ha is required to supply seed for the next harvest. If it is assumed that a national programme would attempt to support the production of just 10% of that total through QAS seed, a participating area in the region of 30,000-50,000 ha would be necessary, depending upon the proportion of different crops included.

53. Such an area would require considerable additional investment in institutional capability within MAS but would not probably result in very large farmer support costs, as the QAS approach should at this stage have been demonstrated to be financially self-sustaining. Nevertheless, a broad estimate of approximately US\$10 million in national programme costs over five years is probably not unreasonable, divided roughly between farmer start-up costs and strengthening of MAS supervisory capacity and support. It should also be borne in mind that farmer participation in seed multiplication presupposes access to production credit, as the purchase of registered seed and the use of approved inputs would be required.

Overall Programme Cost

54. The overall cost of the three phase programme is estimated provisionally at US\$11.6 million, although the majority of that cost derives from the national project for which any costings are highly speculative at this stage.

Item	Phasing	Programme Cost US\$
Policy Development	2004	166,700
Institutional/Legislation/Pilot Project	2005-2008	1,458,600
National Project	2009- 2014	10,000,000
Total		11,625,300

PROFILE 5: HORTICULTURAL EXPORT INDUSTRY DEVELOPMENT STUDY

Background

55. Given the agro-ecological and seasonal diversity in Myanmar a wide range of horticultural crops can be grown. Whilst enjoying favourable growing conditions crop yields lag far behind those of neighbouring countries. Unlike countries such as Thailand that have developed very important export business from high value horticulture, this is totally absent in Myanmar. Given the excellent growing conditions and availability of skilled but low-cost labour there is clearly a potential to develop such enterprises. The main constraints to development of export led

⁴² Paddy, sesame, groundnut, cotton, black gram, green gram, pigeon pea, chick pea and soybean. Vegetables were not included.

horticultural development include: a lack of in-country expertise; absence of a cold storage chain; poor air cargo facilities; unreliable power supply; and lack of incentives to encourage private investment in the sub-sector. There is clearly opportunity to develop horticulture in order to improve foreign exchange earnings, create employment especially in hilly zones and where production can be arranged through contracted out-growers small landowners also benefit.

Rationale and Objectives

56. There have been several recent studies reviewing the current status of horticulture, identifying crop opportunities and providing detailed technical recommendations. The rationale for this study is to examine the physical and institutional constraints to the development of high-value export horticulture in Myanmar identifying priority investments required to start-up an infant industry and thus enabling use of the technical recommendations of earlier work.

Study Skills

57. The following skills are required:

- Agronomist with expertise in tropical horticultural development in the Region;
- Specialist in cold storage/transport requirements of perishable crops in tropical conditions; and
- Economist.

Indicative Costs

Main Elements	Estimated Cost US\$
International Consultants (6 months at US\$15,000 p.m.)	90,000
National Consultants (8 months at US\$1,500 p.m.)	12,000
Report Preparation and workshop	10,000
Local travel and expenses	10,000
Contingency (at 10%)	12,200
Total	134,200

TOTAL INDICATIVE SUB-SECTOR INVESTMENT COSTS

58. Total indicative costs for the crop production sub-sector are shown below. Overall proposed investments total US\$121 million, of which less than US\$1.4 million would be expended in the first two years, rising to US\$7 million over the first five years. Most costs are incurred over the long term, however; US\$ 114 million.

Estimated Profile Investment Costs (US\$'000)

Profile	Short-Term	Medium-Term	Long-Term	Total
Cultivable Waste Land Reclamation	462.0	2,001.0	70,000.0	72,463.0
Dry Land Area Development	242.0	2,029.0	34,000.0	36,271.0
Production Planning and Directed Production Study	352.0			352.0
Production and Utilisation of Improved Seed	166.7	1,458.6	10,000.0	11,625.3
Horticultural Export Study	134.2			134.2
TOTAL	1,356.9	5,488.6	114,000.0	120,845.5

59. Phasing of the specific activities within the individual profiles is illustrated in the table below.

PHASING AND ESTIMATED COSTS FOR PROPOSED INVESTMENT INITIATIVES					
Items	Investment Activities	Cost Est. US\$'000	Phasing		
			Immediate	2005-2008	2008 Onwards
A. Studies	Crop Planning and Management Process Study.	352	X		
	Requirements for Horticultural Export Industry	134	X		
	Seed sector policy definition	167	X		
	Distribution and Land Capability Study of Cultivable Wastes and Pilot Project Preparation with GIS input	462	X		
B. Pilot and Institutional Projects	Land Clearance and Re-Distribution Project and Main Project Preparation	2,001		X	
	Dryland Area Watershed Development Project and Main Project Preparation	2,029		X	
	Seed institutional restructuring and pilot programme	1,459		X	
C. Development Investments	Land Clearance and Re-Distribution Project	70,000			X
	National On-Farm Seed Production Programme.	10,000			X
	Conservation and Resource Management, Watershed Development Project.	34,000			X

3. LIVESTOCK INVESTMENT PROFILES

1. Four strategic priorities have been developed to investment profile level for the livestock sub-sector, covering:

- Review of Livestock Sub-Sector Status, Regulations and Policy (US\$570,000);
- Strengthening of National Disease Control Capacity (US\$2.7 million);
- Expansion of AI and Support for Smallholder Dairy Production (US\$7 million); and
- Establishment of a Village-Based Newcastle Disease Control Programme (US\$1.1 million).

Three of the proposed investment profiles extend over the short and medium-term with a duration of approximately 5 years. The remaining project (Review of Regulations and Policy) is short-term only.

PROFILE 1: REVIEW OF LIVESTOCK SUB-SECTOR REGULATIONS AND POLICY

Background and Rationale

2. It has been more than a decade since reliable national information was collected with respect to livestock populations and performance. As a result, much of the data presented in this sector review has been based on unproven estimates. In order to support a realistic review of livestock sector policies and regulations, therefore, it will first be necessary to update current knowledge.

3. The production and processing infrastructure in Myanmar is unable to produce to the standards required by potential importing countries, so that the access by pig meat, frozen broilers and eggs to export markets is prevented. Constrained market access has had a significant impact on the slowing down of private sector investment in livestock production units and modern facilities for livestock processing. A sound regulatory environment based on upgraded regulations is therefore needed for exports and to maintain standards for livestock products sold locally. The presence of an effective standard enforcing body and a regulatory environment which facilitates production quality and investment is needed. Important in this is the implementation of bio-security measures and standards covering permissible residues for meat and milk and contaminants including antibiotics, hormones and natural toxins in livestock products and commercially prepared livestock feeds, and a mechanism which ensures minimal levels of bacterial contamination in processed meats.

4. Feed standards are particularly important for the highly competitive commercial pig and poultry producers who depend entirely on locally prepared compounded feeds. These need the support of a laboratory capable of complete feed analysis - both for quality assurance and to monitor for and prevent toxins from entering the human food chain. Government capability in this regard is limited and would benefit from support. LBVD and/or the Ministry of Health could be

assisted in establishing an effective body to oversee the imposition of livestock product standards as well as those relating to the food aspects of public health.

5. An environment which attracts investment and leads to the further development of markets for livestock products will support the commercial production sector as well as the smaller scale livestock producers who in aggregate, contribute most of Myanmar's livestock product. Support to government would include the establishment of import and export regulations on livestock and livestock products and food safety and feed standards, and assistance with back up laboratories and the instituting and staffing of a suitable policing body. This investment in regulatory capability and enforcement is necessary over the short-term.

Objectives

6. LBVD has responsibility for establishing and enforcing livestock industry standards. There are shortcomings in the standards themselves but LBVD is also constrained by lack of accurate knowledge of the livestock sector, outdated equipment, equipment shortages and administrative and technical personnel (in support laboratories) whose skills need upgrading.

7. The project will assist LBVD to update its understanding of sector activities, performance and distribution, as well as collaborate with other relevant agencies (Ministry of Health) in developing an enabling regulatory and supervisory framework for animal production, processing and marketing. The revised regulations will be based on those of countries where such production and processing standards are adequate and effectively enforced. Importantly there will be support in developing the capability of LBVD to monitor and implement the imposition of these standards.

8. This will be reinforced by support for developing an appropriate regulatory environment, including the writing and speedy passage of orders covering, import and export regulations on livestock and livestock products and food safety and feed standards and the hygiene and environmental compliance standards for processing facilities – milk plants, abattoirs and poultry processing plants. These improvements will facilitate the development of livestock-based export markets and thereby contribute to an increasing productive capability among both the traditional and commercial livestock producers.

Principal Components

9. Following a nationwide data collection and analysis exercise, the project will finance an urgent review of the policy and regulatory environment for the livestock sector, leading to a repeal of those regulations which are outdated and their replacement with regulations consistent with international standards. Both for livestock and livestock products including milk, these changes will permit the hygienic production of livestock products for domestic consumption, and their access to competitive export markets. This activity is expected to be short-term, and require approximately one year for completion, including discussion and approval of review recommendations.

10. The project will assist LBVD to:
- obtain a better knowledge of the current status of the livestock sector;
 - review all policy with respect to livestock and livestock products production, processing and exports;
 - review all regulations relating to the production, processing and marketing of livestock and livestock products and compare these with those used in countries whose livestock industries are developed and where best international practice is followed;
 - rewrite the regulations in light of the above;
 - conduct workshops between relevant units of LBVD and the Ministry of Health to obtain a working *modus operandi* with respect to the administration and supervision of common issues in respect of livestock processing – a common approach to zoonoses, food processing standards, meat inspection, collaboration on standards and testing laboratory responsibility;
 - provide training for LBVD staff/MOH staff in up to date laboratory procedures;
 - upgrade feed and food testing and microbiological laboratory facilities and equipment; and
 - establish and staff suitable administrative and policing bodies to render the regulations effective.

Outputs

11. Key outputs would include:
- published national survey data on key characteristics of the livestock sector, including: the number of rural households with animals; the number of animals per household; the nature of feed, veterinary and reproductive support provided to those animals; mortality rates; the use of animals for draught purposes, etc.;
 - a set of enabling standards that support the quality of livestock products sold locally as well as the standards needed for products produced in Myanmar to gain international market access;
 - a regulatory environment conducive to private sector investment in local livestock processing facilities; and
 - increased capability of LBVD and MOH to implement and police acceptable international standards.

Indicative Cost

12. Costs for this project are approximately US\$570,000 over a period of one year. An indicative budget is presented below.

Indicative Budget (US\$)

Item	Total Costs
International TA:	
(a) Support in the design, implementation and analysis of the national livestock survey (3 mos at US\$15,000 p.m.)	45,000
(b) Regulation review and revision (3 mos at US\$15,000 p.m.)	45,000
National TA:	
(a) Support in the design, implementation and analysis of the national livestock survey (6 mos at US\$1,500 p.m.)	4,500
(b) Regulation review and revision (3 mos at US\$1,500 p.m.)	9,000
Survey field operations (form printing, enumerators, transport, per diems)	175,000
Survey analysis, report production and printing	40,000
Workshop on policing modalities	20,000
Study tour (MOH/MLBF)	30,000
Laboratory equipment and supplies	50,000
Laboratory TA	40,000
Training in legal aspects	30,000
Support for implementing body establishment	30,000
Contingency (at 10%)	51,500
Total	570,000

PROFILE 2: STRENGTHENING OF NATIONAL DISEASE CONTROL CAPABILITY

Background and Rationale

13. LBVD has several established diagnostic facilities and laboratories producing a range of livestock vaccines, but needs investment particularly in training, to provide a comprehensive livestock disease control programme for Myanmar. The Epidemiological Section has to be strengthened so that it can direct the national animal health programme and develop accurate data on the prevalence, incidence, location, and seasonal occurrence for the key strategic diseases. With few official crossing points LBVD is unable at this time to monitor the movement of the substantial numbers of pigs and cattle which Myanmar unofficially exports. This means there is no pragmatic basis upon which existing and potential livestock disease threats at national or herd levels can be addressed. This has important disease and trade implications both for Myanmar and for the other countries in the region.

14. Effective disease control planning is possible by implementing a Veterinary Epidemiology Programme (VEP) using epidemiological teams of LBVD staff operating throughout the country. With a VEP in place and with some additional support, LBVD could establish a system of effective disease surveillance as the initial step in national disease control. Further support would allow LBVD to include a system of animal production and health

monitoring in all of the agro-ecological zones in Myanmar, and later LBVD could begin to include in-herd intervention trials to evaluate probable animal health control strategies. Animal health management for the commercial and traditional sectors could be made much more useful in this way. Future support for the sector would therefore be more appropriately directed towards establishing such VEP-based, national-level animal health activities, rather than continuing investment in other less focused activities LBVD is also responsible for - LBVD includes research, animal breeding, semen production and extension as its other functions and these compete with disease control for scarce resources.

15. At its basic levels of operation, the Epidemiological Section needs to be substantially strengthened if it is to provide the technical direction an epidemiologically-driven vaccination and disease control programme needs. The VEP would include the ongoing village-based vaccination of poultry against Newcastle disease as a component of the initial programme. Subject to OIE technical approval a VEP would also underpin the development and maintenance of an FMD-free zone in the south of Myanmar established for livestock export on sound epidemiological principles by a well resourced ES.

16. Support for the ES should be directed primarily to developing human resources. LBVD technical staff need higher degree formal training in epidemiology, and formal clinical and laboratory skills, as well as local training in conducting serological surveys and in the effective integration of regional and central diagnostic laboratories with field programmes. Improving the ability of the ES to communicate with all of the field staff responsible for directing local field teams, and in respect of possible transboundary animal diseases with the veterinary departments of neighbouring countries, is also important. But establishing an effective monitoring service based on staff located in adequate numbers of border control points and quarantine facilities as well as elsewhere throughout Myanmar is essential. An effective national animal health programme also requires additional facilities and considerable regulatory support. The latter will need to be developed and institutionalised over the short-term if it is to underpin the process of developing animal health support.

Objectives

17. The project would re-establish the capability of LBVD in providing effective animal disease control. The Principal elements for achieving this capacity are support for the Epidemiological Section of LBVD and successful disease investigation would result from assisting LBVD to implement an effective Veterinary Epidemiology Programme (VEP). This would be supported with more effective diagnostic laboratories and epidemiological field teams. The VEP would implement three main elements – a system for disease surveillance, a production and health monitoring system and the implementation of on-farm intervention trials to evaluate animal health control strategies. These would provide support for the livestock sector as a whole, facilitating exports and improving the productivity of livestock held by the commercial and traditional sectors both.

Principal Components

18. The project would assist LBVD to address its core function - establishing and operating an effective and comprehensive disease control programme for Myanmar. Principal elements of this support, to be provided over a four year period, are:

- a review of policy with respect to LBVD’s function;
- workshops and studies to establish a policy and regulatory framework enabling LBVD to conduct the animal health programme;
- study tours for senior LBVD staff to agencies responsible for animal health in countries with fully developed livestock sectors;
- material inputs supporting key diagnostic facilities at national and regional levels, quarantine stations and animal movement check points;
- human resource development to strengthen the ES in implementing a VEP. As modern undergraduate veterinary training is not well developed currently in Myanmar, the bulk of this focus would be on undergraduate level training; approximately 5-6 students depending upon the country of training. A further five students would be funded to the M.Sc. (3) and Ph.D. (2) level; and
- technical assistance to assist LBVD in designing and managing a VEP pending the return of specialists to assume this role post training;

19. Policy and regulatory change would be undertaken as part of a stand alone review of the whole sector. But the laboratories would be equipped to levels appropriate to the functions of central and regional facilities controlled by an ES. Staff resources are the most serious constraint and training will require considerable planning if LBVD is to acquire the skills it needs to conduct a VEP over the longer term. The shortage of young professional staff who could be trained for key positions in the ES is profound. The graduate cadre upon which to base the specialised training needed is too small and personnel may first have to be trained in basic undergraduate degrees before their post graduate courses in epidemiology and other relevant technical fields. This will continue until enough staff is trained to fill key positions at headquarters and in the regional laboratories/offices. This process may take up to ten years. The phasing of training inputs will depend on the calibre of staff available, but the training of junior staff requiring long-term training should begin immediately. Staff in present positions will need enough basic epidemiology skills to begin a VEP, and TA in epidemiology will be needed to direct this process and implement the VEP until capable permanent staff return. The junior staff when trained will assume these positions when the incumbents retire.

Outputs

20. Key outputs will include:

- an established policy which defines the role of LBVD in respect of animal health and its other functions;

- an effective regulatory capability based on soundly constructed and relevant regulations (as provided for under an Animal Diseases Act for developed livestock sectors) covering the entire range of animal health activity, including quarantine and disease control but including private and public sector responsibility, import and export procedures and requirements and feed and public health standards; and
- an epidemiology section in LBVD capable of providing effective disease monitoring and control, including the coordination of vaccine production with village and township-driven vaccine demand and the planning and sero-monitoring of vaccination response.

Indicative Cost

21. Costs of this project are approximately US\$2.6 million over a four-year period. An indicative budget is presented below.

Indicative Budget (US\$)

Item	Total Costs
International TA (30 months at US\$15,000 p.m.)	450,000
National TA (96 months at US\$1,500 p.m.)	144,000
International Undergraduate Training (6 persons at approx. US\$80,000/degree)	500,000
International postgraduate training (2 x Ph.D. + 3 x M.Sc.)	350,000
Local workshops (5 x US\$7,000)	35,000
Study Tours (2 x US\$30,000)	60,000
Upgrades to Quarantine and related facilities	400,000
Central Laboratory Support (equipment and supplies)	100,000
Vehicles, office equipment and transportation	250,000
Incremental Operating Costs (4 years)	120,000
Contingency (at 10%)	241,000
Total	2,650,000

PROFILE 3: EXPANSION OF ARTIFICIAL INSEMINATION PROGRAMMES AND SUPPORT FOR SMALL-HOLDER DAIRY DEVELOPMENT

Background and Rationale

22. Commercial dairy production is limited to about 350,000 head of Friesian cross cattle located around Yangon and Mandalay which supply mainly to the urban fresh milk markets and backyard processors of condensed milk. These producers can dispose of all of their milk without difficulty. Considerable numbers of smallholders also raise local cattle in irrigated areas around the main cities and smaller towns which have the feed supply potential to support much higher levels of dairy production. Smallholders in these areas produce limited volumes of milk for home consumption now, but with better market access for raw milk and an ability to obtain improved dairy-type cattle as well as dairy production information, they could produce and market milk

much more. Were they to do so, their household incomes and food security would be considerably improved.

23. Extensive smallholder-based dairy production is not yet possible because individual production from local cattle is too small to attract milk traders. The smallholder dairy production base also needs to increase appreciably if the presently high costs of collecting small individual milk volumes are to lessen. The private sector has stimulated production in some areas by providing smallholders with extension support and by establishing collection points the producers can progressively supply. Experience elsewhere has also shown the possibility of other methods. A cooperative approach, based upon village dairy groups, has been successfully applied in Bangladesh (the Milk Vita programme) and in India, and these may be worth considering for Myanmar.

24. Small-scale dairy production is constrained for other reasons. Smallholders are unable to buy the dairy cattle they need without finance and are mostly without a market for their milk. Crossbred dairy cattle also require different management and small-scale farmers need dairy production information. Local cattle are also crucial for the supply of draft on most farms, so that raising both cattle types implies the availability of more resources than most smallholders have, at least until they can develop a cash flow based on milk. Addressing these constraints makes necessary the adoption of a national approach which identifies and targets smallholders in high dairy potential areas. These areas must have the potential for collection by milk traders, or once they have developed critical daily milk volumes, by the collection services of commercial processors.

25. A more generally available system of cattle upgrading is also needed. The presence of a government-supplied AI service notwithstanding, smallholders have little or no opportunity to use artificial insemination - the sole means of breeding their cattle to higher milking potential cheaply. Production potential can therefore be realised by smallholders only if LBVD can return its AI service to considerably greater efficiency, or if it can be privatised. LBVD has conducted an artificial insemination programme since it began with a five year World Bank project in the seventies which supplied much of the equipment at station and field level now in use. The AI service is heavily subsidised and based on inseminators located around Yangon and Mandalay. But coverage is limited because much of their equipment is old and now defective, the inseminators are commonly without mobility for client access and the inseminators themselves are badly in need of refresher training. Most importantly, the most important technical constraint to AI at present is a shortage of nitrogen.

26. The resources which could usefully be provided for dairy expansion in these areas include targeted AI services, and support for the establishment of milk production and collection cooperative and private-sector operated milk collection centres. *The latter two initiatives while possible require careful examination before they could be confidently considered for introduction to Myanmar.* The cooperation of the commercial milk processing sector is also likely to be crucial to expanding smallholder access to raw milk markets. Support for the sector would therefore require dialogue with, and a commitment on the part of the processors to take small milk volumes from smallholder farms and areas initially, and (in the absence of effective government extension services) to train small-scale producers in production and milk quality also. The commercial processors may need assistance in developing smallholder marketing support.

Objectives

27. The project would assist in the more widespread adoption of dairy production by smallholders. Throughout Myanmar in general, such households have little or no access to markets for milk now, or to the cattle they need. The primary objective would be for the project to enable them to increase their dairy production and output by improving access to better systems of milk collection and marketing, and to production information and organisational and technical support. A more competent LBVD is seen as being important in providing dairy production extension services to smallholders and LBVD would be supported in this role.

28. The private sector milk processors would also be assisted to facilitate milk marketing in areas where milk density is low initially, and to the extent possible, in providing dairy production extension. An increase in the smallholder demand for artificial insemination is likely, and supporting better efficiency of this service is a key element in dairy production. Provision of this service more effectively would be supported. In combination, these elements would increase the production and sale of milk at small farm level, leading to an increased level of household income and better living standards for the rural poor.

Principal Elements

Phase 1: Review of Requirements for AI and Village Dairy Expansion (Short-Term)

29. In the first phase, extending over approximately one year, the project would review requirements for upgrading current AI operations and improving their efficiency, especially in terms of its potential to support smallholder dairy. In addition, a series of comparative studies of the dairy sectors in Myanmar and elsewhere would be undertaken. In Myanmar, these would identify dairy areas with potential based on smallholder animal numbers and cattle-raising households. The studies would also quantify the need for additional services to support the smallholder sector, particularly dairy production extension capability, artificial insemination services and assessments of milk collection needs in comparison with available collection services.

30. Other studies (in Bangladesh and India) would identify systems to support pro-poor, smallholder dairy development which may be suitable for introduction to Myanmar. These systems would have to incorporate mechanisms for providing marketing support, the introduction and operation of milk collection and marketing infrastructure and the establishment of producer organisations/collection cooperatives - if appropriate. Importantly, the studies would identify the most appropriate roles of government and the private sector respectively in supporting smallholder dairy development.

31. The project would also assist LBVD by identifying and defining activities to strengthen its ability to provide artificial insemination services nationally, but with AI supplied preferentially to the smallholder priority dairy production areas identified. Support measures considered for AI would include provision of material assistance for the conduct of AI field services and establishing the production or supply capability for liquid nitrogen. Importantly, LBVD would also be assisted in establishing a formal breeding policy for the dairy sector,

ensuring long-term productivity of dairy cattle is not compromised by the adaptation limitations of the improved cattle themselves.

32. During the first phase, the project would:

For artificial insemination:

- assist LBVD in reviewing policy on cattle breeding for milk production;
- review policy on and assess the viability of and requirements for privatising field insemination, possibly restricting LBVD to a supervisory and facilitating role in the supply of AI inputs;
- quantify annual material and personnel needs for an effective AI programme, including the feasibility of local nitrogen production versus bulk nitrogen importation and storage. This may include establishing 10,000 litre bulk storage towers in Yangon and Mandalay, supplied in bulk from Thailand or Malaysia; and
- conduct AI technician refresher training supported by financing for AI technicians in targeted dairy areas, for operating capital, transportation and field equipment.

For smallholder dairy development support:

- identify dairy areas with production potential based on existing small-farm and smallholder cattle numbers;
- assess the inclination, capability and needs of milk processors in priority dairy areas in collecting raw milk as an alternative to milk powder imports;
- identify extension training needs (private and public sector) for supporting smallholder-based dairy production;
- conduct studies to determine:
 - the financial support processors will need in collecting from low density areas initially and until milk supply has developed into economic volumes for collection;
 - mechanisms for privatising artificial insemination services and dairy extension support;
 - processor requirements in developing viable smallholder supply;
 - the operational requirements, production base and throughput for establishing sustainable, privately operated collection centres in areas of dairy potential; and
 - the appropriateness for Myanmar of mechanisms such as dairy producer and dairy marketing cooperatives based on small-scale dairy production units.

- assess options for financing private sector activities, with a particular focus on smallholder acquisition of dairy animals (and required equipment) and dairy collection and processing operations (whether cooperative or company).

Phase II: Strengthening AI and Village Dairy Operations (Medium-Term)

33. From the second or third year, project implementation would commence at a national level. Activities would include financial support for government and/or private sector initiatives to finance the acquisition of dairy animals by smallholders (through a mechanism to be defined in Phase I) and the development of related infrastructure needs to support the smallholder dairy sector. Phase I will provide appropriate designs for such interventions.

34. Although investment costs will be specified in detail during the first phase, it is expected that significant investments will also occur in upgrading AI production and distribution capacity and in training and mobility of field staff. Total project life is expected to be five years but could be longer.

35. Starting in the third year and extending over the longer term, the project would finance activities and infrastructure identified during the first phase as necessary for smallholder dairy development.

Artificial insemination component:

- upgrade the skills of key selected AI staff through long and short duration international training;
- conduct AI technician refresher training supported by financing for AI technicians in targeted dairy areas, for operating capital, transportation and field equipment;
- conduct training for agricultural extension staff in the importance, role and elements of AI services and how to access such services;
- increase the mobility of AI staff (largely through the supply of motorbikes and improved travel allowances) to allow them to respond rapidly and effectively to AI demand; and
- establish or rehabilitate necessary AI field and headquarters infrastructure.

For village dairy production:

- upgrade the skills of key Animal Husbandry Division staff in supporting village level dairy development through long and short duration international training, including study attachment to relevant Indian and Bangladeshi Government Departments and dairy organizations (e.g. AMUL Milk Cooperative in India);
- provide training to agricultural extension staff on the importance and potential contribution of smallholder dairy production to smallholder farming systems and its requirements;

- create financing mechanisms for smallholder dairy cattle purchase; and
- support, where required, the formation of dairy marketing cooperatives and/or support private sector dairy companies with technical assistance and access to financing. In both cases, the need for cooling tanks, milk tanker trucks and similar equipment is anticipated.

Outputs

36. Key outputs would include the following:

- a breeding policy for dairy development including breeds, maximum permissible breed content and sources of genetic material;
- a policy and detailed programme (if feasible) for privatising the delivery of AI services, including the role and responsibility of LBVD as facilitator in the supply of inputs;
- an effectively resourced and sustainable field insemination service capable of supplying inseminations efficiently to an increasing number of smallholders with dairy potential;
- improved dairy productivity based on increasing numbers of smallholders and increased utilisation of raw milk and its displacement of milk powder use by commercial milk processors; and
- a greater awareness, and support capacity, for smallholder level dairy production, including financing and collection systems development

Indicative Cost

37. Costs for this project would be approximately US\$7 million over a five year period. Of this amount, US\$369,000 would be spent during the one year initial phase, while the remaining US\$6.6 million would be spent during the second, implementation phase, with a duration of approximately 4 years. Indicative project costs for the two phases are presented below.

Phase I Indicative Budget (US\$)

Item	Total Costs
Supervision, Oversight and Implementation Design	
International consultant (4 months at US\$15,000 p.m.)	60,000
National consultant (6 months at US\$1,500 p.m.)	9,000
Workshop, travel and miscellaneous costs	15,000
Artificial Insemination	
Dairy Breeding Policy:	
International consultant (2 months at US\$15,000 p.m.)	30,000
National consultant (3 months at US\$1,500 p.m.)	4,500
Field Surveys: National consultants (9 months + costs)	20,000
Insemination Privatization Policy: International consultant (2 months at US\$15,000 p.m.)	30,000
Smallholder Dairy Development	
National Dairy Potential Study: National Consultants	15,000
Comparative Dairy Sector Studies	
International consultants (4 months at US\$15,000 p.m.)	60,000
National contracts - India/Bangladesh (US\$15,000 ea)	30,000
Myanmar participating staff – travel and expenses	15,000
Dairy Institutional and Financing Options study	120,000
International consultant (2.5 months at US\$15,000p.m.)	37,500
Local Consultant (3 months at US\$1,500 p.m.)	4,500
Local costs	5,000
Contingency (at 10%)	33,500
Total	369,000

Phase II Indicative Budget (US\$)

Item	Total Costs
Project Management Unit	
International consultant (12 months at US\$15,000 p.m.)	180,000
National consultant (30 months at US\$1,500 p.m.)	45,000
PMU Staffing and expenses (5 staff at US\$10,000 p.a.)	50,000
Workshop, travel and miscellaneous costs (US\$20,000 p.a.)	100,000
Vehicles	50,000
Sub-total:	425,000
Artificial Insemination	
International consultant (6 months at US\$15,000 p.m.)	90,000
International training (long and short duration)	250,000
Field Inseminator training (6 courses at US\$10,000 ea)	60,000
Extension Staff training (12 courses at US\$7,500 ea)	90,000
Liquid Nitrogen Production Capacity	300,000
Upgrading Headquarters Equipment	150,000
Upgrading Inseminators Equipment and Mobility (motorbikes)	250,000
Incremental Operating Costs (US\$20,000 p.a.)	80,000
Sub-total:	1,020,000
Smallholder Dairy Development	
International TA (6 months at US\$15,000 p.m.)	90,000
International training (short and long duration)	200,000
Extension Staff training (12 courses at US\$7,500 ea)	90,000
Extension materials	25,000
Financing for dairy cattle procurement and milk collection systems development	4,000,000
Creation of Smallholder Dairy Support Unit	100,000
Initial Operating Costs, including travel (US\$20,000 p.a.)	100,000
Sub-total:	4,585,000
Contingency (at 10%)	603,000
Total	6,633,000

PROFILE 4: ESTABLISHMENT OF A VILLAGE-BASED NEWCASTLE DISEASE PROGRAMME

Background and Rationale

38. LBVD conducts a Newcastle disease village poultry vaccination programme, producing and using the heat stable, I2 Newcastle vaccine. This vaccine is of excellent quality, but the programme itself has limited effectiveness – less than optimal geographical coverage and uptake at household level. The programme has enormous potential for improving the overall productive output of village poultry but to be effective, vaccination requires a carefully structured approach based on adequate resources. In particular, because livestock extension is presently limited by LBVD field staff numbers and their operational capability, emphasis on using the villagers themselves to conduct the vaccinations is important.

39. LBVD is charged with livestock extension but has too few resources to support nation-wide vaccination. Its extension capability at state/divisional level is extremely limited, and the planners of provincial level programmes have little knowledge of the dynamics of the disease or the need to design campaigns based on aggregations of village-level poultry population estimates. Importantly also, the best modalities for conducting the vaccination as village-based programmes have not yet been determined. These constraints will need to be addressed. The programme will remain limited by LBVD field staff coverage however, and a nation-wide programme will not be possible until an effective, national agricultural extension system is functioning.

40. Thermostable Newcastle disease I2 vaccine was introduced to Myanmar in the late nineties with FAO support. This vaccine made an effective cold chain to the point of vaccination unnecessary, thus a NCD vaccine suitable for village use has become available for the first time. A facility for producing the vaccine was established in Yangon and has been well supported. Enough vaccine can now be made to meet the annually determined, national vaccination target. LBVD proposes to produce almost sixty million doses, or enough I2 to vaccinate 15 million poultry four times each in 2003/2004. If the vaccine could be distributed and these birds vaccinated, about one quarter of the estimated 57 million village poultry in Myanmar would be protected annually⁴³.

41. The extension support and the vaccination work itself at the level of township and village tract is not well done and it is unlikely that even a small fraction of the 60 million doses proposed for use in 2003/4 can be properly utilised. There are also some technical difficulties with the traditional campaign approach presently adopted. This is because NCD outbreaks occur in some villages somewhere in Myanmar all the time, making a campaign or area-approach inappropriate, because of the risk of vaccinating in villages where NCD is still active. Poultry owners attribute mortalities resulting from the disease to the vaccine if this occurs, or they consider the vaccine to be ineffective, losing confidence in the usefulness of vaccinating their

⁴³ Four doses of vaccine per bird annually. With this live vaccine however, not all birds need to be vaccinated as enough of the virus passes from vaccinated to unvaccinated birds to extend significant coverage beyond any vaccinated population.

chickens thereafter. Importantly also, no provision is made for vaccination effectiveness monitoring.

42. Effective extension is the missing component. Group organisation work in pilot villages is necessary from the outset and over time and in different cultural locations if the modalities for establishing poultry vaccinator organisations are to be developed. Experience elsewhere indicates that widespread vaccination of village poultry can be sustained only if the communities are organised and able to undertake the vaccinations themselves. The most appropriate approach thus far has the community members themselves - usually the women who are directly responsible for poultry – responsible for the vaccinating. The LBVD field staff are untrained in community management and a suitable extension approach, there are relatively few of them, and with other field responsibilities related to animal production and health, they have too little time for this work.

43. The national-level programme presently envisaged is possible only if enough human resources can be accessed to take over the extension training component of the programme. Only village residents know when the disease is present, and this makes it an imperative that trained village vaccinators initiate the timing of the vaccination themselves, and that the provincial plan of vaccination becomes an aggregation of the individual “village plans”. Each such plan depends on the presence or otherwise of NCD and it may be implemented at a different time to the others while NCD is extant. After an initial phase of vaccination in which NCD is brought under control on the basis of individual villages, a broader area “campaign” approach may be feasible, at least in respect of arrangements for vaccine supply to the villages.

Objectives

44. Newcastle disease is the pre-eminent production constraint of village poultry. Poultry are raised in small flocks by almost all rural households in Myanmar, and the disease decimates many of these birds annually. Poultry are therefore an important source of income and food for most poor households, making NCD vaccination an activity of great importance and almost universal appeal, without any issues of equity. Investment in an effective programme to reduce the impact of Newcastle disease on indigenous poultry through a national campaign using I2 vaccine is therefore an important pro-poor initiative.

Principal Elements

45. The I2 vaccine is suitable for general use and LBVD produces enough doses to vaccinate a significant proportion of birds throughout the country. It has been verified as effective and safe in laboratory and field trials in Mozambique and is proven to fully protect vaccinated and in-contact birds under local village conditions. Eye drop is probably the best vaccinating method, and three to four vaccinations are needed per bird each year to establish and maintain immunity. However, if vaccination is generally adopted, it should be followed by the extension of better management methods to increase the productivity of village chickens further. Once vaccination is routine, intensive extension messages aimed at poultry raisers adopting simple housing, supplementary feeding and protection of chickens from predators should be promoted. NCD vaccination also confers a private sector good and it should be distributed and provided to villagers on the basis of market price and full cost recovery.

46. Vaccination needs a phased approach based on modalities which are likely to take several years of field work and in-village testing to develop. Although vaccination by LBVD field staff has already begun this basic development work has not yet been done so that widespread effectiveness is unlikely. The first phase of this work involves conducting surveys to collect data on the production and productivity of village poultry in selected village tracts. The second phase will utilize this data to expand the use of I2 in field vaccination in (say) four states or divisions, to test and identify the most appropriate systems of distribution, administration and cost-recovery. The third and final phase involves the adoption of a national programme for NCD vaccination for all of the states and divisions in Myanmar. This third phase would utilise the systems which have been proven to work during the earlier phases.

47. *The essential prerequisite for introducing such a programme is the operation of an effective extension service.* Coverage of all village poultry throughout Myanmar is unlikely to be achieved unless government embraces the principle of establishing a more effective, nation-wide extension delivery system. However, by using the present LBVD staff as extension agents, but upgrading their extension capability, it should be possible to implement a considerably more effective, albeit geographically limited programme of village poultry vaccination and it will still be possible to establish the operational modalities.

48. The investment would finance the first and second phase surveys, and some full and part-time TA to assist in designing them and in evaluating the data and overseeing the programme. TA would also be provided to assist with the extension material, both that associated with the vaccinating as well as with the post-vaccinating poultry production extension messages. The surveys would be implemented in collaboration with and by district-level extension personnel. Unless there is a change in the national extension programme, these personnel are likely to be personnel of LBVD operating under the direction of district level extension authorities. The investment would finance their intensive training in extension methodology and provide them with their transportation and operating costs. It would also finance refrigeration down to the level of the district office, TA for the field work planning initial vaccination programmes and to develop and refine extension material and to train Community Livestock Workers (CLW) or their in-village equivalents as vaccinators. The investment would also finance support for the central and three regional laboratories, including transportation for the field teams and the recurrent costs associated with conducting the serological surveys for vaccination effectiveness, and the laboratory processing associated with them.

Outputs

49. This investment would result in an established system and infrastructure for distributing Newcastle disease vaccine throughout Myanmar, and a network of village-based community livestock workers undertaking poultry vaccination for a fee. Government laboratory infrastructure for disease monitoring and post vaccination testing would be improved. Downstream benefits include a substantial reduction in the prevalence and incidence of Newcastle disease among village chickens, and better productivity from the village flocks due to more relevant extension. This would result in a significantly improved level of food security and household income among the poorest households.

Indicative Cost

50. The cost of technical assistance, equipment and extension support spread over an approximately five year period, is likely to be approximately US\$1.1 million. An indicative cost summary is presented below.

Indicative Budget (US\$)

Item	Units	Unit Cost	Total Costs
1. International management consultant	8	15,000	120,000
2. International extension consultant	6	15,000	90,000
3. Field staff extension training	1,000	100	100,000
4. Local workshops	6	5,000	30,000
5. Study tours to Mozambique	3	30,000	90,000
6. Laboratory support	5	30,000	150,000
7. Equipment and vehicles		200,000	200,000
8. Incremental operating costs	5	50,000	250,000
Contingency (at 10%)			103,000
Total			1,133,000

TOTAL INDICATIVE SUB-SECTOR INVESTMENT COSTS

51. In view of the developing importance of disease control, border protection and the improvement and protection of domestic and export markets, the initial steps LBVD should take include reviewing sector status and policy, and defining the long-term role of LBVD. By working with the private sector and the agency responsible in Government for national statistics, LBVD could also initiate a comprehensive and regularly updated system of data collection based on data categories useful to all players in the sector. This process should begin with consultation to define the data categories needed and a clear understanding of the private and government purposes to which each of the data categories is to be put. LBVD could begin both of these processes now. Also important for commencement over the short-term is the need (described earlier) to create the environment favourable to investment and market development contained in a review of regulations and standards as well as the support required for them to be enforced and passed into law. This done, and with some external support LBVD might embark on any of the four investment profiles listed here, but priority should be given to implementing an effective and properly resourced national disease control programme based on sound epidemiological principles.

52. LBVD might also articulate the need for livestock to be incorporated into a bottom-up farming systems extension approach and the establishment of a well resourced and properly oriented national extension programme, to which LBVD would logically provide livestock technical support. This initiative should be taken up with MOAI for discussion and a similar initiative might be taken with the need for the provision of a micro finance facility for smallholder support.

53. Support for smallholder dairy production either as initiatives of government and/or the private sector would depend on findings arising from studies conducted over the short-term. The investments likely to arise from these would be medium-term initiatives.

54. Total profile costs for livestock related activities are summarised in the table below. There are no long-term investments proposed at this time.

Investment Proposal	Short-Term Year 1-2	Medium-Term Year 3-5	Total (US\$'000)
1. Review of Livestock Sub-Sector Status, Regulations and Policy	570.0		570.0
2. Strengthening of National Disease Control Capacity		2,650.0	2,650.0
3. Expansion of AI and support for smallholder dairy production	369.0	6,633.0	7,002.0
4. Establishment of a Village-Based Newcastle Disease Programme		1,133.0	1,133.0
TOTAL	939.0	10,416.0	11,355.0

4. FISHERIES INVESTMENT PROFILES

1. On the basis of the sub-sectoral strategy, three investment profiles have been identified which will provide a pro-poor impact with respect to fisheries in Myanmar. Profiles are:

- Support for upgrading and strengthening of the Department of Fisheries (US\$2.5 million);
- The provision of support for the transformation of lease and reservoir fisheries to community-based management (US\$2.8 million); and
- Incorporation of small-scale fish ponds into farming systems (US\$1.4 million).

All profiles extend over the short and medium-term; only a single profile covers also long-term (Transformation of Fisheries to Community-Based Management).

PROFILE 1: INSTITUTIONAL STRENGTHENING OF THE DEPARTMENT OF FISHERIES

Background

2. The situation of the fisheries in Myanmar is characterized by weak Government involvement in the planning, management and development of the sector, and the absence of any Monitoring, Control and Surveillance (MCS). After the creation of the new fisheries legislation in 1989 which provided an impetus for the development of the fisheries sector, Government has been mostly involved in income generation from exports and leases and has not paid adequate attention to its leading or facilitating role in the fishing sector, the aquatic environment and the resources. In addition, it has actively promoted the development of the aquaculture sector in the absence of institutional environmental planning and monitoring capabilities.

3. An analysis of the marine capture fisheries situation has shown that the resources are currently at least locally overexploited. There is a lack of relevant statistical data to check the precise situation. Present recorded catch levels are higher than the Maximum Sustainable Yield estimates based on the acoustic and trawl surveys executed as far back as the early 1980s, and confirm over-fishing.

4. The proposed intensification of shrimp culture in the coastal zone requires considerably more awareness of the risks associated with the introduction of non-sustainable methods and practices, including site selection.

Rationale and Objectives

5. The current resources situation indicates that a period of intensive fisheries management is now required, in which DOF needs to become a more effective instrument. Training is required at all levels, both long-term and short-term. The lack of a research tradition

hence the lack of any experience in research means that there is a need for an educational strategy to upgrade the capabilities of the relevant division of the Department of Fisheries, based on a complete analysis of the educational backgrounds of the officers.

6. The Department of Fisheries is severely under-funded and requires considerable upgrading. In order to play a more prominent role in the future it is necessary that competences be developed and/or updated in all major fields, particularly in fisheries resource monitoring and management (including research and relevant data collecting), fisheries policy and planning (fisheries economics), and that more structurally the Department of Fisheries becomes involved in policy development for the sustainable development of the fisheries sector (fisheries co-management, development and application of environmental capabilities, environmental and biodiversity impact assessments, creation of enabling environment for the generation of jobs and of added value from the exports of finished fisheries products).

7. In addition, there is a need to upgrade the status and authority of the Department of Fisheries and to establish new profiles and tasks for Fisheries Officers. More funds are required if the Department is to fulfil the important task of accompanying and facilitating the important new developments and challenges. This upgrading includes the provision of adequate equipment including the computerization of the Department down to the State/Division level.

8. In the absence of an educational strategy, training requirements are proposed in the following fields: resource monitoring, fisheries planning and management, fisheries and aquaculture research, development of environmental capabilities, as well as assistance for the enhancement of the status and performance of the Department of Fisheries as a whole.

9. In the absence of an institution dealing with the environment, the assistance foreseen also includes as a matter of priority a national workshop for both the private sector and Government staff in which external experts present other international experiences and solutions.

10. In neighbouring South East Asian countries, fisheries institutions have acquired considerable experience in all fields related to fisheries and aquaculture. In addition, regional organizations have been created (e.g. SEAFDEC, NACA) that provide services and training to their member countries, of which Myanmar is part. Although undeniably Myanmar can learn much from participating in regional activities, there is a considerable educational gap to be filled before the country can participate as an equal partner and derive full benefits from its membership.

11. The objective of the support to be provided is to upgrade the technical capabilities of the Department of Fisheries, so that it can play an adequate, informed, leading or facilitating role in the planning, management and development of the Fisheries and Aquaculture sectors. In the absence of an environmental institution, the Department of Fisheries also requires competences in environmental planning, impact assessment and monitoring, particularly in relation to the planned intensification of shrimp culture in the coastal zone.

Principal Elements and Phasing

12. The proposed investment will encompass five components, which will be implemented over a period of approximately 4-5 years:

Component 1: Assistance for the Enhancement of the Status and Performance of DOF (Short-Term)

13. The important new challenges defined for the Department of Fisheries as compared to its current low status call for an urgent assessment of institutional strengthening requirements and subsequent institutional strengthening. It is proposed to provide a Senior Advisor to the Director of Fisheries for a two year period, as well as an initial 3 m/m of international expertise for the evaluation of detailed needs, including an inventory of the staff at all levels and the skills required in all fisheries related fields involving a major educational survey, current management practices and procedures, the availability and suitability of present facilities and equipment. New staff profiles will be developed, reflecting the needs in fisheries and aquaculture planning, management and development, including participatory fisheries management (see Profile 2) and the planning and management of small fish ponds (Profile 3). An additional 3 m/m of support will be required to evaluate the results, fine tune the organization and update support requirements after the initial 2-3 years. Support would also be provided for the upgrading of training facilities at the Fisheries Institute and the strengthening of the ability of DOF to effectively manage financial resources and prepare timely reports.

Component 2: Support for the Establishment of a Resource Monitoring Capacity (Short-Term)

14. This will require some 12 m/m of international consultants, to mobilize existing knowledge and relevant data (retrieval of relevant data from existing sources which are not likely to be archived), to advise on an improved data collecting system, on a resource monitoring programme, on the design of the anticipated resources survey). It also includes a 3 weeks' training course in fish stock assessment (using FiSAT software) which would be repeated after some 3 years to ensure updating of staff skills. Long term international training will be provided to two Fisheries staff members in Fisheries Resources Monitoring. Resources would also be made available for specific data collection activities to fill in gaps in existing data availability. As these will only be defined in detail once the initial evaluation of existing data is completed, these resources are left largely unassigned at this point.

Component 3: National Workshop and Training on the Environmental Impact of Shrimp Farming (Short-Term)

15. The anticipated accelerated conversion of shrimp farms into semi-intensive operations carries great risks for the environment and also for the sustainability of their operation. It is therefore proposed to organize a national workshop in order to reach a consensus on the practices to be introduced, drawing on the experience of neighbouring Thailand, which is the world's first producer of farmed shrimp. It is suggested to involve the Faculty of Natural Resources and the Coastal Resources Institute of the Prince of Songkla University of Thailand (on

the basis of their outstanding publications on the institutional and policy perspectives in the management of fisheries and coastal resources in Thailand). Additionally, two DOF staff will be trained to M.Sc. level in environmental planning and monitoring.

Component 4: Strengthening Staff Capacities in Fisheries Management (Medium-Term)

16. A solid background in fisheries management is totally lacking within DOF. It is proposed that 2 staff be trained to M.Sc. level in the areas of Fisheries Management and Fisheries Economics (Planning). In case the external training required in participatory fisheries management as defined in Profile 2 is not already provided, it should be incorporated here.

Component 5: Strengthening of DOF Staff Capabilities in Fisheries and Aquaculture Research (Medium-Term)

17. In the absence of any current involvement in research, it is recommended that two carefully selected staff be trained to M.Sc. level, respectively in fisheries and aquaculture research, within the Southeast Asian region, and that they be allowed to attend a total of six conferences in the region. Provision would be made for the establishment of a relatively limited research laboratory facility at DOF to undertake analyses.

Outputs

18. The principal output of the project will be a significant institutional strengthening of the Department of Fisheries, including human resources, physical facilities and an improved organizational structure to support the fishery sub-sector. In addition, the increased technical skills and mobility provided for in fisheries resource monitoring, fisheries planning and management, fisheries and aquaculture research, environmental planning and monitoring will enable the Department to assume a leading or facilitating role in the planning, management and development of these key areas. Myanmar should thus be able to draw more benefit from its participation in international meetings and exchanges of experiences. Additionally, the Department will have an outline of a resource monitoring programme enabling it to continue relevant data collection.

Indicative Budget

19. Overall costs for the proposed project would be approximately US\$2.1 million, of which approximately US\$1.2 million would be incurred in the first two years, and the remaining US\$0.9 million in the subsequent 2 years.

Indicative Budget (US\$)

Item	Short-Term (0-2 years)	Medium-Term (3-5 years)	Total
Component I: Enhancement of the Status and Performance of DOF			
Senior Advisor to the Director (2 years)	320,000		
International consultants (8 months at US\$15,000 p.m.)	60,000	60,000	
Upgrading of training facilities and equipment	75,000	25,000	
Improved management & accounting systems & equipment	50,000	40,000	
Workshops	10,000	10,000	
Vehicle and operations for Director & Advisor	30,000	30,000	
Local travel and operating costs	25,000	20,000	
Total	570,000	185,000	755,000
Item	Short-Term (0-2 years)	Medium-Term (3-5 years)	Total
Component II: Support for Establishment of a Resource Monitoring Capacity			
International consultant (15 m/m at US\$15,000 p.m.)	180,000	45,000	
Local travel	20,000	20,000	
Equipment, incl. computers and supplies	60,000	20,000	
Printing of 2 manuals for species identification	20,000	10,000	
Workshop FiSAT 3 weeks	30,000	30,000	
Consultant FiSAT	15,000	15,000	
M.Sc. in Resource Monitoring (1)	40,000		
Vehicle (4 WD) x 2 and operations	50,000	25,000	
Additional data collection and analysis	75,000	150,000	
Incremental operating costs	30,000	30,000	
Total	520,000	345,000	865,000
Component III: National Workshop and Training on Environmental Impact of Shrimp Farming			
Preparations for workshop (2 weeks)	13,000		
International consultants (2 x 2 wks)	20,000		
Consultants from region (4 x 2 wks)	20,000		
MSc in Environmental Sciences (2)		80,000	
Vehicle (4 WD) and operations	32,000	25,000	
Total	85,000	115,000	200,000
Component IV: Strengthening DOF Fisheries Management Capacity			
External training in participatory fisheries management (2 persons) ⁴⁴	33,000		
MSc in Fisheries Management (1)		40,000	
MSc in Fisheries Economics (1)		40,000	
Vehicle (4 WD) x 2 and operations	32,000	57,000	
Total	55,000	150,000	205,000
Component V: Strengthening DOF Capacities in Fisheries and Aquaculture Research			
MSc in Fisheries Research (1) during 1 year		40,000	
MSc in Aquaculture Research (1) during 1 year		40,000	
Attendance of 6 conferences		15,000	
Establishment of laboratory facilities and provision of supplies		150,000	
Total		245,000	245,000
Contingencies (10%)	123,000	104,000	227,000
Total	1,353,000	1,144,000	2,497,000
^{1/} Quoted cost for two persons (all expenses) for 7 week course at Wageningen University in the Netherlands.			

⁴⁴ If not already covered under Profile 2.

PROFILE 2: SUPPORT FOR THE TRANSFORMATION OF LOCAL FISHERIES TO COMMUNITY-BASED MANAGEMENT

Background

20. Rural poverty is widespread in Myanmar. Despite the numerous rivers and lakes, and hence an abundance of freshwater aquatic resources, the contribution of the fishing sector to the rural economy and food security is limited, as local populations have little or no access to these resources. Under a system introduced by the British in the 1920s, rights to most key fishing grounds are leased through an auction system. The highest bidder obtains full rights to exploitation of fish in the water body concerned, denying local populations the right to fish even in rivers and lakes that may be adjacent to the community, leaving only access to limited and often remote “open waters”.

21. For reservoirs and other water bodies managed for irrigation purposes, no fishing at all is currently permitted, on the grounds that fishing could be detrimental to long-term reservoir management. This represents a considerable economic loss to local communities and the economy in general. It is estimated, for example, that Vietnam extracts approximately 250,000 tonnes of fish per year from their reservoir system.

22. There is a need to redesign the system of allocating fishing rights for both leasehold and reservoir waters, taking into account new insights and methodologies developed elsewhere in the world, so that fishing can contribute more significantly to the reduction of rural poverty.

Rationale and Objectives

23. A better and more equitable distribution of the abundant inland fisheries resources would have a major impact on rural communities. Over the last twenty years, the common property nature of fisheries resources has been increasingly accepted and the South East Asian region, in particular, has seen many successful cases of introducing participatory fisheries management techniques to replace situations where a limited number of influential individuals possessed exclusive fishing rights.

24. Improved access by poor populations to effectively managed local fisheries will not only increase household incomes, but also increase food security and provide employment for landless populations.

25. The revision of the current lease concept should not be interpreted to mean that fishing should become open to everybody, as it is well known that unmanaged fisheries are generally rapidly overexploited. Where rights are passed to local communities, new management concepts will be required, in which the roles of Government and the fishing communities themselves are redefined. Community-based fisheries management implies involving resource user groups directly in the management of the resource, while Government plays an overall enabling and facilitating role.

26. The introduction of community-based fisheries and fisheries management will require the drafting of legislation enabling communities to assume their responsibilities. It will also involve supporting and encouraging the formation of organized user groups, their initial training and the setting up of a consultative process between these groups and Government. Government fisheries development policies must be developed to assist these activities as well as to provide technical support.

27. In Myanmar the community-based management approach has not yet been introduced and implementation will have to be undertaken in a phased approach, providing support to both the rural communities and Government.

28. The objective of the proposed investment would be:

- to assist Government in the legal, technical and organizational requirements for the introduction of participatory fisheries management, with a view to ultimately transform current fisheries management practice into community-based fisheries management;
- to enable Myanmar to benefit from the experiences of other South East Asian countries in this respect;
- to raise awareness among fishing communities and upgrade their capabilities so that they can become full partners in the joint management process; and
- to increase household incomes and food security among poorer farming and rural communities.

Principal Elements and Phasing

29. The project will have short, medium and possibly long-term components and activities in three main phases. It is important to stress that the implementation of the entire community-based programme will be dependent upon the willingness of the Government of Myanmar to consider, and subsequently implement, such a major change to existing policies. Furthermore, the long-term sustainability of the programme will also require a willingness on the part of Government to substantially increase resources allocated to the Department of Fisheries to cover increased numbers of personnel, staff mobility, maintenance and upgrade of equipment (even where originally provided by the proposed investment). As community-based fisheries management will be only one of the areas in which the DOF must expand its presence (see Profile 1), it will also be essential to obtain guarantees of DOF allocation to this particular activity.

Phase 1: Sensitization and Training in Community-Based Fisheries Management (Short-Term)

30. Phase 1 will focus on the introduction of the community-based, participatory fisheries management concept to Myanmar through the organization of a major national workshop and the international training of two DOF staff. This phase would also include other training and legislative activities and would extend over a period of approximately 6 months.

- Organization of a nationwide workshop attended by both the Department of Fisheries staff and the private sector, in which the principles of community-based fisheries are explained and discussed. Ample reference will be made of the many successful projects in the geographical sub-region, and recommendations formulated for its adaptation to suit Myanmar's specific needs. These will include recommendations regarding the changes in fisheries legislation required in order to enable co-management of fisheries resources;
- Training of two senior DOF staff at an international training programme such as that offered by the International Agricultural Centre, Wageningen, The Netherlands, entitled "Towards participatory fisheries management" (7 weeks' programme);
- Support to DOF in the drafting of legislation which would change the allocation of fisheries rights in inland waters to favour local communities, and would open up reservoirs and other irrigation related water bodies to controlled fishery operations by local communities; and
- Preparations for the implementation phase would include: project design, selection of pilot areas, and recruitment of international staff (both long-term staff and consultants).

Phase 2: Establishment of a Community-Based Fisheries Management Support Capacity (Medium-Term)

31. The introduction of community-based participatory fisheries management in Myanmar (initially in inland water bodies, but in the longer term also for inshore marine fisheries) will require considerable support. Currently the Department of Fisheries is completely unequipped to provide this. Over a period of three years, Phase 2 will: (a) create an institutional capacity for support to community-based fisheries management; and (b) test the proposed approach through direct support to five communities, which would also function as a source of training for DOF staff and extension workers. Specific activities under Phase 2 will include:

- Support to DOF in the establishment and staffing of a Community-Based Fisheries Management Unit which will provide technical expertise, support to extension staff, and supervision for participating communities. It is assumed that support for general administration and management in DOF will be covered under Profile 1;
- Development of specific approaches and technologies appropriate to community-based fisheries and its management, including such areas as legislation, policies, institutional structures, fishing gear technology, and catch monitoring. Training and extension materials would be produced from these activities;
- The selection of five pilot communities which would be used to pioneer and test community-based management approaches in Myanmar. In exchange for

priority support by DOF, these communities would provide in-service training for DOF staff, as well as acting as demonstrations for visits by extension staff and communities interested in applying community-based approaches;

- The organization and conduct of annual study tours to countries with the region to learn from their experiences in this type of management;
- The upgrading of facilities at the Fisheries Training Institute to allow the expansion of training programmes for DOF staff and extension workers in this approach. This activity would be complementary to that undertaken in Profile 1 above; and
- Evaluate the results of the activity in the third year and use these results to finalize the design for a longer term national expansion of the community-based fisheries management programme.

32. The goal is to have Myanmar counterpart staff that participates fully in the planning and execution of the project at the pilot level, so that an institutional capability is created which will serve to expand activities to other areas at the end of the project, including eventually small-scale fisheries in the marine coastal zone.

Phase 3: National Level Community-Based Fisheries Management Support (Long-Term)

33. The lessons learnt during the pilot phase will enable an effective expansion of support to community-based fisheries management throughout Myanmar, as well as considering inshore marine fishing communities.

34. As much of the capacity development will have occurred during Phase 2 and less international expertise or upgrading of facilities and equipment will be required, Phase 3 will be comparatively low cost, with most expenses arising from training of extension staff and awareness visits organized for community groups to the demonstration communities. However, the exact scope of activities and resultant costs will depend upon the evaluation conducted late in Phase 2.

Outputs

35. The key output of the proposed investment will be the adoption of widespread community-based management of local fisheries in inland and inshore marine waters in Myanmar. In order to achieve this, the project will create a crucial institutional support capacity within the Department of Fisheries, as well as supporting required changes in legislation. It is anticipated that, over the lifetime of the project, more than 500 communities will adopt community-based fisheries management as applied to river systems, reservoirs and inshore marine resources.

Indicative Budget

36. Costs for the proposed project over three phases would be approximately US\$2.8 million over a period of 8-9 years.

Indicative Budget (US\$)

Item	Short-Term	Medium-Term	Long-Term	Total
Phase I: Training in Participatory Fisheries Management and Preparatory Phase				
Internationally mounted training workshop in Myanmar (2 weeks, total cost)	90,000			
External course (7 weeks, all inclusive, 2 persons with travel)	33,000			
Support for the preparation of draft legislation (international consultant – 2 pm)	30,000			
Design of Pilot Phase (4 m/m international consultant input)	60,000			
Design of Pilot Phase (national consultants and local costs)	15,000			
Total	228,000			228,000
Phase II: Establishment of Community-Based Fisheries Management Support Capacity (3 years)				
Community-based management specialist (36 months)		425,000		
International consultants – policy, legislation, fishing gear technology (18 m/m)		270,000		
Project management unit (secretary, driver, communications and supplies)		75,000		
In-country travel		50,000		
Study tours to S.E. Asian region (3)		50,000		
Vehicles and office equipment		80,000		
Upgrading training and demonstration facilities		50,000		
Incremental operating costs, including preparation of training materials		75,000		
Evaluation and design of Phase 3		40,000		
Total		1,115,000		1,115,000
Phase III: National Level Community-Based Fisheries Management Promotion (5 years)				
International Technical Assistance (30 m/m)			450,000	
Vehicles and equipment			150,000	
In-service training and study visits for DOF community-based management staff			80,000	
Training of extension staff (45 courses)			215,000	
Local travel (5 years)			75,000	
One-day awareness visits to community-based schemes (200 group visits x US\$500)			100,000	
Preparation and distribution of teaching materials			50,000	
Incremental DOF operating costs (5 years)			100,000	
Total			1,220,000	1,220,000
Contingencies (10%)	22,800	111,500	122,000	256,300
Total	250,800	1,226,500	1,342,000	2,819,300

PROFILE 3: INCORPORATION OF SMALL-SCALE FISH PONDS INTO FARMING SYSTEMS IN MYANMAR

Background

37. Although Myanmar possesses a relatively rich resource base and low population density, rural poverty is believed to be significant and opportunities for income diversification in many rural areas limited. Experience from other South and South-Eastern Asian nations has shown that small-scale aquaculture can make a significant contribution to food security and income generation among small-scale farmers and land holders. This appears not to have been established in Myanmar.

Rationale and Objectives

38. According to FAO experience with small-scale fish ponds, there are several advantages that could be derived from integrating aquaculture with other smallholder farming system components:

- (a) The diversification of farming systems to include aquaculture diminishes the risks associated with small-scale farming. This is because pond water not only yields fish, an edible and tradable commodity, but can also contribute to crop irrigation and livestock watering in the dry season, thereby increasing the viability of year-round production; and
- (b) The extra production from aquaculture can imply an increased availability of protein for household consumption. Alternatively, aquaculture products can be treated as commodities which can be traded for cash or essential household items.

Both strategies increase household economic security.

39. The absence of small fish ponds (less than 400 m²) in rural Myanmar was identified by the Myanmar Aquaculture and Inland Fisheries Mission in December 2002. This mission remarked that “this may reflect a cultural reluctance to farm fish ... or possibly uncertainty over the legality or potential of small scale fish culture. Another possibility is that wild fish are sufficiently available to lowland rural people to render fish culture in small ponds unattractive.” The Mission ended its remarks by stating that “*Identification of the underlying reasons for this would have significant implications for aquaculture development in rural areas especially where the rural poor are targeted. It is recommended that this be clarified and documented*”.

40. Given this uncertainty, a phased approach will be required. Initially, a representative survey should be undertaken in various regions of Myanmar, by an expert familiar with the opportunities offered by and requirements for small fish ponds. In addition to detecting the reason for the absence of such small fish ponds, this survey should also assess the required number of ponds and the cost of their construction, requiring either excavation through commercial companies or by the farmers themselves, working in groups. Based on the outcome, a detailed further approach should be developed.

41. If the need for such ponds is indeed also felt in Myanmar, targeted rural populations (those with appropriate land resources and low income levels) should be provided with assistance to create and manage small-scale productive aquaculture ponds. These could be new ponds, or they could comprise modifications to existing paddy fields, either as part of rice/fish cultivation or as a conversion to purely aquaculture operations.

42. The objective of the intervention is to contribute to the diversification of the production of rural farmers through the introduction of private small-scale fish ponds. The first phase of this project aims at a more detailed understanding of the reasons for the absence of such ponds in rural Myanmar and at the detailed requirements in case the integration of small fish ponds in local farming systems is deemed feasible. The second phase will provide assistance for basic pond design, for training of support services and for the creation of 50 demonstration ponds. The objective of phase three is the nationwide introduction of small-scale fish ponds facilitated by the Department of Fisheries.

Principal Elements and Phasing

43. Support for the promotion of small scale aquaculture should follow three logical steps: an initial study to determine the extent of the problem and the needs, the organization of support for the creation of fish ponds and support for the actual fish culture operations.

Phase I: Survey to Determine Requirements for Small-Scale Pond Expansion (Short-Term - 1 year)

44. An initial three months' consultancy will be required to determine the initial scope for small-scale fish farming in key geographical areas of rural Myanmar. This will include a thorough examination of the existence of possible cultural obstacles impeding small scale aquaculture, the local year-round availability of water and fish as well as the interest of small scale farmers and land holders in the introduction of small-scale fish farming. This survey needs to be undertaken by an expert thoroughly acquainted with the advantages and technical issues involved in small-scale fish farming, as well as their economics. He/she will be accompanied by a local expert able to advise on cultural matters. In addition to the survey, two m/m will be allocated for the preparation of Phase 2.

Phase II: Support for Pond Design and Creation (Short-Term – 1 year)

45. The proposed approach will provide targeted rural populations (those with appropriate land resources and low income levels) with assistance to create and manage small-scale productive aquaculture ponds. These could be new ponds or could comprise modifications to existing paddy fields, either as part of rice/fish cultivation or as a conversion to purely aquaculture operations.

46. The outcome of the scoping study will determine the feasibility and the size of the immediate follow-up activities. Three regional meetings are foreseen within Myanmar, organized by DOF in conjunction with NACA and/or the FAO Regional Office, to advise farmers interested in adopting small-scale fish ponds on water management, pond design and construction as well as

on the advantages of integrated fish farming. Two DOF staff will receive training in the S.E. Asian region in pond design and management.

47. Additionally, throughout the country, 50 demonstration fish ponds will be created free of charge. Extension service personnel will be trained and extension materials developed. DOF aquaculture field staff will also be trained to support and supervise extension staff activities. These staff will advise on the selection of suitable species, stocking densities, prevention and/or curing of diseases, and feeding. Support will be provided for the establishment of the DOF Small-Scale Aquaculture Field Unit. Training will also be provided to increase the technical skills of the private sector for an expanded fingerling production capacity.

Phase III: Government Support for Nationwide Integrated Small-Scale Fish Culture (Medium-Term – 4 years)

48. Approximately 50 demonstration ponds will be built in order to test appropriate technologies and provide local farmers with an opportunity for training and inspection visits to community operated facilities. Although it is foreseen that there will be considerable further demand for small fish ponds, it is not deemed wise from the sustainability point of view to continue to provide these free of charge. While the Department of Fisheries will facilitate the process, farmers will be encouraged to create ponds themselves through self-help or group activities, using local tractors. Funds will be provided to cover the costs of extension-service organized visits (some 600 over the four year period) to the demonstration facilities, and extension materials will be made available to community groups. Access to credit for the initial operation of the ponds could be used as an incentive. DOF will receive technical support for the coordination and implementation of this programme in the form of 8 m/m of consultancies from the S.E. Asian region. Additionally, a credit specialist will be made available to advise on the implementation of a credit scheme.

Outputs

49. Output of the initial project phase will be a report summarizing for the various regions of Myanmar the actual situation concerning the presence of small-scale fish ponds. In case such ponds are absent, results will be presented of a detailed investigation into the reasons for this absence. The report will also provide a detailed list of requirements relating to the immediate demand. Additionally, Phase II of the project will have been formulated in detail.

50. Under Phase II, which will also last approximately one year, the technical capability will be developed, both within DOF and within the private sector (fingerling production and, in some cases, pond excavation) for the establishment of small fish ponds and their operation, drawing heavily on experience elsewhere in the S.E. Asian region. Approximately 50 small fish ponds will be provided by the project, which will serve as technology testing sites and demonstration units for both extension staff and community groups. Extension capabilities will be enhanced, as well as providing technical support for fingerling production by private sector hatcheries.

51. Over the four year duration of Phase III, a considerable number of small fish ponds will be created and integrated into local farming systems. An initial estimate is for at least 500

small ponds to be developed by local communities and private groups during this period. Provided adequate levels of Government support for required staff are available, DOF is deemed capable of providing follow-up support for aquaculture management, through a specialist extension unit composed of existing aquaculture officers, coordinated by headquarters in Yangon and backed up by occasional support from consultants for technical matters and credit as well as by an evaluation of the extension capabilities.

Indicative Budget

52. Costs for the proposed project over three phases would be approximately US\$1.4 million, assuming that Government will contribute the required national staff for DOF operations, and that cooperation is received from the extension services. The cost of Phases I and II in the first year is approximately US\$700,000, with the same amount for support of community pond adoption in Years 2-5.

Indicative Budget (US\$)

Item	Short-Term (Year 1)	Medium-Term (Years 2-5)	Total
Phase I: Identification Survey and Project Design			
International Consultants (6 m/m)	90,000		
National Consultants (8 m/m)	15,000		
Travel and local costs	8,000		
Sub-Total	113,000		113,000
Phase II: Strengthening of National Pond Design and Implementation Capacity			
Regional consultants (4 m/m)	48,000		
Regional meetings in Myanmar	30,000		
Regional consultant to prepare training workshops/materials (4 months)	48,000		
International training in pond design and water management (2 persons)	20,000		
Workshops for extension staff (6)	30,000		
Training to increase private sector hatchery capacity (1 week)	20,000		
Creation of 50 nationwide demonstration fish ponds	150,000		
Preparation and production of extension materials for communities	25,000		
Vehicles (3) and operations costs	80,000		
Establishment of DOF Small-Scale Aquaculture Support Unit	60,000		
Sub-Total	511,000		511,000
Phase III: Government Support for Integrated Small-Scale Fish Culture			
Regional consultants (8 m/m)		96,000	
Credit specialist (2 m/m)		30,000	
Vehicle operations (3) for 4 years		90,000	
Training and demonstration visits for communities (150 per year x 4 yrs)		250,000	
Refresher training for extension and hatchery staff		50,000	
Additional training materials		24,000	
Incremental operating costs of support unit (4 yrs) and staff mobility		60,000	
Project evaluation		40,000	
Sub-Total		640,000	640,000
Contingencies (10%)	62,400	64,000	126,400
Total	686,400	704,000	1,390,400
NOTE: International consulting costs are estimated at US\$15,000 per month, including international travel and per diem. National consulting costs are estimated at US\$1,500 per month, including per diem. Local travel is normally calculated separately.			

TOTAL INDICATIVE SUB-SECTOR INVESTMENT COSTS

53. Below are summarised total indicative investment costs for the fisheries sub-sector, broken down by phasing. The majority of the US\$6.3 million total is expended in the short-term (US\$2.2 million) and in the medium-term (US\$2.8 million).

Profile	Short-Term (0-2 yrs)	Medium-Term (3-5 yrs)	Long-Term (6-10 yrs)	Total (US\$'000)
Institutional Strengthening of the Department of Fisheries	1,188.0	891.0	0	2,079.0
Support for the Transformation of Local Fisheries to Community-Based Management	250.8	1,226.5	1,342.0	2,819.3
Incorporation of Small-Scale Fish Ponds into Farming Systems in Myanmar	686.4	704.0	0	1,390.4
Total	2,152.2	2,821.5	1,342.0	6,315.7

5. AGRO-INDUSTRY INVESTMENT PROFILES

1. Four strategic priorities have been developed to investment profile level for the Agro-industry sub-sector, covering:

- Support to Policy Analysis and Reform (US\$1.1 million);
- Support to Institutional reform in the SOE Sector(US\$0.9 million);
- Support to Private Sector Agribusiness Network Development (US\$8.2 million); and
- Small-Scale Agricultural Mechanization (US\$1.2 million).

Three of the investment profiles extend over both the short and medium-term, with an approximate duration of 5 years. The remaining profile (Policy Analysis and Reform) covers only the short and medium-term.

PROFILE 1: SUPPORT TO POLICY ANALYSIS AND POLICY REFORM

Background and Rationale

2. Creating greater revenues for the agricultural sector through adding value to agricultural production and rural industrialization offers great potential as a strategy for rural income growth and poverty reduction in Myanmar, but will require enormous investment and take considerable time and effort to achieve. The constraints are of staggering complexity: the presence of a large population in rural areas characterized by widespread poverty; the low productivity of agricultural labour; the low level of infrastructure development; poorly integrated markets; poorly functioning factor markets for inputs such as land and credit; and an underdeveloped rural industry characterized by a dichotomy between micro enterprises and large (usually State-owned) enterprises. These constraints are aggravated by a still incomplete process of liberalization in the transition from a centrally-planned to a market-oriented system.

3. A greatly strengthened capacity in policy formulation, investment allocation, and institutional development will be required to implement such a strategy. The core need is to lower the barriers to smallholder farmers and small-scale enterprises participating in these changes and benefiting from them. Improved infrastructure, appropriate research and extension, access to land and credit markets, information, support to institutional building (market information systems, standards and grades, trade associations) are all important.

4. The complexity of agricultural diversification and rural industrialization strategy in Myanmar entails policies and measures that affect not only agriculture but also several other aspects of rural society including infrastructure, credit, health, education, and rural institutions. Within the context of a market economy, rural development is not directed from above, as in the former centrally managed system. The state, however, still has an important role to play in providing public goods in which the private sector does not have incentive to invest and in facilitating the creation of market institutions such as voluntary business associations and

cooperatives. This process entails an enormous amount of information gathering, processing, and evaluation. Currently, in Myanmar, many line ministries provide this information function, often in an uncoordinated manner and sometimes without appropriate technical expertise. Currently, policy design and implementation are often conducted without adequate monitoring of impacts and without the support of analytical tools that could improve the decision and implementation process.

Objectives

5. The proposed investment strategy involves the creation of a policy analysis and advice unit within MOAI (probably under DAP), the creation of a series of diagnostic tools for policy analysis and commodity forecasting, within the context of an overall sector strategy, and the building of capacity within that unit for policy analysis, modelling and policy advice.

6. The policy analysis unit is designed to deliver high quality policy advice on sectoral and commodity issues to the Minister of Agriculture and Irrigation and the Minister of Livestock Breeding and Fisheries on a regular basis. The policy analysis unit would be engaged in (but not limited to) the following activities:

- (i) writing reports, reviews and general assessments of sectoral issues and commodities;
- (ii) consulting services and commodity and policy advice provision to the Minister of Agriculture and Irrigation and the Minister of Livestock and Fisheries;
- (iii) issuing sectoral and commodity analyses and forecasts;
- (iv) collecting information on the general agricultural sector and commodities, and the establishment of commodity information database in conjunction with the MIS under DAP; and
- (v) developing and maintaining agricultural economic policy models and econometric models of specific agricultural commodities.

Principal Components

7. The project will be implemented over 3 years, depending on the level of capacity building required, and as determined by the training needs assessment exercise carried out in the initial project stages. The support package involves six interrelated components⁴⁵:

- (i) The establishment of a policy analysis unit within MOAI (probably under DAP), including budgetary provision for personnel (10 staff), equipment and consumables.

⁴⁵ Although not included as an integral component, consideration should be given to designing an appropriate monitoring and evaluation system.

- (ii) A training needs assessment study carried out with MOAI staff to tailor a specific capacity building programme to the needs of the MOAI in general and the policy analysis unit in particular.
- (iii) The development of a multi-market model of agricultural commodities for Myanmar (e.g. rice, oilcrops, pulses and beans, livestock, forestry products, fruits and vegetables, and industrial crops⁴⁶).
- (iv) The placement of an international advisor within the policy analysis unit for a period of 3 years to assist the unit in undertaking high level analysis for agricultural commodities.
- (v) The provision of short-term (4 week) capacity building programmes in policy modelling techniques to assist the unit in undertaking high level analysis for agricultural commodities. These programmes (approximately 4 in total) will strengthen capacity in multi-market modelling as well as other economic and econometric modelling techniques. The international advisor would be assisted by specialist international experts in the appropriate fields.
- (vi) The establishment of a regular workshop series and publications designed to promote the activities of the policy analysis unit and obtain feedback from various stakeholders (government, private sector) on the desired policy questions to be analyzed.

8. These components will be phased in four phases lasting three years. During the course of the project the activities of the policy analysis unit would be assisted by an international advisor.

9. In Phase I (3 months) the policy analysis unit would be created, including the assignment of relevant, skilled personnel from DAP and other departments from within MOAI, MLBF and other government ministries. The recruitment of new government staff with the appropriate technical skills may be considered in consultation with MOAI and MOLF. Approximately 10 professional staff should be recruited as the main commodity analysts. Appropriate levels of resources, including infrastructure, equipment and software, will be provided; as determined by the initial project design document. An initial training needs assessment will be carried out to determine priorities for training and capacity building.

10. In Phase II (6 months) the policy analysis unit will be engaged in the major undertaking of developing a multi-market model of agricultural commodities for Myanmar. This will involve at least 2 international experts, 2 national experts, and the policy analysis unit staff in collecting and collating the data necessary to build and calibrate the model. Extensive surveys of commodity systems are envisaged to provide the relevant and accurate data required. Consideration should be given to the use of external (private sector) survey teams with relevant experience and expertise.

⁴⁶ A fisheries model could be built separately.

11. In Phase III (10 months) the policy analysis unit will be involved in four short-term capacity strengthening programmes designed to upgrade the skills of the staff and expose them to the latest commodity modelling techniques and market forecasting tools and techniques. Each capacity strengthening programme will be conducted by one international expert in the appropriate field, with the assistance of the international advisor and policy unit staff.

- (i) The first short-term capacity strengthening programme would be a four week training course in economic modelling theory and practice, with an emphasis on agricultural commodity modelling. The course content would be specifically targeted at the economic modelling skills and techniques needed to build, modify and use market forecasting models. Staff would be trained on the use of STATA in statistical analysis and econometric forecasting.
- (ii) The second short-term capacity strengthening programme would involve a four week training course on multi-market modelling using GAMS. This course would be specifically targeted at training staff in developing and maintaining the multi-market model developed in Phase II.
- (iii) The third short-term capacity strengthening programme would involve a four week training course on econometric modelling and the use of STATA in statistical analysis. This course is specifically designed as an advanced course building on the theory and methodology introduced in the first short-term capacity building programme.
- (iv) The final short-term capacity strengthening programme would involve a four week training course in the economics of international integration, with a particular focus on the economics of agricultural commodity trade under trade liberalization. This will strengthen the capacity of the policy analysis unit to analyze the impact of trade liberalization, WTO and AFTA on Myanmar's agricultural sector.

12. In-between the training courses the policy unit staff will be involved in their core activities of research, providing commodity policy advice, and conducting workshops and seminars to disseminate results of their research.

13. In Phase IV (17 months) the policy analysis unit will be involved in their core activities of research, providing commodity policy advice and conducting workshops and seminars to disseminate results of their research. Assisted by the international adviser the unit would build on the skills and techniques developed in the first 3 phases of the activity and applying these techniques to practical modelling simulations and further developing practical skills through intensive exposure to actual modelling situations. As needed, additional training courses and capacity building exercises could be scheduled to meet the needs of the staff. Ideally, the support activities proposed will enable the policy analysis unit to continue beyond the term of this project without further external assistance.

Outputs

14. Key outputs would include the following:
- (i) a core group of agricultural commodity professionals fully able to utilize economic models and other techniques for commodity analysis and being able to provide accurate and high quality advice to government and the private sector;
 - (ii) provision of agricultural commodity information and policy advice to government and the private sector;
 - (iii) a multi-market model of agricultural commodities in Myanmar, enabling government to access accurate, high quality and timely advice on policy questions of relevance to the government and the private sector;
 - (iv) workshops, seminars and a publication series disseminating information on commodity analysis, forecasting and policy advice to government and the private sector; and
 - (v) establishment of an agricultural commodity database in conjunction with the MIS.

Indicative Costs

15. Costs for this proposed investment would be approximately US\$1 million over 3 years. An indicative budget is shown below.

Summary Indicative Budget for Support to Policy Reform Project

Item	Sub-Item	Budget Amount (US\$)			
		Year 1	Year 2	Year 3	Total
International Experts	Long-Term Advisor	130,000	130,000	130,000	390,000
	International Expert 1 (Multi-Market Model)	105,000			105,000
	International Expert 2 (Multi-Market Model)	105,000			105,000
	International Expert 3 (Short Course)		20,000		20,000
	International Expert 4 (Short Course)		20,000		20,000
	International Expert 5 (Short Course)		20,000		20,000
	International Expert 6 (Short Course)		20,000		20,000
National Experts	National Expert 1 (Multi-Market Model)	30,000			30,000
	National Expert 2 (Multi-Market Model)	30,000			30,000
Model Development and Maintenance	Survey and Data Collection, Database Management and Associated Costs	60,000	15,000	15,000	90,000
Short-Term Capacity Building	Training Supplies and Teaching Materials		8,000		8,000
Transport	Vehicle purchase (2) and operations	50,000	10,000	10,000	
Office Equipment	10 Computers, Associated Peripherals, Software, Consumables	60,000	6,000	6,000	72,000
Office Overheads	Infrastructure and Equipment	10,000	5,000	5,000	20,000
Workshops, Seminars and Publications	Workshop and Printing Costs	5,000	5,000	5,000	15,000
Travel	Travel and Associated Costs for Policy Unit Staff	5,000	5,000	5,000	15,000
Contingency	(10% of Total Costs)	59,000	26,400	17,600	103,000
Total		649,000	290,400	193,600	1,133,000

Employment costs valued at total package costs (Honorarium, travel, accommodation etc).

PROFILE 2: SUPPORT TO INSTITUTIONAL REFORM IN THE SOE SECTOR

Background and Rationale

16. Creating greater revenues for the agricultural sector through adding value to agricultural production and rural industrialization offers great potential as a strategy for rural income growth and poverty reduction in Myanmar, but will require enormous investment and take considerable time and effort to achieve. The constraints are of staggering complexity: the presence of a large population in rural areas characterized by widespread poverty; the low productivity of agricultural labour; the low level of infrastructure development; poorly integrated markets; poorly functioning factor markets for inputs such as land and credit; and an underdeveloped rural industry characterized by a dichotomy between micro enterprises and large (usually State-owned) enterprises. These constraints are aggravated by a still incomplete process of liberalization in the transition from a centrally-planned to a market-oriented system.

17. To make this process a reality, a key requirement will be to promote investments or mechanisms to facilitate the participation of smallholder farmers and small-scale enterprises in the market. Improved infrastructure, appropriate research and extension, access to land and credit markets, information, support to institutional building (market information systems, standards and grades, trade associations) are all different ways to lower transaction costs. Equally importantly, policies and legislation must be in place to ensure equal access for all under and open and competitive environment.

18. The current status and operations of State Economic Enterprises (SEEs, generally known as State Owned Enterprises or SOEs) within the agricultural sector form an impediment to both of these requirements. By consuming large quantities of public resources to subsidize loss making operations, the SOEs reduce the amount of investment capital available for other purposes⁴⁷. Through their largely non-competitive presence in the market, they reduce opportunities for non-subsidized enterprises and distort marketing and supply patterns.

19. Including banks, there are currently 6 SOEs under MOAI: Myanmar Farm Enterprise (MFE); Myanmar Cotton and Sericulture Enterprise (MCSE); Myanmar Sugarcane Enterprise (MSE); Myanmar Jute Industries (MJI); Myanmar Perennial Crop Enterprise (MPCE); and Myanmar Agricultural Development Bank (MADB). Under MLBF there are 2 SOEs: Livestock Feed and Milk Products Enterprise (LFMPE) and the Livestock and Fisheries Development Bank (LFDB)⁴⁸. Each of these enterprises faces their own particular constraints and opportunities, limited budgets, inefficient management, and lack of access to both inputs and output markets.

20. Due to the restrictions that these entities work under – in terms of pricing, capital investment and business planning – they suffer major losses in operations and have a significant distortionary impact on the market for the commodities in which they deal. Low government procurement prices for raw material inputs have left SOEs struggling to operate plants at more than 50 percent utilization rates. In some SOE plants processing cotton, for example, utilization rates are under 4 percent. In the private sector capacity utilization rates are higher, but still less than economical in the long run.

Objectives

21. A diagnostic study and financial audit of all SOEs under MOAI and MLBF, with the exception of MADB and LFDB⁴⁹, should be carried out in order to allow policy makers to make fully informed decisions regarding these SOEs' future operations. It should be noted that the diagnostic study and financial audit is not a punitive exercise, and the purpose is to generate constructive recommendations for future operations. Once a diagnostic study and financial audit has been completed a reform or restructuring plan for SOEs can be designed and implemented, including the development of individual business plans and management capacity strengthening for any SOE retained within government control.

22. The diagnostic study and financial audit should cover the areas of governance, strategic planning, organizational structure, human resources management, pricing policies and procedures, purchasing and selling policies and procedures, products and demand, compliance

⁴⁷ For 1999/00 non-mineral natural resource sector SOEs (e.g. agriculture, livestock, fisheries and forestry) received over US\$10 million in capital allocations and suffered over US\$50 million in trading losses. See Volume 1, Section F.

⁴⁸ There is some debate as to whether LFDB should be classified as an SOE under MOLF. LFDB themselves claim to be a "privately owned" bank, however, with the board of directors being drawn from the government sector, their banking operations not being subject to the same regulations as other private banks, and two centrally initiated development programmes initiated in 2003, it is arguable as to whether they are truly a private sector bank.

⁴⁹ It is noted that a separate diagnostic study and financial audit of MADB has already been proposed under the Rural Financial Services sub-sector strategy.

review, financial and accounting systems, management information systems, and financial analysis. The financial audit should be conducted to international accounting standards in order to gain an accurate representation of the individual SOE's financial situation. Full market costing of inputs and outputs, including depreciation of assets should be used. International donor support will be necessary for the diagnostic study and audit of each SOE.

23. The objectives of the project would be to:
- (i) provide the government, MOAI, MLBF and SOE management with a thorough understanding of the particular SOE's current operations, policies, and financial situation;
 - (ii) assess the consequences in terms of the particular SOE's financial sustainability and contribution to achieving the Government's economic objectives;
 - (iii) compare the particular SOE's operations and policies with international best practices; and
 - (iv) make recommendations on a set of institutional and policy reforms to transform the particular SOE into a financially self-sustainable, market-orientated enterprise, either still under government ownership or as a privatized enterprise.

Principal Components

24. It is proposed that the diagnostic study for each SOE under MOAI and MLBF would take place over one year and include the following⁵⁰:

- (i) review of the organizational structure and governance of the SOE, its level of autonomy and decision-making procedures, and its business practices, pricing policies, and business culture;
- (ii) review of the SOE's operating systems and procedures, including accounting policies and practices that have a significant bearing on its operations and financial health;
- (iii) assess the situation of supply and demand for SOE inputs and outputs, determine the constraints and opportunities for SOE operations and products;
- (iv) assess the financial performance of the SOE, including an analysis of its cost structure and the implications for financial viability;
- (v) identify the major problems of the SOE concerning governance, autonomy, organizational structure, business culture and practices, operating systems and procedures, accounting policies and practices, management information systems, risk management systems, and staff incentives, motivation, and skills;

⁵⁰ Although not included as an integral component, consideration should be given to designing an appropriate monitoring and evaluation system.

- (vi) formulate, in consultation with the SOE, Ministry of Agriculture and Irrigation, Ministry of Livestock and Fisheries and the Ministry of Finance, a comprehensive reform programme to address the identified issues with a view to transforming the SOE into a viable institution, including an evaluation of the options for continued operations as an SOE or privatization; and
- (vii) define the Terms of Reference to assist the SOE with the introduction of a corporate planning process that will set out the SOE's mission, business conduct, strategies, operational policies, and detailed action plans for the agreed reform programme.

25. Parallel to the diagnostic study, the project would also conduct an external financial audit of each SOE under international accounting standards (IAS) for the financial statements of the previous two years. In accordance with IAS, the audit will examine the financial statements of the SOE and express an opinion on any material items that vary from IAS. The audit will also examine the SOE's accounting policies and procedures and submit to the SOE's management a statement of recommended modifications.

26. Based on the results of the diagnostic study and financial audit, a restructuring plan will be prepared in relation to the areas studied under the diagnostic. The restructuring plan will include cost estimates for its implementation, recommendations regarding external assistance to assist the SOE to implement it, and recommendations on staff training to accompany the restructuring.

27. MOAI would be the main Government counterpart in the project and contribute staff to assist the consulting team in carrying out project activities. The consulting team will consist of 3 international experts, 6 senior national experts, and 6 junior national experts. Each of the national experts (1 senior and 1 junior) would be responsible for the diagnostic study of 1 SOE, under the guidance of an international expert, who would be responsible for 2 SOEs.

Outputs

28. Key outputs would include the following:
- (i) Diagnostic papers on each SOEs:
 - (a) governance;
 - (b) strategic planning;
 - (c) organizational structure;
 - (d) human resources management;
 - (e) pricing policies and procedures;
 - (f) risk management policies and procedures;
 - (g) inputs and supply;
 - (h) products and demand;
 - (i) financial and accounting systems;
 - (j) management information systems; and
 - (k) financial analysis.

- (ii) Financial audit report and management letter; and
- (iii) SOE restructuring plan.

Indicative Costs

29. Costs for this one year investment would be approximately US\$950,000. An indicative budget is shown below.

Summary Indicative Budget for Support to SOE Reform Project

Item	Sub-Item	Budget Amount (US\$)
Myanmar Farm Enterprise (MFE)	International Expert 1	52,000
	Senior National Expert 1	15,000
	Junior National Expert 1	10,000
Myanmar Cotton and Sericulture Enterprise (MCSE)	International Expert 1	52,000
	Senior National Expert 2	15,000
	Junior National Expert 2	10,000
Myanmar Sugarcane Enterprise (MSE)	International Expert 2	52,000
	Senior National Expert 3	15,000
	Junior National Expert 3	10,000
Myanmar Jute Industries (MJI)	International Expert 2	52,000
	Senior National Expert 4	15,000
	Junior National Expert 4	10,000
Myanmar Perennial Crop Enterprise (MPCE)	International Expert 3	52,000
	Senior National Expert 5	15,000
	Junior National Expert 5	10,000
Livestock Feed and Milk Products Enterprise (LFME)	International Expert 3	52,000
	Senior National Expert 6	15,000
	Junior National Expert 6	10,000
Financial Audit	International Financial Expert 1	105,000
	International Financial Expert 2	105,000
	National Financial Expert 1	30,000
	National Financial Expert 2	30,000
Office Equipment	Computers, Associated Peripherals, Software, Consumables	50,000
Office Overheads	Infrastructure and Equipment	10,000
Workshops and Publications	Workshop and Printing Costs	10,000
Domestic Travel	Travel and Associated Costs for Diagnostic and Audit Teams	25,000
Contingency	(10% of Total Costs)	80,200
Total		907,200
Employment costs valued at total package costs (Honorarium, travel, accommodation etc).		

PROFILE 3: SUPPORT TO PRIVATE SECTOR AGRIBUSINESS NETWORK DEVELOPMENT

Background and Rationale

30. A large proportion of the resources devoted to meeting the demand for agricultural products in Myanmar have been spent to improve production technology and productivity. Much less attention has been devoted to the chain through which agricultural commodities and products reach final consumers within the country and abroad. This neglect is particularly serious given the enormous value added produced along the processing and marketing chain between producers and consumers. Moreover, if this agribusiness chain does not function properly, investment in production becomes more costly and more risky, and ends up being wasted.

31. Over the past two decades, global changes in the agro-food industry have affected agriculture dramatically. As the structure of the industry has become more concentrated, demand patterns have shifted towards higher value added products, and supermarkets are increasingly the major actors in the farmer to consumer chain. Yet, in Myanmar, post-harvest systems and agro-industry are still largely characterized by a dichotomy between a multitude of small enterprises, often household businesses with little capital, limited access to modern technology, and poor integration with urban and international markets, and a few large SOEs often inefficient and not well prepared to face the competition from global agro-industry. Under the process of globalization, both small enterprises and SOEs are put under pressure by the entry of large domestic and international agribusinesses.

32. The impacts of agro-industry globalization on rural livelihoods and small enterprises remain unclear. However, there are indications that globalization is compatible with a broad-based approach to agro-industrial development. A broad-based approach implies a balanced structure of expanding small, medium, and large enterprises that can capture different scale economies, niche markets, linkages with urban and international markets, and intra-industry linkages. Institutional arrangements such as contracts between smallholders and large enterprises, farmers and trade associations, and supply chain networks offer promising avenues for reaping the benefits of a dynamic global agro-industry.

33. The link between agricultural and rural development has been already recognized by the government of Myanmar and is embedded in policy guidelines, decisions, and programmes. One major challenge in the future will be to effectively promote these linkages in a financially sustainable way. That will require the participation of all stakeholders (rural households, private corporate sector, SOEs, NGOs, and civil service) in order to ensure better coordination. The state can facilitate this process, but cannot expect to do better than the private sector in the conduct of business.

34. Effective participation has to be based on incentives of different stakeholders to contribute to meeting the challenges ahead. The system of incentives largely depends on prices in a market system. However, there are also important incentives deriving from improving governance, transparency, and the accountability of different stakeholders. Whenever these other incentives are neglected, then even the market mechanism will not operate efficiently.

35. In terms of private sector constraints, it is noted that there are currently few examples of partnerships and linkages between different levels of the agribusiness chain and within each level (vertical and horizontal integration). Contractual arrangements between farmers, traders and processors are virtually non-existent, and will fail to develop unless participants see real benefits from establishing long-term relationships. The evidence from other countries, both developed and developing, indicates that opportunities exist for the poor to develop such linkages, as long as producers can be organized into effective marketing groups. The challenge is to find out ways of implementing the creation of trust, partnerships and linkages to form value chains for agricultural products in Myanmar.

36. Even with the formation of such arrangements, the private sector in Myanmar will find it difficult to generate increased investment within the sector. In part there are serious constraints to the availability of credit, most particularly in the current environment facing the financial sector in Myanmar. There are also significant restrictions on the ability of the private sector to mobilize Foreign Direct Investment (FDI). Not only is the investment climate in Myanmar ill-suited to attract foreign investors, but rules and regulations are non-transparent or actively a hindrance to FDI.

Objectives

37. The objective of the proposed investment strategy is to increase the degree of linkage between producers, traders and processors in Myanmar, and hence the efficiency of the production, processing and supply network, by promoting the development of a network of well-functioning agribusiness chains that are competitive and innovative. Initially, it is proposed that the feasibility and sustainability of this approach be demonstrated and tested in one pilot region of Myanmar, in a sustainable manner.

38. There are several characteristics of the investment strategy:

- (i) The investment strategy recognizes the key role of agribusiness networks in the emergence and development of well-functioning agricultural value chains and provides institutional mechanisms through which producers, processors, traders and related service providers can effectively link to form mutually beneficial partnerships and alliances.
- (ii) The investment strategy proposes methods for sharing information through improved marketing information services. Sharing information, however, is not going to be translated into higher incomes and more effective services unless complemented by other mechanisms that give stakeholders the means to make investment decisions needed to move to higher levels of commercialization. Demand-driven investments will improve the efficiency of allocation of scarce public resources. The formulation, approval and implementation of demand-driven investments will also contribute to the development of alliances and partnerships between stakeholders and service providers.
- (iii) The investment strategy builds and strengthens the existing capacity of service providers to facilitate the development of commercial agriculture. Improved

capacity of service providers facilitates the development of commercial agriculture in two ways: by directly providing better services to currently well-organized commercial stakeholders and by mobilizing and organizing currently loosely-organized farmer groups operating at a low-level of commercialization.

Principal Components

39. The project would be implemented in one region of Myanmar, encompassing 11-12 districts, over a period of 5 years. It would comprise five principal components⁵¹:

- (i) The formation of a Commercial Agriculture Network (CAN) to facilitate exchange of information between key stakeholders (producers, traders and processors) and service providers at district and regional levels.
- (ii) The formation of a Commercial Agriculture Alliance (CAA) with a properly constituted Board and the formation of a Commercial Agriculture Fund (CAF) to provide a co-financing mechanism for different types of key stakeholders (producers, traders and processors) to work together by formulating and selecting investments that improve the efficiency of the production/processing/marketing system. Qualifying services or investment programmes would not normally be financed by a bank, even to borrowers with substantial collateral, good credit ratings and proven commercial track records. These investments in services or infrastructure would either (a) benefit more than one party by their direct implementation; or (b) being risky and innovative in nature, will if successful, probably stimulate imitation by other parties, thus helping to move the commercialization of the agricultural sector upwards to a higher general level. They are 'promotional' or 'developmental' investments or programmes, and the CAF co-financing will accordingly be in grant form.
- (iii) The Strengthening of the existing Agriculture Market Information Service (AMIS) to provide a strongly needed service to stakeholders involved in commercial agriculture. This service will expand the AMIS role from just providing market information on prices to a limited audience, to include information specifically required by commercial agriculture and agro-industry on a much wider scale.
- (iv) Support for the creation and strengthening of small farmer marketing groups (SMGs) which would participate in the CAA and have the capacity to enter into supply arrangements with processors and other marketing system participants. Group formation would also improve access to market information. Particular attention would be given to working with disadvantaged groups (e.g. female headed households) which have already received support from NGOs and others in group formation.

⁵¹ Although not included as an integral component, consideration should be given to designing an appropriate monitoring and evaluation system.

- (v) The formation of the Institutional Capacity Development for Commercial Agriculture (ICDCA) component to strengthen the capacity of service providers to adequately respond to the needs of commercial agriculture. This could include skills in such areas as supply-processor liaison, marketing extension, planning and managing supply chain infrastructure, investment proposal and business plan preparation, and female entrepreneurship.

40. Different components of the investment strategy address market failures related to the formation of commercial organizations, provision of information, and investment in new technology and infrastructure. The CAN, the CAA and the SMG components address the failure of diverse commercial stakeholders to organize themselves into larger units and to establish mutually beneficial relationships; the AMIS and ICDCA addresses the failure of supplying and disseminating information to improve production and marketing. The CAF and its managing Board address the failure of investing in new technologies and infrastructure providing public good benefits.

Outputs

41. The key outputs of the project would include the following:

- (i) **Commercial Agriculture Network (CAN):** Comprising a database on network members; bi-monthly bulletins distributed to all network members; women agro-entrepreneurship news; semi-annual workshops; a CAN website – all providing support for the formation of partnerships among members of the network.
- (ii) **Commercial Agriculture Alliance (CAA):** Demand-driven co-financed investment related to infrastructure, technology, marketing, information, and capacity development. The table below presents some examples of each category, for illustrative purposes only.

Category of Proposal	Example of Proposals
Technology	Development and testing of a farm-level cool storage unit for vegetables Development and testing of early maturing varieties of pulses and beans Development and testing of new packaging material Provision of expertise to upgrade processing practices and processed-product quality for fruits and vegetables
Infrastructure	Specification and construction of a produce collection centre for farmers Specification, construction and training to use small irrigation system including channels and drip/sprinkler irrigation Upgrading of an access road to agricultural supply area
Marketing and Information	Feasibility study for investment in palm oil Development of facilities and know how for testing and grading various agricultural products, e.g. animal feed ingredients
Capacity and Training	Advisory and training services to strengthen the capacity of a traders' association to specify grading standards for purchasing produce and to arrange services testing such standards Extension and training programmes for farmers in farm management Training in quality assurance systems

- (iii) **Agriculture Market Information Service (AMIS):** Radio broadcasting of marketing information, database of price, trade and production data that can be accessed via Internet, and enhanced capacity to collect and interpret data.
- (iv) **Small Farmer Marketing groups (SMGs):** Approximately 20 groups (with on average about 20 farmers per group) will be targeted per District each year (total of 1,100 groups over 5 years). These groups will be selected from those: (a) already involved in commercial agriculture; and (b) with a large component of women, poor and disadvantaged ethnic groups.
- (v) **Institutional Capacity Development for Commercial Agriculture (ICDCA):** Training courses, action research projects and study tours. Each trainee will be required to conduct an action research project together with commercial stakeholders. The action research will provide a practical testing of what has been learned during training and the opportunity of making an actual contribution to the project beneficiaries.

42. The project would be developed in one pilot region in Myanmar, over a period of 5 years.

Indicative Costs

43. Costs for this project would be approximately US\$8.25 million over 5 years, with a considerable part of that cost be accounted for by the investment fund. An indicative budget is shown below.

Summary Indicative Budget for Support to Private Sector Agribusiness Network Development

Item	Budget Amount (US\$)
Commercial Agricultural Network	240,000
Commercial Agricultural Alliance/ Commercial Agricultural Fund	5,000,000
Agricultural Market Information System	500,000
Small Farmer Marketing Groups	750,000
Institutional Capacity Building	500,000
Project Management	500,000
Contingency (10% of Total Costs)	750,000
Total Cost	8,240,000

PROFILE 4: SUPPORT TO SMALL SCALE AGRICULTURAL MECHANIZATION

Background and Rationale

44. While mechanization of agriculture is still extremely limited, most smallholder farms are able to utilize draft power to meet their tillage requirements. However, significant underutilization of land, both in terms of cropping intensity and extensification, is in part due to the lack of mechanization. This is particularly the case with households with land holdings over

2 ha in size, where double oxen draft power is not sufficient to till the whole land holding. This in turn has significant implications since the 1992/93 Agricultural Census estimates that the average farm size is 2.5 ha and 46 percent of farmers out of a total of 2.72 million agricultural land holdings have more than 2 ha; occupying 79 percent of cultivated land.

45. Considering that some 21-24 percent of cultivated land is covered by machinery (around 3.18 million acres), even if in the short to medium-term only a modest additional 10 percent of farmers were able to effectively and efficiently use mechanization, and only an additional 10 percent of cultivated land was suitable for mechanized tillage services using power tillers and reapers, this would equate to some 270,000 households, and 1.55 million acres of land. Considering domestic SOE manufacturing capacity for agricultural machinery is only some 21,000 machines per year, it would take nearly 13 years of production for the SOE factories to satisfy this additional potential demand. There is considerable scope for increased sales of agricultural machinery to farmers for their own crop production, for cooperative groups or for private sector contract services.

46. Among the small scale machinery categories in which there is considered to be potential for significantly increasing productivity, can be mentioned 2-wheel cultivators, simple seed drills, water pumps, post-hole auger/digger, fertilizer spreaders, reaper attachments, and cart attachments for transportation.

47. The current absence of an effectively functioning rural finance system is, however, a considerable obstacle to increasing demand for small-scale agricultural machinery, and alternative financing methods such as hire-purchase through suppliers would probably be required in the short to medium-term in order to facilitate investment in such machinery.

Objectives

48. The objective of the proposed strategy is to increase the level of small-scale mechanization in agriculture by providing support to the private sector in investment in machinery hire and purchase.

Principal Components

49. The proposed strategy involves firstly the restructuring of the AMD and the devolving of its responsibilities for contract machinery operations to the private sector. Unless AMD stops subsidizing its contract machinery operations by only charging for operating costs, there is limited chance that the private sector will be able to expand their own contract machinery operations. Secondly, the strategy increases support to private sector operations. The proposed strategy has several interlinked components⁵²:

⁵² Although not included as an integral component, consideration should be given to designing an appropriate monitoring and evaluation system.

Phase I: (Short-Term - 9 months)

- (i) Review of options for divestiture of AMD machinery manufacturing operations and commercial contract machinery activities provided through the 100 tractor stations.
- (ii) Review of existing legislation, regulations and practices governing agricultural machinery and fuel importing.
- (iii) Following consultations with Government and the private sector, an implementation plan would be drawn up for the approved approaches in these areas.

Phase II: (Short-Term - 6 months)

- (i) Preparation of restructuring proposals and plans for AMD operations to create a focus on monitoring and regulation of the sub-sector and the provision of training and support functions to small-scale far mechanization and mechanization service providers and design of a pilot implementation programme for mechanization support.

Phase III: (Medium-Term - 2 years)

- (i) Implementation of AMD restructuring proposals, including staff training, development of extension materials, preparation of field training courses for machinery owners and mechanization service providers, and establishment of monitoring systems.
- (ii) Establishment of a pilot programme to provide small-scale machinery (power tillers, seed drills, pumps and ancillary equipment) to private sector enterprises, farmers or cooperative groups on a hire-purchase basis, and provide associated training to participants in machinery operations and business management. Training and technical assistance would also be provided to small-scale machinery and parts manufacturers.

50. MOAI would be the main Government counterpart in the project and contribute staff to assist the consulting team in carrying out project activities.

Outputs

51. The key outputs of the project would include the following:

- (i) Approved proposals and an action plan for the divestiture of AMD manufacturing and contract machinery activities and for modifications to existing import procedures and regulations for agricultural machinery, fuel, lubricants and spare parts.

- (ii) Approved restructuring plan for AMD focusing on a monitoring and regulatory role and support to agricultural machinery training.
- (iii) A restructured AMD with a strengthened capacity to support and monitor private sector machinery manufacture and utilization, including training programmes in financial/business management and machinery maintenance.
- (iv) A pilot programme in 12 townships in three regions to support private sector agricultural machinery contract operations and hire-purchase plans.

Indicative Costs

52. Total indicative cost for this project would be in the region of US\$1 million, with approximately US\$130,000 for Phases 1 and II and US\$850,000 for Phase III.

Summary Indicative Budget for Support to Agricultural Machinery Usage Project

Item	Sub-Item	Budget Amount (US\$)
Phases 1 and II: Review and implementation plan for AMD restructuring and modifications to import regulations	International Expert (4 months)	60,000
	Senior National Experts (12 months)	18,000
	Junior National Experts (12 months)	10,000
	Workshops and Reports	14,000
	Internal Travel	6,000
	Contingency (10%)	10,800
	Total	118,800
Phase III: Restructuring of AMD and implementation of pilot mechanization support programme	International Technical Assistance (6 months)	90,000
	National Technical Assistance (15 months)	22,500
	Field Training Module Development & Publications	15,000
	Training for AMD Monitoring/Regulation	15,000
	Capacity Development	500,000
	Revolving agricultural machinery HP fund	150,000
	Equipment (computers, copiers, vehicles etc.)	120,000
	Field Operations Expenses (\$10,000 per District)	20,000
	Supplies	75,000
	Contingency (10%)	100,750
Total	1,108,250	
Programme Total		1,227,050
Employment costs valued at total package costs (Honorarium, travel, accommodation etc).		

TOTAL INDICATIVE SUB-SECTOR INVESTMENT COSTS

53. Total profile costs for proposed agro-industrial development investments are summarised in the table below.

Investment Proposal	Short-Term Year 1-2	Medium-Term Year 3-5	Total
1. Support to Policy Analysis and Policy Reform	939,400	193,600	1,133,000
2. Support to Institutional Reform in the SOE Sector	907,200		907,200
3. Support to Private Sector Marketing and Agro-industry Development		8,240,000	8,240,000
4. Support to Small Scale Agricultural Mechanization	118,800	1,108,250	1,227,050
Total	1,965,400	9,541,850	11,507,250

6. IRRIGATION AND WATER RESOURCE MANAGEMENT INVESTMENT PROFILES

1. Four strategic priorities have been developed to investment profile level for the Irrigation and Water Resources Management sub-sector, covering:

- Irrigation Management Policy Development (US\$1.8 million);
- Irrigation Modernization and Expansion Programme (US\$121 million);
- Small-Scale Irrigation and Water Management Programme (US\$64 million); and
- Capacity Building in Irrigation and Water resources Management (US\$2.5 million).

Two of the profiles comprise short, medium and long-term phases, while the Capacity Building profile covers only short and medium-term, and the Policy Development profile is short-term only.

PROFILE 1: IRRIGATION MANAGEMENT POLICY DEVELOPMENT

Background and Rationale

2. All formal irrigation schemes in Myanmar are developed and managed by government staff in a top-down manner. Responsibility for the operation, maintenance and management of dam- and river diversion-based systems is firmly vested to the Irrigation Department (ID). The Water Resource Utilization Department (WRUD) is charged with the management of river or groundwater pumping schemes. Although farmers are expected to carry out maintenance works of watercourses, results are disappointing and many canals are in a poor state. The Irrigation Department is involved in the formation of “Canal and Village Committees”; however water user adherence to and acceptance of such groups is limited.

3. ID allocates some MYK 4,000 million (US\$4 million) in order to operate and maintain irrigation systems. The budget allocation for gravity-based irrigation is about MYK 1,000/ha/year (US\$1.0/ha/year), which is clearly insufficient. The financial contribution of farmers is area-based, providing no incentive to use water economically. The amounts payable show considerable variation depending on the type of schemes, crops grown and season. The Irrigation Department charges a flat rate of MYK 10/acre/year and MYK 5/acre for flood protected land.

4. Current cropping planning procedures are based on plans derived from the National Project, which are then translated into the reality on existing irrigation systems irrespective of constraints that may render the cropping patterns impractical. There are numerous examples where the cropping patterns are unsuitable for an existing irrigation system. A typical example is the Kinda irrigation project. The system is designed for the irrigation of mainly dry season crops

such as cotton, sesame and chilli. In the original design the assumed portion of summer paddy was only 5%, much lower than levels now required under the National project. Irrigation requirements, and the dimensions of the canal network, were therefore based on a specific irrigation requirement of 1.5 l/s/ha, far lower than is needed under the mandatory cropping pattern now observed. The opportunity costs of the current high-paddy cropping pattern were calculated as between MYK 8 and MYK 35/m³ of water supplied for irrigation. If cropping restrictions were removed, and the shift made to sesame, chilli and similar crops, the net benefit would be substantial.

5. Within this context, it is now increasingly realized that successful irrigation management in Myanmar cannot be accomplished without the participation of water users and farmers. The government hopes that through better Water Users' Associations (WUAs) and farmer participation in system operation and maintenance, the financial burden on the public sector can be reduced and water use efficiency increased.

6. Under current legislation in Myanmar, WUAs can only be informal organisations without legal status or standing. They lack autonomy and governance, i.e. the ability to make independent decisions on matters of concern to the group. Instead, the role of water user groups is reduced to collaboration on terms set by the ID or village councils and committees. In the absence of statutes and by-laws, the internal arrangements remain informal and rather vague. The role and the responsibilities of WUAs are not well defined and authorizing access to land and water use right remains a prerogative of the State. If effective and meaningful participation by WUAs is to be achieved, much more attention must be given to the formation, strengthening and empowerment of water user associations in order to effectively participate in system operation, maintenance and management.

Objectives

7. To assist the government in developing and formulating an enabling policy and legislative framework for increased water user involvement and participation in irrigation management leading to the formation of autonomous WUAs, effective system operation and maintenance and substantial reductions in government involvement and expenditure. The primary target group of this programme include senior policy makers and irrigation professional. The ultimate target group will be the water users and in particular the poor smallholders. The programme would be divided into two phases, a first study and review phase and second, policy formulation and implementation phase.

Principal Components

8. The investment would occur over an estimated period of two years and comprise two major components: studies and policy formulation and implementation.

Component 1: Studies

9. This component would review current restrictive cropping policy and to identify policy options which would allow farmers a free choice of cropping pattern based on their preferences; to assist policy makers in addressing the issue of adequate water pricing based on

volumetric principles; to propose mechanisms for adequate investment cost recovery and financing of water service provision⁵³. Key tasks would be as follows:

- (a) Conduct of an irrigation performance assessment study of representative irrigation schemes within major agro-ecological zones, focusing on the effects of restricted cropping pattern on both productivity and water use efficiency; identify options for liberalized cropping; and
- (b) Assist government with a critical analysis of the current water and irrigation tariff systems and proposal of adequate volumetric water tariffs, cost recovery and irrigation financing mechanisms.

Component II: Policy Formulation and Implementation

10. This component would create awareness and conduct a dialogue on participatory management among water users and stakeholders at national, divisional/state, scheme and community level and prepare for the creation of an enabling environment for water user involvement and participation in the operation, maintenance and management of irrigation and drainage facilities. Key tasks would include:

- (a) Awareness and stakeholder dialogue on participatory irrigation management;
- (b) Conduct of scheme, regional (State and Divisions) and national stakeholder consultations and workshops on participatory irrigation management;
- (c) Design and conduct of a national multi-media awareness campaign targeting the irrigation community, especially the poor;
- (d) Creation of an enabling environment for water user participation;
- (e) Formulation of an enabling legislation for autonomous water user associations including procedures for their creation and registration; defining their role in irrigation management;
- (f) Regulations and bylaws of water user associations addressing aspects of membership, accountability of executive members, fees and penalties, etc.; and
- (g) Proposal of a standard agreement for the transfer of management responsibility to water user associations including legal and financial aspects such as land and water use rights, water tariffs and cost recovery policies.

⁵³ This activity may, to some extent duplicate that proposed under the Crop production sub-sector (Production Planning and Directed production Study), but would, in any case be focused only on irrigated areas.

Output

11. An expected output of this programme would be a broadly accepted strategy for a shift in irrigation management towards increased involvement of water users in system operation, maintenance and management. This strategy would be supported by a number of policy documents and draft legal acts to be submit to the government for approval and enactment. More specifically the following outputs would be expected:

- a set of standard irrigation performance indicators grouped by irrigation type, agro-ecological zone focusing on the agricultural productivity, water use efficiency and system sustainability;
- a proposal for a new water tariff system based on volumetric principles and supported by a scenarios-based assessment of the needs for cost recovery, irrigation financing, and water user support, evaluated against the payment capacity of water users and poor farmers;
- a documented stakeholder feedback on the formulation and implications of an irrigation management change towards participatory principles clarifying the role for poor smallholders based on assessed strengths, weaknesses, opportunities and threats; a set of pamphlets, videos and broadcast information on the principles and practical implications of water user involvement in irrigation management; and
- a draft enabling law for the formation and registration of water user associations, describing their legal status, role, organs, membership, rights and responsibilities in participatory irrigation management; standard bylaws to be adopted by individual WUAs describing their domain, organs, penalties; a standard agreement for the transfer of system management responsibility and ownership to water user associations including a description of assets, responsibilities, reporting, supervision, account;

Indicative Budget

12. The indicative costs of this two-year capacity building programme are estimated to be US\$1.8 million. The budget item for personnel is based on an assumed input of 170 person-months (PM), including 45 PM for international and 125 PM for national consultants. International input would be required from the following experts: a water management specialist, a socio-economist, a policy economist, a land and water use planner and a mass media specialist. National expertise would include sociologists, communication specialists, media experts and lawyers. A provision of US\$350,000 is made for contracts such as the conduct of additional studies (irrigation baseline study, irrigation performance study), an awareness campaign, as well as for divisional and national stakeholder workshops. Other expenses, including local transport, equipment and operating costs are estimated at US\$255,000.

Budget Item	US\$
A. Personnel	1,053,000
International (45 person-months)	675,000
National (125 person-months)	378,000
B. Contracts	350,000
C. Material and Supplies	60,000
D. Travel and Transport	120,000
E. Office Equipment	25,000
F. General Operating Costs	50,000
Sub-total	1,658,000
H. Contingencies	165,800
Total	1,823,800

PROFILE 2: IRRIGATION MODERNIZATION AND EXPANSION PROGRAMME

Background and Rationale

13. The current performance of most irrigation systems in Myanmar is far below expectations. Typically the amount of water injected into main canals is three times as much as the net requirement of irrigated crops. A large portion of deliveries are accounted for as unutilized outflow. The dominating crop is rice cultivated as monsoon and summer paddy. Per-hectare yields are below regional averages. The rice-dominated cropping pattern is set by the National Project plans regardless of farmers' preferences or the limited supply capacities of the hydraulic network. On schemes where irrigation demand exceeds the supply capacity of canals, large areas have only intermittent access to water and some farmers remain entirely reliant on rainfed production. Although statistics suggest a that cropping intensities of over 150%, in reality this is only true for the minority of schemes where water supplies are sufficient; typically those farmers at the 'tail-end' of water distribution systems are excluded from supplies in the dry season when it is most necessary.

14. At the field level, all irrigation is based on submerging of paddy fields. Field channels have almost disappeared and water is distributed on a plot by plot basis. Canals and hydraulic structures are in poor state and sedimentation is a frequently observed problem. The time to irrigate one acre of land is often double what would normally be considered necessary. In response to uncertain supplies, farmers closer to main distribution outlets largely ignore the rules of water distribution and take water whenever they can. Sometimes additional outlets from canals are dug, and existing off-take structures manipulated in order to increase discharge rates, this, of course, only the inequity in water distribution between the head and tail-end users along the canals. In some schemes the ID staff are simply overwhelmed by the magnitude of problems, and systems deteriorate even further as all real attempts at management are abandoned. Farmers appear to be unaware of on-field irrigation methods that would be more suitable for non-rice crops. Similarly, the concept of field drainage for improved water control is hardly practiced.

15. Many of the irrigation projects recently developed remain incomplete, primarily as a result of budget restrictions. According to ID is the completion level of dam- and weir-based command areas at 63%. Much of the projected area still remains undeveloped. Estimates suggest

that some 100,000 farm households could be connected to existing water supply facilities if all projects were implemented as planned. In addition, there are some 328,000 ha of projected downstream area of projects that are currently under construction. Taking both existing schemes and those under construction or expansion, the potential exists to expand water supply to 555,000 ha, which would be sufficient to provide about 275,000 farm households, or 1.375 million people, access to irrigation.

16. A technical assistance project implemented by the Japan International Cooperation Agency (JICA) concentrated on improving operation and maintenance techniques of both main facilities such dam, reservoir and main canal structures as well as on so called terminal facilities (watercourse level) of the Ngamoeyeik Irrigation Project, Bago Division. The project oversaw a rigorous change of the existing land and plot structure from an irregularly to regularly shaped outline of the farm plots of one acre each. Technically, the system was upgraded from block-wise plot-to-plot irrigation to a system that allows irrigation and drainage of each plot individually. In addition to changes to the hydraulic system (which involved the construction of additional irrigation and drainage canals), access roads to farms were constructed and land was levelled by means of laser-supported techniques.

17. Yet, despite all the technical upgrading, the project was limited in its results, largely because the approach ignored socio-economic and institutional factors, and retained the same top-down approach to water management. If the adoption of a farmer-driven focus, based on participatory and service-oriented principles, could be added to the improved technical methods already demonstrated, then land consolidation and modernisation could become a real option for the modernisation of the existing irrigation schemes.

18. It is now increasingly recognized that the rehabilitation of irrigation systems involves a modernisation component that must be based on a much improved water control and service orientation. Much progress has been made in the region with the concept of service-oriented modernisation, which offers a considerable opportunity to Myanmar's irrigation community that could be exploited beneficially.

19. Furthermore, the modernisation process must include a comprehensive review of the assumptions taken at the design stage and evaluate these assumptions against projected future needs. In this respect, careful attention is required to the future cropping options and associated irrigation needs. Moreover, the improvement of the hydraulic network should be considered in the context of the basin. For example, irrigation efficiency is an indicator that combines various system levels including main, secondary, tertiary/watercourse level as well as the field level. Water escapes at each level, part of which could be captured and made available for consumptive use if the system was rehabilitated and modernised. However, escaping water returns to the river system or water table where it contributes to recharge. It would be available again in the future both to the scheme in question and other schemes sharing the same basin through pumping and/conjunctive use of groundwater.

Objectives

20. The overall objective of this irrigation modernization and expansion project is to upgrade current irrigation infrastructure and on-field practices in order to facilitate the irrigation of a diversified cropping system through adequate service provision and thereby making irrigated agricultural production a viable and sustainable enterprise. More specifically the following objectives may be attained in the two phases:

- **Phase One:** To evaluate existing pilot projects on irrigation technology improvement and land consolidation; to propose suitable on-field irrigation and water management techniques based on field tests and farmers’ evaluations including conjunctive use of groundwater resources; to conduct fully-fledged feasibility studies on three identified irrigation project area for modernization and expansion, covering dam- and pump-based as well as flood-protected irrigation systems in order to demonstrate the technical, economic, financial, environmental feasibility of projects as well their social and institutional acceptance.
- **Phase Two:** To implement irrigation modernization and expansion projects applying an “open priority project approach”; to establish a project implementation unit for participatory downstream modernization and expansion; to form water user associations for participatory detailed design and project implementation and involvement in system operation, maintenance and management; to transfer irrigation management responsibility including the provision of support services and training to WUAs.

Principal Components

Phase I: Pilot Evaluation and Feasibility Assessment (Short-Term – 18-24 months)

- (a) Evaluation of existing pilot irrigation technology and land consolidation projects including projects such as Irrigation Technology Centre Project I and II, the Myananda land consolidation, Mandalay District, and Shwe Laung Paddy Project, Ayeyarwady Division, Paddy I and II (World Bank). The evaluation would take a critical technical, socio-economic and institutional assessment approach, which would help to clarify each project’s impact on the performance of irrigation and in particular on the farm income situation. Presumably a number of important lessons can be learnt, which could benefit the planning and design of future investments greatly.
- (b) Field testing and proposal of simple but effective on-field water management practices suitable for the irrigation of diversified rice-based systems including groundwater pumping in conjunction with surface irrigation (furrow irrigation using siphons, low pressure drip systems). This would be an adaptive research/technology transfer component which would provide basic input for extension services on technologies that are readily available elsewhere in the region.

- (c) Conduct of feasibility studies in order to demonstrate the technical, economic, financial, environmental feasibility of system modernisation and expansion projects including their social and institutional acceptance. Types to be included in the studies (reservoir-based, river-pumped; and flood protected polder irrigation systems). It is important that the planning and design approach of the studies should adopt a participatory and service-oriented approach giving sufficient attention to socio-economic and institutional aspects.

Phase II: Implementation and Water User Support (Medium-Term - five years)

- (a) Establishment of a project management unit (PMU) for downstream development and expansion. The PMU would assume overall responsibility for project implementation and monitoring. Furthermore, the unit would provide advisory and training services to project staff in order to strengthen their planning and project management capacity.
- (b) Formation of water user associations (WUAs) grouped by hydraulic units (watercourse). In this component farmers and water users would be formed into water user association based on established rules and regulations. Their role would be to participate closely in the planning and design process and to subsequently take on responsibility for system operation and maintenance. Regional experience with the modernisation of irrigation infrastructure suggests that the formation of legally autonomous water user associations prior to technical planning and design of infrastructure rehabilitation and modernisation facilitates a quick take over of management responsibility through WUAs.
- (c) The transfer of irrigation management responsibility to water user associations is normally done within the framework of a transfer agreement. In this agreement the rights and responsibilities of the parties involved are clearly stated. Besides guaranteed access to land and water resources (land and water rights), the transfer agreement stipulates the domain and the financial aspects of the future management arrangements. Although standard procedures are being adopted, the process can be time-consuming until full agreement over the modalities is reached.
- (d) Designing and establishing water users' support services based on assessed priority needs such as on-field irrigation, system operation and maintenance, water and financial management. Farmers and members of executive organs and committees of water users associations would be the prime target groups for training and support services to be provided by the project.

Output

21. **Phase One:** Lessons learned from past experience with irrigation technology improvement and land consolidation projects; findings and guidelines for broadened on-field irrigation management practices; feasibility reports validated for three project types and areas including detailed recommendations for increased water user involvement in irrigation system operation and management; guidelines for water user organization social acceptance; a list of priority projects for implementation.

22. **Phase Two:** Constructive improvements of approximately 75,000 ha are projected for this phase. The hydraulic irrigation and drainage infrastructure developed would provide water for diversified cropping, and be supported by various on-farm irrigation and water management techniques. Some infrastructure development would expand command areas on existing projects, while others would be new schemes. Strengthened water user associations will take over management responsibility at watercourse and secondary level;

Indicative Budget

23. The indicative budget of this two-phase project is about US\$121 million, divided between US\$3.2 million for Phase I and US\$118 million in Phase II. The input of international consultants is assumed to be 90 person-months in Phase I and 250 person-months in Phase II. Experts involved in this project would include irrigation engineers, water management specialists, socio-economists, sociologists, institutional specialists, land and water use planners and farmer training experts. The required input of national consultants is estimated as 264 person-months in Phase I and 1,260 in Phase II. Under line item B (contracts) provisions are made for detailed topographical and soil surveys and special water users' training. Line item C (materials and supplies) estimates irrigation construction costs in Phase II at US\$1,250 per hectare.

Budget Item	Short-Term (2 years)	Medium/Long-Term (5 years)	Total
	(US\$'000)		
A. Personnel	2,010.0	6,900.0	8,910.0
International	1,350.0	3,750.0	5,100.0
National	660.0	3,150.0	3,810.0
B. Contracts	500.0	4,000.0	4,500.0
C. Material and Supplies	75.0	95,250.0	95,325.0
D. Travel and Transport	200.0	500.0	700.0
E. Office Equipment	50.0	150.0	200.0
F. General Operating Costs	100.0	250.0	350.0
Sub-total	2,935.0	107,050.0	109,985.0
G. Contingencies	293.5	10,705.0	10,998.5
Total	3,228.5	117,755.0	120,983.5

PROFILE 3: SMALL-SCALE IRRIGATION AND WATER MANAGEMENT PROGRAMME

Background and Rationale

24. The current irrigated area accounted for as private irrigation is about 245,000 ha. Typically, private irrigation in Myanmar is organised within communities and centred on small village ponds as the principal storage facility or pumping stations taking water from small streams. However, there is little information on the performance of such systems. Based on field inspections it can be suggested that many small schemes are used for the production of food crops for home consumption. Apparently, these schemes perform very well.

25. There is considerable potential for the development of Myanmar's groundwater resources for irrigation purposes. The potential additional area that could be irrigated from renewable fresh groundwater resources is estimated at nearly 718,200 ha (1.7 million acres). About one third of this area is located in the Divisions of Ayeyarwady and Sagaing (35%). The portions other states/division would take are as follows: Kayin (12.6%), Bago (11.5%), Magwe (10%) and Mon State (8.7%). Based on conservative assumptions, the study has identified a potential area of 718,201 ha (1.77 million acres). However, the agricultural water resource assessment study has identified a number of districts where the renewable groundwater resources are becoming severely scarce. Examples are found in the divisions of Mandalay, Sagaing and Magwe. For such areas it would be necessary to carry out more detailed investigations into the availability and the current utilization of groundwater resources. Based on the findings, it would be important to develop a district-wise master plan in order to identify potential areas and zones for the development of groundwater resources.

26. In drought-prone areas of Central Myanmar, the Government has identified water harvesting techniques as a means for water supply and soil conservation, especially the dry zone, which covers an area of some 677,000 km² (17% of the country). Building upon the lessons learnt from the first three phases of two UNDP/FAO projects on environmentally sustainable food security and micro-income opportunities in the Dryzone and in critical watersheds, which altogether covered some 25,000 ha of land, this project could expand to other areas.

27. Currently, there are few firms active in the field of irrigation systems supplies and development. Representatives of the private firms feel that the production of irrigated crops is not perceived as a money-making enterprise, which is why demand for irrigation equipment is marginal. However, this may change as agricultural input markets and services develop. Small-scale irrigation schemes have the potential of becoming an inexpensive and effective means for the irrigated food production. Private sector involvement in this process could be catalytic, whereby the role of the Project in small-scale irrigation is that of a facilitator providing technical, financial support to communities and water user associations.

Objectives

28. The principal objective of this investment project is to promote and support the development of small-scale irrigation and water management systems capable of supplementing water needs of diversified smallholder production systems from both surface and subsurface water resources, largely through private sector involvement and collective management;

29. **Phase I:** to evaluate the potential for small-scale irrigation development from surface and sub-surface water, and its current and future level of utilization; to establish district-wise water resource master plan studies, delineating zones for the development of small-scale irrigation systems; to conduct participatory feasibility assessment of priority projects (at pre-feasibility level).

30. **Phases II and III:** To assist communities and WUAs in establishing small-scale irrigation schemes and management capacity, in order to become productive and self-sustained enterprises; to invite private firms to participate in small-scale irrigation project implementation;

Principal Components

Phase I: Exploratory and Scoping Studies (Short-Term – 2 years)

- (a) Conduct of semi-detailed water resource exploration studies within potential water-scarce areas. Water resource exploration studies would imply both hydrological investigations for the assessment of surface waters and geo-technical investigation for the exploration of groundwater resources.
- (b) Establishing irrigation master plans for the development for small-scale irrigation systems in water-scarce areas.
 - Potential for groundwater resource development
 - Potential of pressurized irrigation systems for supplementary irrigation
 - Potential for water harvesting techniques on sloped and drought-prone land
- (c) Conduct of participatory pre-feasibility assessment studies. The purpose of that component is to provide a set of technical and economic indicators and criteria that can be used for project classification and participatory project priority setting.

Phase II and III: Implementation and Water User Support (Medium/Long-Term - 8 years)

- (a) Establishment of a project management unit for a small-scale irrigation development programme. The PMU would assume overall responsibility for project implementation and monitoring. Furthermore, the unit would provide advisory and training services to community councils and project staff in order to strengthen their technical, planning and project management capacity.
- (b) Formation of community-based water user associations. Regional experience from similar projects suggests that the formation of legally autonomous water user associations prior to technical planning and design of infrastructure rehabilitation and modernisation facilitates a quick take over of management responsibility through WUAs.
- (c) Participatory conduct of detailed design and implementation of small-scale irrigation projects through much increased involvement of the private firms.
- (d) Development of procedures for participatory small-scale irrigation support services (technically, financially and administratively).

Output

31. **Phase I:** Semi-detailed maps of available water resources of an area of 5000 ha; district master plans including identified development zones for small-scale irrigation including pumping from groundwater, water harvesting, and pumping from small streams; a framework for participatory pre-feasibility assessment and procedures for eligible water user associations;

32. **Phases II and III:** The additional area equipped with small-scale irrigation and water management facilities, fully managed by water user associations is some 20% larger than what is currently accounted for as private irrigation, equivalent to an additional 50,000 ha;

Indicative Budget

The indicative budget of this ten-year project is given below. In total, the small-scale irrigation and water management programme would require an investment in the order of US\$64 million. About 6% of the total would provide for a Phase I (US\$3.7 million) in the form of technical assistance and feasibility assessment. The estimated input of international consultants would be 120 person-months in Phase I and some 264 person-months in Phases II and III. Experts involved in this project would include irrigation engineers, water management specialists, socio-economists, sociologists, institutional specialists, land and water use planners and farmers training experts. The required input of national consultants is estimated as 249 person-months in Phase I and 1,140 in Phases II and III. A substantial portion (80%) of the provision made for contracts would be allocated for special water user training of about 3,000 water user associations. Overall investment costs covering some 50,000 ha of land in Phases II and III are estimated at US\$60 million. The bulk would be spent for material and supplies (US\$39 million).

Budget Item	Short-Term	Medium-Term	Long-Term	Total
	0-2 years	3-5 years	6-10 years	
US\$'000				
A. Personnel	2,187.0	4,217.1	3,162.9	9,567.0
International	1,440.0	2,262.9	1,697.1	5,400.0
National	747.0	1,954.3	1,465.7	4,167.0
B. Contracts	800.0	4,285.7	3,214.3	8,300.0
C. Material and Supplies	60.0	22,114.3	16,585.7	38,760.0
D. Travel and Transport	200.0	250.0	150.0	600.0
E. Office Equipment	25.0	175.0	75.0	275.0
F. General Operating Costs	50.0	150.0	250.0	450.0
Contingencies	332.2	3,119.2	2,343.8	5,795.2
Total	3,654.2	34,311.3	25,781.7	63,747.2

PROFILE 4: CAPACITY BUILDING IN IRRIGATION AND WATER RESOURCE MANAGEMENT

Background and Rationale

33. Myanmar's water sector is characterised by a diversity of governmental departments and ministries, all of which share responsibility for the utilization of the country's water resources. The two main government institutions involved in the development of irrigation include the Irrigation Department (ID) and the Water Resource Utilization Departments. Besides ID and WRUD, six departments are involved in the water sector including the Directorate of Water Resources and Improvement of River Systems (river training and navigation), Myanmar Electric Power Enterprise (hydropower), Factories under the Ministry of Industry (industrial use), Myanmar Fishery Enterprise (fishery works and aquaculture), City Development Committees

(city water supply and sanitation), Department of development affairs (domestic and rural water supply and sanitation), and private uses (domestic water supply, navigation and fisheries). The Department of Meteorology and Hydrology is charged with the operation of hydrometric monitoring network and the forecast of earthquakes. Both functions are of great importance to the irrigation project planning, operation and in particular to the safety of dams. Surprisingly, none of the departments mentioned above are in charge of environmental aspects.

34. The need for improved co-ordination and planning of the available water resources becomes immediately evident as implications of the findings of the Agricultural Water Resources Study are interpreted carefully: out of a total number of 63 districts, four districts are found to be severely water-scarce and another seven fall into the category of medium to severely water-scarcity⁵⁴. With a water scarcity indicator of some 106% Mandalay district is the most stressed district among the severely water-scarce districts. Mandalay district must be regarded as a priority target area for improving water management strategies. Districts other than Mandalay where severe water scarcity is identified include Meiktila (74%), Kyaukse (51%) and Shwebo (46%). In order to keep the water scarcity indicators below 40% the study suggests that water management should be improved, giving particular attention to the efficiency of irrigation systems. Also, the sustainability of water use must be a key element in any future water resource development strategy especially concerning its impact on the environmental.

35. Although oversight of the allocation of water resources is in the national interest, the most appropriate unit for water resource management and coordination is the basin. Myanmar's water resources are contained in ten large drainage basins, of which the four main river basins carry six times as much water than is currently depleted for irrigation and other uses. It is therefore important that planning, implementation and monitoring of water resources and their use be co-ordinated within these units. To build capacity in basin and national water resource management is identified as an important challenge for the government.

36. Over the past fifteen years, a total of 289 irrigation projects were completed covering an area of nearly 1.4 million ha. The preparation and planning of new irrigation schemes is primarily based on technical criteria and assumptions. In feasibility studies, less attention is given to socio-economic, organisational, environmental and institutional aspects. However, the socio-economic and institutional environment of the beneficiaries is increasingly recognized as a key domain for feasible and sustainable development of irrigation projects. The direction of planning and development is downward as opposed to upward. Participatory principles have not yet adopted by the departments. This is however, a normal pre-requisite of bi- and multilateral lending organisations. Improving the capacity of ID and WRUD in participatory planning, preparation, implementation and management of complex irrigation development projects is identified as an important function for successful and sustained development of the entire sector.

⁵⁴ A country is considered to be severely water scarce if the withdrawals exceed 40% of the total supply. Countries having the withdrawals from 20% to 40% are considered to be subjected to medium to severe scarcity. Countries with the withdrawals from 10% to 20% are considered to have moderate water scarcity and while those with less than 10% are categorized as to have little or no water scarcity

Objectives

37. The overall objective of the proposed investment in capacity building in irrigation and water resource management is to strengthen the government's capability in strategic planning of the country's water resources and thereby safeguard efficient and sustainable use by all water users including irrigation, domestic and industrial use and the environment.

38. **Phase I:** Strengthen the project management capacity of ID and WRUD, emphasizing an integrated water resource management approach; develop skills in participatory project planning, evaluation and impact monitoring; broaden the scope of feasibility studies by adding socio-economic, institutional and environmental aspects; to create awareness of service orientation in system operation and maintenance; and to build capacity in effective irrigation support and extension in close collaboration with other departments concerned; to develop effective monitoring systems for dam safety;

39. **Phase II:** Assist Government with the establishment of a national water resource management policy and the establishment of national water institution which is responsible for the assessment, allocation and management of water resources at national level; to provide for mechanisms as to co-ordinate sector activities within basins, regardless of administrative boundaries; to conduct a hydrological modeling study of the Ayeyarwady river basin in order to assess the impact of increased storage and flood protection on the basin hydrology and the basin environment.

Principal Components

40. The proposed investment would comprise two phases, and would be implemented over a four year period.

Phase I: Focusing on Effective Irrigation Planning Support Capacity (Years 1-2)

- (a) Strengthening the management capacity of ID and WRUD in participatory project planning, management, evaluation and impact monitoring. The component would involve the development of facilitation and listening skills and improved communication between project staff and water users. Technically, improved information technology would build capacity in order to organize and manage a large number of projects and water user associations.
- (b) Development of effective support services for water user associations and farmers. This component involves the development of national irrigation support service programme that would be linked to the national agricultural extension and support service facility. Specific programmes would include operational and financial management support.
- (c) Training in the conduct of feasibility assessment studies. This component would provide training to staff of ID and WRUD on the principles of a comprehensive feasibility study including technical, economic, social and institutional as well as environmental aspects.

- (d) Facilitation of service-oriented system operation and maintenance of main hydraulic structures. The concept of service-oriented water service provision requires a full array of planning and operational skills on the part of schemes managers that need to be developed carefully through a mix of technical and training needs assessment activities and the subsequent conduct of specific training modules and units.
- (e) Technical monitoring of the performance of dams (seismological, operational and environmental monitoring). These components would greatly improve the technical equipment for environmental monitoring and seismological forecasting.

Phase II: Focusing on Effective Water Sector Institutional Building (Years 3-4)

- (a) Formulation of a national water resource management policy. This component involves a lengthy exercise of review and stakeholder dialogue on the future organization of the water sector and development strategy.
- (b) Establishment of a national water resource management body with overall responsibility for the integration of nation- and basin-wide water resource management of all water uses (domestic, industry, agriculture and environment).
- (c) A hydrological modeling study of the Ayeyarwady river basin. This component would involve the employment of a hydrological model that would provide a much improved understanding of the spatial distributions of rainfall and runoff relations and the availability of water. In addition the hydrological model would permit staff of ID to monitor and evaluate the effect of increased storage capacity on the hydrological regime of the river.

Output

41. **Phase I:** The management capacity of ID and WRUD staff in participatory planning and management is strengthened and structure of staff in terms of disciplines and services are broadened; effective training capacity is available in order to provide assistance to water user associations in scheme operation, maintenance and financial management; subject matter expertise training material in on-farm water management is readily available for national extension services;

42. **Phase II:** Policy paper on the future of water resource management in Myanmar taking an integrated approach; a strategy and activity scheduling plan for the establishment of a National Water Resource Institution overseeing water resource allocation and use as well as the establishment of management bodies for basin-level co-ordination; model output of a hydrological model showing rainfall/runoff distributions and the impact of increased storage and agricultural water use on river discharge and water levels.

Indicative Budget

43. The indicative budget of this capacity development project is about US\$2.5 million, with US\$1.27 required for Phase I (2 years) and US\$1.25 million for Phase II. It is assumed that the required input of international consultants would be 75 person-months. Expertise in technical

assistance and training would be provided by water management specialists, socio-economists, sociology, economists, water user association specialists, hydrologists, GIS experts and environmentalists. For national experts the input would be 126 person-months. National experts would include irrigation engineers, sociologists, hydrologists and geologists.

Budget Item	Short-Term 0-2 years	Medium-Term 3-5 years	Total
	US\$		
A. Personnel	720.0	783.0	1,503.0
International	540.0	585.0	1,125.0
National	180.0	198.0	378.0
B. Contracts	80.0	20.0	100.0
C. Material and Supplies	50.0	25.0	75.0
D. Travel and Transport	150.0	60.0	160.0
E. Office Equipment	100.0	200.0	300.0
F. General Operating Costs	50.0	50.0	100.0
Sub-total	1,150.0	1,138.0	2,288.0
G. Contingencies	115.0	113.8	228.8
Total	1,265.0	1,251.8	2,516.8

TOTAL INDICATIVE SUB-SECTOR INVESTMENT COSTS

44. Below are summarised total indicative investment costs for the irrigation and water management sub-sector, broken down by phasing. As not all of the US\$190 million in proposed investments extend into the long-term (beyond 5 years), costs are higher for the medium-term (3-5 years) than for the long-term (6-10 years).

Profile	Short-Term (0-2 Years)	Medium-Term (3-5 Years)	Long-Term (6-10 Years)	Total (US\$'000)
Irrigation Management Policy Development	1,823.8	0	0	1,823.8
Irrigation Modernization and Expansion Programme	3,228.5	58,877.5	58,877.5	120,983.5
Small-Scale Irrigation and Water Management Programme	3,654.2	34,311.3	25,781.1	63,747.2
Capacity Building in Irrigation and water Resource Management	1,265.0	1,251.8	0	2,516.8
TOTAL	9,971.5	94,440.6	84,658.6	189,071.3

7. AGRICULTURAL RESEARCH, EXTENSION AND EDUCATION INVESTMENT PROFILES

1. Two strategic priorities have been developed to investment profile level for the Agricultural Research, Extension and Education sub-sector, covering:

- Creation of a National Multi-Disciplinary Agricultural Service (US\$8.7 million); and
- Strengthening of Agricultural Education (US\$3.9 million).

Both profiles are broken down into short, medium and long-term phases.

PROFILE 1: CONCEPTUALIZATION AND ESTABLISHMENT OF A NATIONAL MULTI-DISCIPLINARY AGRICULTURAL SUPPORT SERVICE

Summary

2. The proposed investment would provide financial and technical resources to assist the Ministries of Agriculture and Irrigation (MOAI) and Livestock Breeding and Fisheries (MLBF) in defining and assessing options for the creation of a multi-disciplinary national agricultural support service that would ensure greater coordination between research, extension and education and ensure the effective provision of information, technologies and genetic materials to farmers across the entire spectrum of agricultural activities, including crops, livestock and aquaculture. Such a nationally coordinated service would not only resolve the problem of largely non-existent livestock and fisheries extension services, it would also treat all activities undertaken at farm level as interconnected, and ensure that research and extension activities were responsive to farmer priorities rather than arbitrary targets set at national level.

3. Because the implementation of such an approach would involve numerous departments across at least two ministries, as well as significant institutional restructuring, it is proposed that the investment comprise three phases, implemented over a period of some 8-9 years, at a cost of approximately US\$8.1 million.

Background

4. In Myanmar, agricultural research is conducted on a largely uncoordinated basis by a wide variety of institutions, organized almost entirely on the basis of the crop or specific activity concerned. There are no research facilities devoted to integrated or farming systems approaches. For crops alone, existing research institutions include the Central Agriculture Research Institute (CARI), the Central Agriculture Research and Training Centre (CARTC), the Applied Research Centre on Perennial Crops (ARCPC), the Vegetable and Fruit Research and Development Centre (VFRDC) and the Central Sugarcane Research Station (CSRS). In addition, further limited research is also undertaken by groups and units within such agencies as the Myanmar Cotton and Sericulture Enterprise (MCSE), the Agriculture Mechanization Department (AMD) and Myanmar

Jute Industries (MJI). Livestock research is handled by both the Research and Biological Production Section of the Research and Disease Control Division (RDCD) and by the Research and Development Section of the Animal Husbandry and Development Division (AHDD). For fisheries, research is largely the responsibility of the Research and Development Division.

5. Agricultural extension services are offered principally by the Agricultural Extension Department (AED) of MAS, employing a field staff of approximately 10,000. The emphasis of AED outreach is very much on a small range of 'key' crops - particularly rice, but also to a lesser extent, oilseeds, maize and some pulses. Extension services are offered by a number of other institutions concerned with specific crops, such as coffee, oil palm, cotton, sugarcane and jute. In addition, some non crop specific aspects of agricultural production are covered in independent extension services maintained by the Plant Protection Division (PDD) and the Land Use Division (LUD), both within MAS, which focus on integrated pest management and soil conservation respectively. Livestock and fisheries are the responsibility of a separate ministry (MLBF), where livestock extension services are limited almost entirely to matters of animal health. Even then, the approximately 600 field veterinary staff (or one per 25 village tracts) receives support only from a seven person extension section at national level within MLBF. Fisheries are even less supported, and although an Aquaculture Extension Division has recently been established, there are neither the staff nor the resources to develop and disseminate extension messages to the sub-sector. Handicrafts and similar non-agricultural rural activities are the responsibility of a third ministry (Ministry of Cooperatives), as part of the Department of Cottage Industries.

6. Priorities for both research and extension are set centrally. Little or no consultation occurs with regional research stations or farms, nor is there any input at all from producers. Because of mobility constraints, field stations may be visited only once a year by headquarters staff, limiting interchange of views or knowledge of what is happening elsewhere in the system. Furthermore, many field staff have little opportunity to travel to rural areas away from their sites of work, restricting their knowledge to the area immediately around the station. Because of shortages of funds, considerable effort on research and experimental farms is dedicated to producing crops for sale; not only to increase station income, but also to provide a flow of funds back to the central administration.

7. Graduate and post-graduate education for researchers and extension staff is offered only by Yezin Agriculture University. Seven State Agriculture Institutes offer courses leading to an Agriculture Diploma. Finally, pre- and post-service training is offered by the CARTC. All these educational institutions work independently with little effective coordination. Operational linkages are weak. There are no organized mechanisms for operational interaction between staff of Yezin, AED, MAS, CARTC, the State Agriculture Institutes, and industry research institutes. In fact, there is relatively little collaboration between institutions such as CARI and their outlying research stations, or between field extension staff and head quarters.

Rationale

8. Effective agricultural research, education and training are essential for ensuring a sustainable increase in food supply, the alleviation of poverty, and overall rural development. Currently, however, the agricultural research, extension and education services in Myanmar face significant problems which are limiting their effectiveness. The diversity of agro-ecological

conditions, production systems, crops, and socio-economic conditions present in Myanmar pose difficulties for proper coordination and linkages among research, extension and training institutions. Agricultural technology is usually location specific, which calls for decentralization of research. On the other hand, cost issues and assembly of critical scientific mass tend to favour centralized research operations in specific locations. Balancing these conflicting requirements will be a major challenge for an efficient organizational structure of research in Myanmar. Among the most important problems to resolve are:

- The wide range of institutions involved in these activities, and their narrow focus, render collaboration between different units and agencies difficult if not impossible. This is particularly the case in the separation of livestock and aquaculture from the remainder of agriculture;
- There is no existing mechanism for coordination between the three service branches of education, research and extension, leading to a lack of coherence in focus at the three levels;
- There is no appropriate mechanism for ensuring that the experiences of field workers (research or extension) or the needs and priorities of farmers themselves, are taken into account in deciding research and extension programmes;
- The distribution of research and extension responsibilities across different ministries (as well as in different agencies within ministries) and an almost universal crop or commodity specific focus, render it difficult to provide support to producers that reflects their mixed activities, and generally completely excludes post-harvest or other ‘non-traditional’ agricultural activities (jaggery, toddy palm, handicrafts etc.);
- Financial and mobility limitations make travel to the field difficult, thus reducing the ability of extension staff to cover remoter areas, or visit frequently, as well as limiting contact between head office and field staff;
- Lack of investment in irrigation, drainage, post-harvest handling facilities (e.g. seed dryers) and on-farm equipment (e.g. tractors) has meant that much research station land is not utilised effectively;
- There is relatively little contact between field research stations and farmers. This is partly a matter of low priority being given by researchers to outreach, and partly a consequence of lack of transport or budget to bring farmers to the stations for visits; and
- As a result of low salaries, lack of training, limited mobility and lack of consultation, staff motivation is often poor. The great majority of “researchers” in the various research institutions only have a B.Ag.Sc. degree. This may partly explain the reasons for the low output of research.

Objectives

9. The objective of this investment is to achieve a consensus on, and then provide support for, a coordinated multi-disciplinary approach to providing support services to the agricultural sector which will ensure a cost-effective operation that is responsive to farmer needs and contributes to increased food security and economic growth in rural areas.

Principal Element

10. The proposed investment would comprise three principal phases, covering: (a) the initial study and evaluation of options; (b) the restructuring of service provision in pilot areas, coupled with strengthening of human and other resources, and the development of new programmes; and (c) the extension of the pilot programme to national level. Each of these is described in more detail below.

Phase I: Agricultural Service Provision Options Study and Enabling Legislation (Short-Term – 15 months)

11. Phase I comprises three components. Under **Component 1**, a joint team of national and international experts, drawing upon existing materials such as the analysis provided in this ASR, would review in detail the functioning of the agricultural education, research and extension services as a whole (including livestock and aquaculture) and define:

- the principal strengths and weaknesses of the existing support systems in terms of their policies, institutional settings, planning processes, human resource base, and financial and physical assets;
- alternative institutional approaches which would permit the provision of a multi-disciplinary and coherent agricultural service to producers, possibly including (i) a single unified national institution; (ii) separate national institutions linked through an oversight council or other collaborative mechanism; (iii) a central national institution with decentralized, independent regional agencies; or (iv) a unified field extension service which draws upon other independent elements (e.g. livestock and fisheries units and research and educational services);
- the possible need to create support services in areas not currently covered at farm level, such as small entrepreneurship and post-harvest handling and processing;
- recommendations as to the most appropriate institutional arrangements, given financial, institutional and human resource realities and farmer needs;
- mechanisms for ensuring that the selected institutional arrangements provide producers and field staff with a significant input to defining approaches and priorities, as well as local control of research agendas;

- the extent to which service provision should remain entirely the responsibility of the Government and its staff, or whether the private sector could or should handle some aspects of the education, research and extension continuum; and
- key needs for support to agricultural service provision which should be addressed simultaneously with restructuring, including training, upgrading of research facilities, mobility of field staff, international collaboration, preparation of extension materials, etc.

12. Following the preparation of a draft of the study, **Component 2** would comprise a series of workshops held with regional and field staff and agricultural producers to determine their response to the proposals. These regional consultations should be followed by a national workshop which – it is hoped – would approve the final report. If approval for the proposals can be obtained from MOAI and MLBF – the two principal institutions involved – support would be available to the Government (if requested) to assist in the drafting of appropriate legislation.

13. Finally, under **Component 3**, a preparation mission would be mounted for the design and costing of the initial restructuring and strengthening programme, which would be expected to last some 2-3 years.

14. It is estimated that Component 1 may require a period of approximately three to four months. However, Component 2 would require more time in order to undertake the consultations, the national workshop and preparation of enabling legislation. A minimum of nine months is projected. Component 3 would require a further three months for the formulation of the pilot project. In total, approximately 12-15 months is allowed for this phase.

Phase II: Central Institutional Restructuring and Strengthening Programme (Medium-Term 2-3 years)

15. While it is difficult to predict the outcome of the process of detailed institutional study and recommendations and their eventual acceptance by the Government, it is assumed that some form of rationalization of sector support services will result from the Phase I study.

16. A medium-term time frame is thus provided for under which the following activities would be envisaged:

- undertaking of necessary institutional changes, including merging of units, departments or facilities and establishment of supervisory and collaborative mechanisms;
- intensive training of central-level and field supervisory staff in agricultural education, research and extension, including at the international level;
- the development of improved curricula for national training and upgrading of extension staff skills at YAU and the Agricultural Colleges;
- the piloting of participatory decentralized approaches to support service programmes in several diverse regions of the country; and

- upgrading of physical facilities and mobility at central level and in key field stations.

17. Such work is seen as preparatory to a more widespread strengthening of field level services in Phase III and is expected to require from 2-3 years to implement and evaluate.

Phase III: Strengthening of Field Level Agricultural Service Provision (Long-Term – 5 years)

18. Under Phase III of the proposed investment, a widespread strengthening of physical and human resource capacities would occur throughout Myanmar. This strengthening would take advantage of an upgraded national training capacity, developed during Phase II, as well as improved managerial and scientific leadership capacities derived from international training of key staff in Phase II.

19. It is expected that this Phase would result in the establishment of local level research and extension capacity in all Divisions or States, or even Districts, in which farmers and local extension staff would be heavily involved in local adaptive trials and testing of work previously carried out at national level. It would also build a capacity for a rapid flow of information in both directions involving national level institutions and local groups.

20. Given the need to develop a capacity across all 17 Divisions or States, as well as in a considerable number of the 64 Districts of Myanmar, it is expected that this Phase will require substantial investment and a period of approximately 5 years to implement and review.

Outputs

- Creation of a coordinated national capacity for multi-disciplinary agricultural education, research and extension that addresses all types of farm activities, including crops, livestock, aquaculture and post-harvest activities;
- A single field level mechanism for contact between farmers and the providers of support services which covers all areas of farm-based activity;
- The greater involvement of producers and extension agents in testing and verifying research work at local level, and feeding the resulting information back to national level institutions, as well as in determining priorities for future work;
- An educational service better equipped to train effective and useful extension and field research staff;
- A strengthened and more mobile field service that would be able to reach producers throughout the country and offer incentives to participating staff; and
- Better equipped field research stations able to undertake rapid and reliable research according to need.

Indicative Cost

Phase	Units	Number of Units	Sub-Total	Total (US\$)
Phase I: (Short-Term)				
1. Options Study				
National Consultants (Education, Research, Extension, Legislation)	pers/month	12	18,000	
International Consultants (Education, Research, Extension, Legislation)	pers/month	7	105,000	
2. Workshops/Consultations	sessions	4	25,000	
3. Phase II Preparation Study	pers/month	5	75,000	223,000
Phase II: (Medium-Term – 3 years)				
National Consultants	pers/month	24	36,000	
International Consultants	pers/month	8	120,000	
Institutional reorganization (staff transfers, office modifications, etc.)	total		150,000	
Strengthening of central facilities and transport	total	3	350,000	
Strengthening of key research stations	stations	3	225,000	
Development of local outreach capacity and local field stations (3 regions)	region	3	450,000	
Upgrading of training curricula and facilities for extension and research field staff	total		70,000	
Training of key personnel (M.Sc. level, international) in participatory, integrated service provision	person	10	500,000	
Training of personnel in pilot regions	courses	30	150,000	
Increased operating costs (central plus 3 regions)	year	3	240,000	2,291,000
Phase III: (Long-Term – 5 years)				
National Consultants	pers/month	60	90,000	
International Consultants	pers/month	15	225,000	
Expansion of outreach and field station strengthening activities to all regions	region	14	2,100,000	
Training of personnel in remaining regions	courses	80	400,000	
Additional international training of second tier national level staff to M.Sc. level	person	15	750,000	
Increased operating costs (central plus 17 regions)	region/year	70	1,750,000	
Development and printing of extension materials	year	5	100,000	5,415,000
Contingency (@ 10%)				793,000
TOTAL				8,722,000

PROFILE 2: STRENGTHENING OF AGRICULTURE EDUCATION

Summary

21. The proposed investment would provide resources for a significant upgrading and modernization of the agricultural education system in Myanmar, covering diploma level, university and vocational training institutes. Particular emphasis would be given to updating faculty skills, modernizing curricula and improving information access for students and staff through improved library and internet connections. Attention would also be given to closer

collaboration with other institutions and will local communities. The indicative cost of the investment would be US\$3.25 million over a period of 6 years (including initial needs definition and project design).

Background

22. Agricultural education in Myanmar is the responsibility of a number of different institutions, including Agricultural Institutes, a Central Research and Training Centre, and the Yezin Agricultural University (YAU).

23. Initiated in 1954, there are currently seven functional State Agriculture Institutes offering three year diplomas in agriculture, with a mixture of theory and practical experience. They are under the management of the Department of Agricultural Planning in MOAI. All the institutes are located in the central area of Myanmar, including two in Mandalay, and one each in Ayeyarwady, Sagaing, Magway, Mon and Bago. There are no institutes currently functioning in Shan State or other more peripheral areas. Each institute accepts from 120-150 students per year.

24. The Central Agricultural Research and Training Centre (CARTC) was established in 1981 in Hlegu Township, near Yangon and also comes under the control of MOAI, through Myanma Agricultural Services (MAS). The Centre has 74 staff, including four Senior Research Officers, and a 60 acre research farm. Despite this, research is very limited, and the farm is used primarily for demonstration purposes. The core function of CARTC is to provide in-service training for extension staff. However, MAS and AED take responsibility for planning and managing all training courses, as well as selecting students, so it may be more correct to view CARTC as a facility than as an educational centre.

25. Yezin Agricultural University, founded in 1924, is the only national tertiary level agricultural education institution, offering B.Ag.Sc. as well as M.Sc. degrees. A Ph.D. programme was initiated in 2001. The undergraduate programme is for 5 years. YAU forms a department of MOAI and is not independent. The annual intake of approximately 300 students is taught by a faculty of 134 academic staff, of which 7 have Ph.D. and 62 M.Sc. degrees. The remainder of the teaching staff have B.Ag.Sc. degrees.

26. Located in the central dry zone area, YAU has adequate basic infrastructure in terms of buildings, as well as a 58 acre research farm with access to irrigation. However, the skills and knowledge of teaching staff are limited and the training offered is mostly theoretical. Most research is conducted for academic purposes, in completion of M.Sc. and Ph.D. requirements. YAU lacks many modern facilities including a good library, internet access for research, and laboratory equipment.

Rationale and Objective

27. Although the overall number of teaching staff at existing institutions appears adequate, most instructors lack the necessary skills to be effective teachers. Teaching staff are largely isolated from contact with other researchers in Myanmar and abroad and suffer from low salaries and little opportunity for professional development. Curricula are too theoretical or unrelated to key issues facing the agricultural sector, and largely fail to reflect current conditions

in agriculture. At YAU, graduate research projects fail to address priority constraints of the agricultural sector. The exchange of scientific information and research results with national research organizations is very limited. Scientific seminars and workshops are limited and attended mostly by senior faculty.

28. The success of an agricultural teaching system depends largely on its ability to motivate its staff. Furthermore, to keep pace with advancements in science and technology, it is necessary to upgrade the skills of the staff regularly. Adequate numbers of well-qualified staff and effective management of human resources are key determinants of organizational performance. Teaching and research staff may not leave the organization because of lack of opportunities in Myanmar, but such de-motivation is damaging to those being trained in the system.

29. Staff planning, recruitment, evaluation, and training are key components of a sound human resources management. While YAU and other training institutions have some staff that are highly motivated even under very difficult working conditions, their academic qualification is very limited and most are completely outdated in their fields of expertise. Within this work force, many outstanding staff can be identified for training programmes at M.Sc. and Ph.D. levels, which would make a significant contribution to teaching and research development in Myanmar.

30. In addition, it is a source of concern that all diploma level teaching occurs within a relatively small area of central Myanmar. Consideration should also be given to the extension of the Agricultural Institute system to areas such as Shan State or Taninthayi State, where agro-ecological conditions differ significantly from those in the central zone.

31. The primary objectives of the proposed investment would be:

- improve the curricula and subject coverage within the agricultural sector to ensure more relevant courses reflecting current problems and realities;
- strengthen the capacity of teaching and senior administrative staff;
- improve the facilities available to staff and students, with a particular emphasis on library and IT facilities;
- improve the linkage of the institutions to other national and regional educational, training and research organizations; and
- consider, and if justified, support an expansion of State Agricultural Institutes to areas currently not adequately served.

Principal Elements and Phasing

Phase I: Detailed Needs Assessment and Investment Proposal (Short-Term – 8 months)

32. Under this phase a four month study would be carried out by a joint team of international and national experts to define the specific activities to be undertaken as part of the investment project, as well as the timing and scope of activities. In particular, they would consider the following:

- The appropriateness of the existing teaching curriculum at agricultural teaching and training institutions, and the modifications needed to render them more relevant to actual sector needs;
- Potential new courses to be provided at both SAI and YAU levels in areas currently addressed only at post-graduate level, if at all. These might include Seed Science and Technology, Livestock Production⁵⁵, Information Technology, Agricultural Marketing, and Agricultural Economics. The requirements for developing and establishing such courses;
- The number and level of teaching and administrative staff who would benefit from additional post graduate education and short duration refresher training (including training to permit faculty to offer new courses such as those discussed above);
- Requirements for improving access to information for both student and faculty use, including libraries (and journal subscriptions), web access, participation in national and international seminars and workshops, and improved collaboration with other research and training organizations of the MOAI and the private sector;
- Potential opportunities and benefits for senior administrative staff participation in study tours to other regional educational and training institutions;
- The benefits of, and requirements for, strengthening linkages with farmers and cooperative groups through Open Days and short-duration visits for groups to the institutions; and
- Suggested improvements to financial aspects of institution management and functioning, including medium-term funding guarantees, resources for maintenance and upgrades, and linkage of funding to student enrolment.

33. The findings of the study would be accompanied by detailed proposals for a five year project to strengthen agricultural education and training in Myanmar, including the costs, benefits and management of such investment. The draft report, together with the investment recommendations, would be presented at a national Workshop on Agricultural Education and Training for approval by educational and Government authorities, prior to finalisation and submission for funding.

Phase II: Implementation of Study Recommendations (Medium-Term – 5 years)

34. Implementation of the proposed project would be expected to include at least some of the following activities: (a) reorganization of courses and curricula at participating educational and training institutions and the preparation of course materials and/or purchase of appropriate

⁵⁵ Animal husbandry and livestock production are currently addressed in only a very limited manner outside of veterinary training.

texts; (b) long and short-term international training for staff and relevant administrative staff - e.g. library systems/information technology and human resources management; (c) creation and presentation of short-term in-country training courses to update skills of SAI faculty not receiving graduate training; (d) upgrading of information resources, including libraries, journals and web access; (e) the creation of a fund to permit faculty participation in regional and national seminars and workshops; (f) a support facility for academic exchanges at YAU; (g) the development of community linkage programmes; and (h) upgrades to physical equipment and transport, including mini-buses, tractors, laboratories etc.

35. Given the time needed for overseas training, and the necessity of staggering training so as to avoid loss of a high proportion of teaching staff, it is expected that a minimum time period of 4 years will be required to complete staff upgrading. A five year investment project is recommended.

Indicative Cost

Phase	Units	Number of Units	Sub-Total	Total (US\$)
Phase I:				
Detailed Needs Assessment and Investment Proposal				
National Consultants (Education, Training)	pers/month	8	12,000	
International Consultant (Education)	pers/month	4	60,000	
Local travel and DSA			15,000	
Workshop	sessions	1	12,000	99,000
Phase II:				
Implementation of Study Recommendations				
National Consultants	pers/month	15	23,000	
International Consultants	pers/month	5	75,000	
International Training (M.Sc. or equivalent)	course	25	750,000	
National Training	course	30	150,000	
Study tour to regional institutions	tour	4	160,000	
Development of new curricula and materials	course	6	120,000	
Creation of new SAIs (including dormitories, laboratories, kitchens, classrooms etc.)	institution	3	750,000	
Upgrading of information availability and IT systems	institution	10	300,000	
Seminar participation and academic exchange fund			120,000	
Community linkage programmes	institution	10	100,000	
Upgraded facilities, laboratories and transport	institution	10	400,000	
Incremental operating costs	institution/yr	50	500,000	3,448,000
Contingency (@ 10%)				355,000
TOTAL				3,902,000

TOTAL INDICATIVE SUB-SECTOR INVESTMENT COSTS

36. Below are summarised total indicative investment costs for the agricultural research, extension and education sub-sector, broken down by phasing. The second investment (Strengthening of Agricultural Education) has only a single, five year, second phase and this cost is pro-rated over the medium and long-term period. Total indicative costs are almost US\$11.5 million.

Profile	Short-Term (0-2 yrs)	Medium-Term (3-5 yrs)	Long-Term (6-10 yrs)	Total (US\$'000)
National Multi-Disciplinary Agricultural Services	245.3	2,520.1	5,956.5	8,721.9
Strengthening of Agricultural Education	108.9	2,276.0	1,516.8	3,901.7
TOTAL	354.2	4,796.1	7,473.3	12,623.6

8. AGRICULTURAL MARKETING INVESTMENT PROFILES

1. Three strategic priorities have been developed to investment profile level for the Agricultural Marketing sub-sector, covering:

- Support for Agricultural Marketing Policy reassessment (US\$187,000);
- Strengthening of Wholesale Market Infrastructure (US\$3.4 million); and
- Establishment of National Agricultural Marketing Standards (US\$2.5 million).

None of the proposed investment profiles is expected to extend over more than 5 years, and one profile (Policy Reassessment) is short-term only.

PROFILE 1: SUPPORT FOR AGRICULTURAL MARKETING POLICY REASSESSMENT

Summary

2. This activity would provide for a detailed examination of the impact on rural and urban households and on the national economy of market restrictions arising from existing policies of the Government. By providing quantifiable data on the costs and benefits of policy options, it would provide senior decision makers with a clearer view of policy implications. The total cost is estimated at just under US\$190,000 over a period of eight months.

Background

3. The Government of Myanmar actively pursues a number of policies which attempt to ensure the availability of key food staples at relatively low prices – particularly to the urban population. At a primary level, decrees and other policy instruments are used to dictate both the crops grown (directed production) and access to markets (procurement and trade restrictions). At a secondary level, policies determine the allocation of resources for investment (e.g. in irrigation systems), technical assistance (research and extension) and inputs (finance and fertilizers), providing increased support to those crops considered strategically important – particularly rice.

4. Not all policy instruments are applied directly to the agricultural marketing system, and those affecting production choices, technical assistance and input and financing availability are discussed in other sections of this document, and are not dealt with further here. However, access by agricultural products to markets – especially international markets - constitutes one of the areas most strongly influenced by Government policies, and is the focus of this investment profile.

5. Under the socialist economic model pursued by Myanmar in the 1970s and 1980s, all markets were tightly controlled, and a considerable proportion of production for most strategic crops (including grains, oil seeds, pulses and industrial crops) had to be sold to State procurement agencies at controlled prices, which were generally well below market levels. With the shift away

from the socialist approach at the end of the 1980s, State procurement was dropped for some crops, and domestic and even international markets were opened to private sector participation. The first crop group to benefit from this liberalization was the beans and pulses, from which all marketing controls were dropped in 1989. It is widely believed that the quadrupling of output from this crop group over the next 10-15 years was a direct response to this change.

6. Since that time, domestic marketing restrictions have been eased on most other crops, although controls have been reintroduced from time to time. This occurred, for example, in the case of green and black gram, for which compulsory procurement was re-introduced in 2000 at the rate of two bags/acre, but discontinued again in 2002. By 2003, compulsory procurement remained only for certain industrial crops, such as cotton, and for rice. Compulsory cotton procurement is now being phased out, and replaced by preferential access to inputs and financing for those who sell to the State-owned ginneries.

7. However, by far the most important crop in Myanmar is rice, and this remained tightly controlled until late 2003. Under key policy changes announced in April 2003, which came into effect at the following harvest, compulsory procurement of paddy was discontinued. As such procurement has accounted for between 8 and 17% of total national production over recent years, and at prices as low as 25% of open market levels, this was an important change. Furthermore, exports of rice were immediately opened to the private sector for the first time in several decades. However, by January 2004, the Government had reimposed the ban on private sector exports, in order to ensure stable prices for the domestic market.

8. In addition to rice, export controls are also still in force with regard to most oilseeds (both in seed form and as edible oil) as well as rubber, cotton and, reportedly, yellow maize. Historical data shows clearly a direct relationship between export controls and domestic market prices for a number of crops, with national prices dropping sharply following the imposition of controls.

Rationale and Objective

9. It is widely believed that existing Government policies have led to a wide variety of impacts on the Myanmar economy, including not only such direct changes as domestic prices and marketed volumes and foreign exchange earnings, but also indirect impacts on production levels, types of crops grown and household incomes (rural and urban). The rationale for the proposed investment is therefore the need to document and disseminate to senior policy makers objective evidence on these impacts.

10. The objective of the activity would be to make decision makers aware of these impacts in order to permit more informed choices with respect to such policy options.

Principal Elements and Phasing

11. The proposed investment would be short-term only, and would be expected to require a total of 8 months, including workshops, seminars and related policy discussions. No phasing would be necessary.

Component 1: Policy Impact Study

12. The proposed study would contrast three major scenarios: (a) supply and prices under the current situation; (b) short-term impact on prices of removal of policy restrictions; and (c) long-term impact of removal of policy restrictions, including predicted response in production patterns.

(a) **Under the current situation:**

- Identification of all crops and agricultural commodities affected by marketing related policy restrictions, and definition of those restrictions and controls;
- Determination of the importance of these products in household income (producing households) and expenditures (consuming households); and
- Identification of current contribution (if any) to foreign exchange earnings and taxation.

(b) **Removal of policy restrictions:**

- Estimated FOB values in the absence of market controls (with and without export taxes);
- Estimate of domestic market volume at export parity prices - with and without tax (thus requiring estimates of national price elasticity of demand for the products); and
- Estimates of likely export market volumes and the affect of such volumes on foreign exchange earnings and export tax revenues.

(c) **Following projected supply response:**

- Estimated potential for growth in area and production intensity under a changed market price situation;
- Impact of such adjustments on total production levels and volume exported;
- Long run impact on foreign exchange earnings and tax revenue;
- Likely eventual domestic price adjustment (if any) resulting from such factors as increased productivity and limitations on export market size;
- Estimated increased household incomes and/or expenditures for rural households⁵⁶ and increased expenditures for consumer (urban) households under the new production structures; and
- Estimated cost/benefit balance of production adjustments arising from eliminating marketing policy restrictions (summing above factors).

⁵⁶ Rural households may be producers or purchasers of key staples. In some cases they will be both producers and purchasers over a one year period.

Component 2: Policy Dialogue

13. Under this element, the results of the draft study would be disseminated, including through a series of workshops with different participant groups. Initial presentations to sector participants would be used to validate the assumptions and conclusions of the study. A seminar for mid and senior level technical staff from within the Government would allow a more detailed understanding of the public sector perspective. Finally the presentation of an executive version of the study to senior policy makers would concentrate on describing the impacts under each scenario, and their implication for the economy as a whole.

14. It is possible that these seminars could be accompanied by presentations on the actual results arising from lifting market policy restrictions in other countries.

Indicative Cost

15. The indicative cost of the policy impact reassessment activity is placed at just under US\$190,000 over a period of approximately 8 months.

Item	Costs US\$
Study:	130,000
International TA (7 months at US\$15,000 p.m.)	105,000
National TA (10 months at US\$1,500 p.m.)	15,000
Local Travel and expenses	10,000
Workshops and Seminars	40,000
Contingencies	17,000
Total	187,000

PROFILE 2: STRENGTHENING OF WHOLESALE MARKETING INFRASTRUCTURE

Summary

16. The investment proposal provides for the conduct of a feasibility study for the establishment of one or more wholesale agricultural markets, with a focus on fresh and perishable produce. If positive, the studies would result in the implementation of the recommended markets, including management and related systems. On the basis of very broad assumptions concerning the types of markets which might be determined to be feasible, the indicative cost of this activity is placed at Approximately US\$3.6 million, of which 4% would be for the initial study.

Background

17. Over a period stretching back many decades, the agricultural marketing system in Myanmar has developed an effective and efficient network for handling staple, non-perishable commodities. Through a network of primary village-level collectors, rural wholesalers, Central Crop Exchanges (CCEs), and market wholesalers and retailers, this system allows commodities to move rapidly through the marketing system with minimal losses and low marketing margins.

Margins for market participants can be as low as 1% (in the case of CCEs), and rarely exceed 10-15%, even including transport.

18. Because the Central Crop Exchange-based system deals primarily with easily standardised grains and seeds, it does not require the actual presence of the commodities, or even the supplier, relying instead on specialist brokers working from small samples and product descriptions (hence the low margins charged). With more than 1,000 brokers belonging to the Mandalay CCE, for example, the market provides for interaction between large numbers of participants and the rapid movement of information on current prices.

19. However, such a broker-based system works less well for perishable products, such as vegetables or fish where product quality and characteristics can vary significantly and have a major impact on price. As a result, these types of products do not trade through the CCEs. Instead, alternative marketing channels have developed that provide direct contact between supplier and purchaser in the presence of the product. Nevertheless, given the dominance of the CCE system for non-perishable products, and the relatively low historical volumes of fruits and vegetables, such alternate channels have failed to develop into major wholesale markets, and buyer/seller contact has tended to be localised, or even occur on a one-on-one basis.

20. The result has been an apparent reduction in competitiveness in fresh product marketing – resulting in higher marketing margins - and the lack of adequate facilities for handling and storage of traded products - resulting in higher loss rates. It has also rendered it harder to provide market oversight or related services, for example the collection or dissemination of market information.

Rationale and Objective

21. The poorer performance of the existing market channels when dealing with fresh and perishable items (including meat and fish) is apparent from the relatively high marketing margins associated with such perishable products, as well as in estimated system losses, which reach as high as 25-30% for garlic and onions. As the volume of these more perishable products increase, it will be increasingly important to provide more efficient marketing channels.

22. The objective of the proposed investment would be to ascertain the feasibility of providing wholesale market infrastructure in major population centres for the trading of fresh and perishable products. These would be primarily fruits, vegetables and other perishable items, but could include separate sections or markets for meat or fish, if demand is sufficient. If the investments appear feasible, the investment would finance the physical development of the market infrastructure, as well as providing technical assistance for market start-up and operation.

Principal Elements and Phasing

23. The project would be organized into two principal components: the feasibility study and investment implementation. Implementation would, however, be conditional on a positive feasibility study.

Component 1: Wholesale Market Feasibility Study (Short-Term)

24. The study would be conducted over a period of approximately 4 months by a joint team of national and international experts who would focus on the following issues:

- Based upon previous studies of market flows and volumes, identify those urban areas where the greatest concentration of fresh produce trading occurs and in collaboration with local Government authorities, consider the availability of specific sites near these urban areas considered to be suitable as potential wholesale market locations;
- On the basis of current market flow patterns and historical growth trends in perishable products, estimate the product volumes that can be expected to be traded through the proposed wholesale facilities over the next 15-25 years;
- In consultation with local authorities and users, determine the optimal layout and characteristics of the identified markets, including: controlled entrances with weigh scales, vehicle parking and access, vendor areas; sanitary facilities; administrative and support service offices (e.g. market management, extension services, plant health, analytical laboratories, market information services), security arrangements;
- Determine the apparent demand for additional facilities for which space could be provided, such as: warehousing (ambient and temperature controlled); restaurants and cafes; packing and grading facilities; and offices/storehouses for input suppliers (e.g. finance and insurance agencies; fertilizer, agrochemical and seed vendors);
- Determine the preparation and construction costs associated with the provision of the recommended facilities, including the linkage of the market to associated municipal or township services (e.g. roads, water supply, electricity), and the time period needed for construction and hand-over;
- In consultation with local authorities and traders, transporters and other market participants, determine the most appropriate management and administrative system for the proposed markets, consistent with an emphasis on financial sustainability, user participation in key management decisions, and the role of local authorities as providers of the land;
- Determine the extent and type of technical support services that would be needed in order to support the new management of the wholesale market(s), including accounting systems, information systems; revenue collection; maintenance etc.;
- Estimate the charges that would have to be levied on users in order to ensure the funding of market operating costs and maintenance, and determine the willingness of market participants to pay such costs; and

- Estimate the likely reduction in marketing costs, margins and product losses arising from the operation of the market and provide an indication of the likely level of benefits anticipated from wholesale market operations.

25. It is likely that one or more workshops would be held, both in the urban areas proposed for market development, and possibly also at national level, to inform the Government and market system participants of the proposals and receive feedback on their appropriateness.

Component 2: Implementation of Wholesale Markets (Medium-Term)

26. In advance of the results of the feasibility study, it is clearly very difficult to identify the specific elements that would be required for wholesale market implementation. Nevertheless, the following major elements can be considered to be almost certainly required, if the establishment of wholesale market(s) is determined to be feasible:

- preparation of detailed civil engineering plans and work schedules;
- finalisation of user charges and offering of site leases to vendors and other users;
- basic site preparation, including foundations, drainage, sanitation, electrical and communication systems etc.;
- construction of buildings, perimeter walls, internal roadways etc.;
- connection of the site to external infrastructure (access roads, electrical and water supplies, telephones);
- finishing of administrative and service offices, sanitation facilities;
- installation of weigh scales, computer and communication systems, public lighting; and
- installation and operationalization of systems for accounting, information management, personnel, revenue collection and security.

27. It is estimated that the above processes will require a period of approximately 2 years, depending upon the size and complexity of the markets to be developed, and would require technical assistance in both civil engineering and in wholesale market operations.

Output

28. The principal outputs from this work would be: (a) the initial feasibility study, providing a detailed estimate of the costs, benefits and timing of wholesale market development in one or more sites within Myanmar, including technical assistance needs; and (b) the construction and operation of one or more wholesale markets in accordance with the feasibility study recommendations.

Indicative Cost

29. As implementation costs will depend upon the number of markets recommended, as well as their size and scope, the numbers presented below for the implementation component must be regarded as highly indicative. They are based broadly on the establishment of two medium sized fruit and vegetable wholesale markets using land provided on a long-term no-cost lease by the local Government. The total cost for the investment profile under these assumptions is approximately US\$3.6 million, of which the feasibility study represents some 4% (US\$150,000).

Category	Short-Term Year 1-2	Medium-Term Year 3-5	Total
1. Wholesale Market Feasibility Study			
International Civil engineer (2.5 months x US\$15,000 p.m.)	37,500		
National Civil engineer (3 months x US\$1,500 p.m.)	4,500		
International Marketing Specialist (2.5 months x US\$15,000)	37,500		
National Marketing Specialist (3 months x US\$1,500)	4,500		
International Financial Analyst (3 months x US\$15,000 p.m.)	45,000		
Local travel costs and workshops	10,000		
Contingencies	14,000		
Total	153,000		153,000
2. Wholesale Market Implementation			
International TA: Construction planning and oversight (5 months at US\$15,000 p.m.)		75,000	
National TA: Construction supervision (12 months at US\$1,500 p.m.)		18,000	
Site preparation and connections		500,000	
Major civil works		1,600,000	
Furnishing of offices etc.		300,000	
Computers, vehicles, equipment		340,000	
TA for systems establishment and operation		150,000	
Contingency (10%)		300,000	
Total		3,283,000	3,283,000
TOTAL			3,436,000

PROFILE 3: ESTABLISHMENT OF NATIONAL AGRICULTURAL MARKETING STANDARDS

Summary

30. The proposed investment would provide funding for a consultative process to define appropriate agricultural marketing standards for both domestic and international marketing channels, as well as providing implementation funds to establish and operate some form of standards agency and an expanded MIS service. Total estimated cost is US\$2.5 million over approximately 4-5 years.

Background

31. Myanmar possesses a bewildering variety of weights and measures, which often vary both geographically and as the commodity moves through the marketing chain. This confusion in measures is coupled with the almost complete absence of recognised grades or quality standards. Even where such standards do exist (Central Crop Exchanges and the MAPT define certain standards for rice, oilseeds and pulses), they are only applicable locally and are generally based on characteristics clearly visible to the human eye – such as percentage of broken grains, or colour - and thus exclude such potentially important factors as moisture content, protein content, chemical contamination etc. No widely recognized standards exist at all for horticultural products, nor for livestock and dairy products. Controls are also weak, or absent altogether, with respect to quality and food safety, whether at slaughter, processing, packaging or sale.

32. While the absence of grades and quality standards is prejudicial to the operation of the domestic agricultural marketing system, it is critical for the ability of Myanmar to establish and maintain quality export markets. In general, Myanmar exports fall at the bottom end of international price scales specifically due to perceived poor quality controls. In some cases, such as meat and dairy products, the absence of proven and independently verified health controls makes exports impossible. Nor is the problem restricted only to exports. Myanmar annually imports large quantities of edible oil, but has no standards which such imports must meet, nor any means of enforcing them if they did exist.

33. The absence of standardised weights and measures also restricts the usefulness and accuracy of market information services, as these must deal with measures unfamiliar to market participants in other parts of the country and which may, in any case, vary within a single market. An expansion in current market information systems, which would likely comprise an element in any national agricultural marketing standards effort, would be instrumental in promoting the acceptance and use of the new standards, as well as being a beneficiary.

Rationale and Objectives

34. Although it is recognized that considerable time will be required to displace traditional weights and measures, the demands of an increasingly global economy, together with the need to ensure transparency and efficiency in domestic marketing systems, provides a strong rationale for developing and commencing the application of a modernized national system. Such a system would also address national food quality and safety standards, and support mandatory testing and certification of agricultural products for export.

35. The objective of the investment would be to reduce marketing costs, increase product quality and obtain access or improved prices for Myanmar products in the international market.

Principal Elements and Phasing

36. The proposed project would comprise three broad components: (a) the consultative definition of appropriate national standards and systems of measurement for major agricultural products; (b) the establishment of an institutional and technical capacity to disseminate, enforce and monitor compliance with the selected norms and standards; and (c) a national outreach

programme involving marketing and extension services, local Government and the private sector. Each of these is discussed below:

Component 1: Consultative Definition of Appropriate Marketing Standards and Measures (Short-Term)

37. Using extensive consultations, involving discussions with traders and other market participants, a small panel of experts will identify and define the norms and standards required for the agricultural marketing sector in Myanmar at different stages of the marketing cycle. Input will, in addition, be derived from an assessment of relevant legislation in regional countries such as Thailand and Malaysia, and a review of ISO regulations. The panel will also recommend actions to ensure their effective dissemination, application, and where necessary, enforcement.

38. It is expected that the work of the panel will require at least one year, if adequate time is to be allowed for comments and feedback from both national market participants and consultation with international bodies such as FAO.

39. Appropriate norms and standards in relation to all major agricultural products will be proposed with respect to:

- **Weights and measures:** Although weight measures are easier to standardize and control, they may not be appropriate for rural areas where most traditional measures are in volume terms (baskets, tins, etc.) as these do not require scales or other equipment. Where volume measures are retained, efforts should be made to standardize them nationally – for example, through requirements for single size sacks, and the distribution of standard volume containers. It may be useful and feasible to require a standard size of crate for groups of horticultural products (which also increases the ease of reuse). However, consideration should be given to universal conversion to metric measures for reporting purposes (e.g. yields, production levels) and for all wholesale transactions. The use of periodically checked and certified weigh scales should be required in wholesale markets, and where practical in retail markets also (particularly urban markets). Metric measures are already widely used for export trading⁵⁷.
- **Grades:** Grades are used primarily for separating groups with different characteristics and values within a single product (e.g. tomatoes). With the exception of some grades for cereals and oilseeds (mostly in terms of broken grains, colour and occasionally physical contamination), little grading currently occurs in Myanmar. For many products, size grading (using simple size-based sorters) is one of the easiest initial steps and can be linked with the use of standardized packaging. Effective grades for cereals and grains may require the introduction and dissemination of simple moisture meters, while grades for other products may require the ability to undertake brix analysis (juices) or determine physical contamination. A careful examination should be made of

⁵⁷ It may also be useful to consider the simultaneous introduction of metric measures for packaged foodstuffs.

required international grades for products exported, or likely to be exported, from Myanmar.

- **Quality standards:** Similar in some ways to grades, quality standards are typically imposed more for reasons of public health and food safety, and are of particular importance for biological and chemical contamination (pathogens, parasites, pesticide traces, heavy metals, etc.). They often require Government certification of exported goods, as well as inspection capacity at agro-processing and transport chain level. The FAO Codex Alimentarius is the major international source of such food safety standards.
- **Market information services:** Although some progress has been made in Myanmar in recent years in developing a market information service it is still severely restricted in both scope of data collected (e.g. no volume data is collected from CCEs, and many commodities are currently excluded), and in the dissemination of that data. The panel will consider priorities for expansion of the MIS, including types of data, analyses and dissemination practices.

40. The panel would also consider the institutional basis for the introduction of agreed-upon standards, including the need for the establishment of a specialized agricultural marketing standards unit, the possible future role of the existing Market Information System (MIS) unit, and the legal penalties that would apply to those found intentionally in breach of standards.

Component 2: Application and Enforcement of Appropriate Standards and Measures (Medium-Term)

41. Under this activity investments would be made to permit the dissemination, application and enforcement of the agreed upon norms and standards prepared under Component 1. Although these cannot be defined in advance of the Component 1 work, actions that might be considered include:

- Establishment of an agricultural standards unit, responsible for promoting and enforcing the use of agreed-upon standards. Such a unit might fall within the mandate of MOAI or comprise part of the national Standards Authority. If under MOAI, the unit might be combined with an expanded MIS system (see below);
- Expand the scope of the current MIS programme, both in terms of data collected and through a broader dissemination of market information on radio, market bulletins etc. This might require creating and manning small market information/standards units at key market locations and requiring CCEs to record volume transactions, prices and buyer seller types (not currently done). All information sources should probably use the internet for the transfer of data to the central office;

- Provide for the installation and operation of public weigh scales in major trading areas, as well as programmes of inspection of private scales used in wholesale and retail markets;
- Establishment of laboratory and analytical capabilities for food safety and quality standards, and development of procedures for the selection and analysis of food samples; and
- Training of marketing standards unit, laboratory and extension staff, in the relevance and importance of national standards for weights & measures, grades and food quality.

42. This component would be expected to require at least 3-4 years of support in creation of institutional structures and capacity, as well the development and implementation of outreach programmes.

Output

43. The principal output from this investment would be the creation of a coherent national set of standards for agricultural products entering the marketing system, the strengthening of knowledge about marketed products, and the ability to better comply with international requirements for exported products.

Indicative Cost

44. Based upon broad assumptions concerning the types of actions likely to emerge from a study of improved agricultural marketing standards, an indicative cost for the total investment would be in the region of US\$2.5 million over 4-5 years.

Category	Short-Term Year 1-2	Medium-Term Year 3-5	TOTAL
1. Definition of Marketing Standards			
International Consultants (2 x 3 mos)	90,000		
National Consultants (2 x 4 mos)	15,000		
Regional Study Tour	15,000		
Workshops and Consultations	10,000		
Local Travel & Report Costs	12,000		
Support in the preparation of draft legislation	20,000		
Contingency (10%)	16,200		
Total	178,200		178,200
2. Application and Enforcement of Standards			
Technical Assistance to implementation		250,000	
Creation of marketing standards unit		500,000	
Expanded MIS programme		400,000	
Weigh scales/measuring equipment/ vehicles for MSU and MIS		300,000	
Analytical laboratory and supplies		400,000	
Training of staff (laboratory, standards unit, MIS, extension staff)		250,000	
Contingency (10%)		210,000	
Total		2,310,000	2,310,000
TOTAL			2,488,200

TOTAL INDICATIVE SUB-SECTOR INVESTMENT COSTS

45. Total indicative sub-sector costs for marketing related investments total approximately US\$6.3 million, with all investments being short or medium-term.

Estimated Investment Profile Costs (US\$'000)

Profile	Short-Term	Medium-Term	Long-Term	Total
Support for Agricultural Marketing Policy Reassessment	187.0			187.0
Strengthening of Wholesale Marketing Infrastructure	153.0	3,283.0		3,436.0
Establishment of National Agricultural Marketing Standards	178.2	2,310.0		2,488.2
TOTAL	518.2	5,593.0	0.0	6,111.2

9. RURAL FINANCIAL SERVICES INVESTMENT STRATEGY PROFILES

1. Three strategic priorities have been developed to investment profile level for the Rural Financial Services sub-sector, covering:

- Building Understanding of Rural Finance (US\$277,000);
- Diagnostic Study and Strengthening of MADB (US\$30 million); and
- Developing an Enabling Framework for Rural and Micro Finance (US\$361,500).

Only one of the proposed investment profiles (Strengthening of MADB) is medium-term and is expected to extend over 5 years, the remaining two profiles are short-term only.

PROFILE 1: BUILDING UNDERSTANDING OF RURAL AND MICROFINANCE

Background and Rationale

2. Current availability of formal rural and microfinance services in Myanmar is low - while 70% of the population is engaged in agriculture, which produces 57% of GDP, only 1 to 3% of formal bank credit is provided for agriculture, and the rural population continues to rely mostly on informal sources of finance, especially moneylenders, traders, and input suppliers, most of whom charge high interest rates. This low outreach of the formal sector is the result of a combination of weaknesses in the current policy environment, financial infrastructure, and institutional capacity of existing rural and microfinance institutions.

3. For example, although the Government has pursued a well-intentioned policy of providing subsidized institutional credit to farmers through the state-owned Myanma Agricultural Development Bank (MADB), implementation of this policy has yielded results that are quite different from those desired. In particular, MADB's outreach is limited, loan sizes are inadequate, and MADB drains scarce resources from the Government budget. MADB has been further constrained by limited staff banking skills. Because of MADB's mandate, there has not been a strong emphasis on recruiting experienced bankers at senior levels, or business and accounting majors at entry levels. Nor is there a formal training programme for staff. MADB will need substantial reforms to become a self-sustainable, market-oriented rural finance institution.

4. In the financial sector generally, interest rate ceilings, coupled with recent rates of inflation, have resulted in negative real interest rates—negative deposit rates discourage the savings mobilization that is necessary to fund lending operations, and negative lending rates discourage lending by making it inherently unprofitable. Moreover, banks other than MADB are prohibited from lending for agriculture, and they are further discouraged from lending to rural households by their inability to accept agricultural land as collateral.

5. In a few townships, microfinance projects supported by international donors and local associations partially fill the gap. However, the lack of a clear legal framework for microfinance institutions (MFIs) is a further constraint to the provision of rural finance. The status of these microfinance interventions is generally defined by project agreements that must be individually negotiated and signed with the Government. Such agreements generally define the area of operations, pricing (i.e., interest rates) allowed, and products and services offered. Revisions to such terms require further agreement with the Government. As a result, MFI operations are sometimes legally uncertain, MFIs lack adequate flexibility, and their growth is unnecessarily constrained. Development of an enabling policy, legal, and regulatory framework will therefore be crucial to promoting development of rural and microfinance in Myanmar.

6. Within this context, senior policy makers currently have insufficient inexperience in market-oriented financial systems and have inadequate knowledge of successful experiences in providing rural and microfinance in other countries. Therefore, an improved understanding by policy makers of the issues and lessons learned in rural and microfinance would assist them to develop policies and financial infrastructure (e.g., laws, regulations, and supervisory systems) conducive to developing the sector, as well as guide institutional development in MADB and other rural finance institutions in Myanmar. This will allow rural and microfinance to play its appropriate catalytic role in promoting rural economic growth, including finance for increased farm investments, adoption of improved agricultural technologies, increased crop yields, investments in rural small enterprises, increased and improved livestock raising activities, and therefore higher rural incomes and reduced rural poverty. This will in turn support the Government's efforts to achieve its Four Economic Objectives, which focus on agriculture as the backbone of economic development in a market-oriented system.⁵⁸

Objective

7. The objective of the proposed investment is to assist the Government in developing a sustainable, market-oriented rural finance system; a long-term comprehensive approach is needed. The measures required to address the issues above will need to be introduced sequentially to ensure systematic development of the rural finance sector. As a first step, therefore, the objective of this project will be to build awareness and understanding of policy and institutional issues in rural and microfinance among senior policy makers. This will in turn allow them to prepare and implement informed and improved policies to support the development of a sustainable, market-oriented rural and microfinance sector.

⁵⁸ The Four Economic Objectives are:

- development of agriculture as the base and all round development of the other sectors of the economy as well;
- proper evolution of the market oriented economic system;
- development of the economy inviting participation in terms of technical know-how and investments from inside the country and abroad; and
- the initiative to shape the national economy must be kept in the hands of the state and the national peoples.

Principal Components

8. The project will be implemented over 6 months and include the following components and activities:

- (i) assisting the Central Bank of Myanmar (CBM) to establish and lead an inter-ministerial policy group on rural and microfinance;
- (ii) conducting policy workshops in Yangon and in selected divisions and states for senior policy makers, divisional authorities, and senior staff of CBM, MADB, the Ministry of Finance, the Ministry of Agriculture and Irrigation, and the Prime Minister's Office;
- (iii) facilitating consultations among policy makers and key stakeholders, including rural and microfinance practitioners and clients, to identify and assess different policy options; and
- (iv) providing policy makers, through study tours within the region, with opportunities to learn from successful rural finance environments and institutions; study tours to Indonesia and the Philippines are recommended.⁵⁹

9. CBM, with its responsibility for regulating and supervising the financial sector, would be the main Government counterpart in the project and contribute staff to assist the consulting team in carrying out project activities. However, given the cross-cutting relevance of rural finance development, other ministries and Government agencies would actively participate in project activities and contribute staff where appropriate.

Outputs

10. The key output of this project will be an enhanced understanding by policy makers of institutional and policy issues in rural finance. Another output would be a Rural Finance Institutional and Policy Issues Paper that presents the lessons learned and compares international best practice with the current situation in Myanmar, and thereby indicates directions for reform. A third key output should be an enabling Vision and Policy Statement for Rural Finance that would build on national policy objectives and be officially endorsed by the Government. Such a Statement would be a basic precondition to be met if the full potential of the rural finance sector is to be realized.

⁵⁹ Both countries have relatively advanced rural and microfinance sectors supported by enabling policy and regulatory environments. The state-owned Bank Rakyat Indonesia (BRI) would provide valuable lessons on the successful transformation from a bank originally responsible for channelling government funds for agricultural loans into a market-oriented bank providing a range of financial services to support the overall livelihood activities of rural households.

Indicative Cost

11. Costs for this project would be approximately US\$400,000. An indicative budget is presented below.

Indicative Budget (US\$)

Item	Total Costs
International Consultants ^a (8 months at US\$15,000 p.m.)	120,000
Domestic Consultants ^a (8 months at US\$1,500 p.m.)	12,000
Workshops	40,000
Study Tours (2)	40,000
Office Space	10,000
Office Equipment ^b	10,000
Project Office Supplies, Reports, Communications	20,000
Contingencies (at 10%)	25,000
Total	277,000
^a Includes fees, per diem, and travel expenses	
^b Includes computers (hardware and software), printers, fax machine, furniture, etc. to equip project office	

PROFILE 2: DIAGNOSTIC STUDY AND STRENGTHENING OF MYANMA AGRICULTURAL DEVELOPMENT BANK

Background and Rationale

12. Current availability of formal rural financial services in Myanmar is low—while 70% of the population is engaged in agriculture, which produces 57% of GDP, only 1 to 3% of formal bank credit is provided for agriculture, and the rural population continues to rely mostly on informal sources of finance, especially moneylenders, traders, and input suppliers, most of whom charge high interest rates. Myanmar has pursued a well-intentioned policy of providing subsidized institutional credit to farmers through the state-owned Myanmar Agricultural Development Bank (MADB). However, as has been seen in other countries that have followed similar policies, implementation of this policy has yielded results that are quite different from those desired. In particular, MADB's outreach is limited, loan sizes are inadequate, and MADB drains scarce resources from the Government budget.

13. MADB has several strengths to build on, and therefore has the potential to play an increased role in providing broad-based, market-oriented rural financial services. It has a relatively large branch network, with branches in nearly two thirds of Myanmar's 325 townships. It has established substantial public trust, which is a significant asset to any financial institution. It has staff who is dedicated to their jobs and to MADB's mission to deliver quality financial services to rural households. And it maintains a relatively strong credit culture - although its reported repayment rate of 100% is overestimated, evidence indicates that on-time repayment is likely over 80%, which is relatively high for a state-owned agricultural development bank.

14. In order to fulfil its potential as a rural finance institution, MADB will need to overcome several constraints and address key institutional and policy issues. Although the 1990 Law gives MADB a mandate to “effectively support the development of agricultural, livestock and rural socio-economic enterprises in the country by providing banking services”, in practice it provides loans only for agricultural production. It therefore has high risk concentrations related to climate (e.g., crop failure or low yields), natural disaster (e.g., flooding or drought), and agricultural commodity price movements. While agriculture should remain an important part of the portfolio, MADB should diversify its lending to reduce its own risk and to foster the growth of non-farm income, rural enterprises, and employment in rural areas. This would be consistent with its original legal mandate.

15. Seasonal loans make up the bulk of MADB’s lending and are granted for growing paddy, groundnuts, pulses, sesame, cotton, jute, mustard, maize, and sugarcane. Thus far, MADB has been supply-driven, based on its lending plan. In principle, loan size is to be determined according to the borrower’s demand and capacity to repay, and is targeted to be approximately 30% of production costs. In practice, because of MADB’s limited funds, loan size is much smaller. In 2003-04, loan rates for growing rice (which account for 80% of MADB seasonal loan volume) were MYK 2,000 to 8,000 per acre, while production costs were MYK 50,000 to 61,000 per acre. Loan rates for other crops were an even smaller percentage of production costs. From 1998 to 2003, the number of loans granted fell from 1.66 million to 1.23 million; and although loan volume increased over the same period from MYK 10,359 million to MYK 12,015 (with a projected increase to MYK 20,150 million in 2003-04), if adjusted for inflation, total lending has also fallen, indicating an overall trend of diminishing lending to a diminishing client base⁶⁰.

16. MADB’s decreasing lending is the result of its decreasing funding base, when adjusted for inflation. MADB’s loanable funds come from its capital, reserves, customer deposits, and short-term borrowing of Government funds, all of which have their limitations under current policies and practices⁶¹. The 1990 Law limits MADB’s capital to MYK 1,000 million and limits reserves not to exceed capital; current policy limits reserves to MYK 500 million—hence, capital and reserves combined are currently limited to MYK 1.5 billion. MADB borrows from the largest state-owned bank, the Myanma Economic Bank (MEB), at 10% per annum. However, the amount that MADB is allowed to borrow from MEB is determined by the Government each year and is therefore limited by the scarce budgetary resources. With respect to savings, MADB pays a deposit rate of 9% per year, considerably below inflation, so clients are not encouraged to deposit savings. In principle, farmers are encouraged to save by being allowed to borrow an investment loan equal to five times their savings; in practice, MADB’s limited loan funds severely restricts implementation of this incentive scheme. MADB further adopted a policy in March 2003 of not allowing customers to withdraw any deposits except in “exceptional” circumstances — in practice, this means that customers can withdraw their savings only if they agree to leave MADB and forfeit all borrowing privileges. Hence, savings are not a service, but rather a requirement to maintain borrowing privileges, and clients maintain only the minimum required. As a result of this

⁶⁰ Average nominal loan size in 1998-99 was MYK 6,242, while average nominal loan size in 2002-03 was MYK 10,283. If adjusted by the official consumer price index (using 1997-98 as the base year), however, average real loan sizes were MYK 4,675 in 1998-99 and MYK 3,140 in 2002-03. (Projected average nominal and real loan sizes, respectively, in 2003-04 were MYK 16,331 and MYK 4,083).

⁶¹ For 2003-04, MADB’s loanable funds are projected to be MYK 20,822 million (MYK 15,000 million borrowed from the Government; MYK 4,616 million in deposits; and MYK 1,206 in capital and reserves).

set of laws, regulations, and policies, MADB's funding base is restricted, which in turn limits its lending.

17. Another constraint faced by MADB is the capacity of staff. Because of MADB's mandate, there has not been a strong emphasis on recruiting either experienced bankers at senior levels, or business and accounting majors at entry levels. Staff at the key assistant manager level are not recruited by MADB, but instead are recruited by the Public Service Selection and Training Board, which is appointed by the Government. Nor is there a formal training programme for staff. Skills for credit assessment, risk management, accounting and auditing, asset valuation, business planning, and marketing integral to function on a market-basis must be built over time.

18. MADB does not pay taxes, but makes a contribution to the State out of its nominal profits every year, making a total contribution of almost MYK 4 billion from 1980 to 2003. However, adjusting for inflation, MADB represents a net loss to the Government budget every year as a result of the Government's subsidizing MADB's negative real interest rates (i.e., by the Government's lending to MADB at 10% interest while inflation is significantly higher). Such losses amounted to approximately MYK 4 billion in 2002-03.

19. MADB has established a goal of financial self-sustainability. However, it has yet to articulate a strategy to achieve this goal. Revisions to MADB's policies and operations, to transform it into a demand-driven and market based rural finance institution, would increase its potential to achieve this goal by building on MADB's strengths and substantially enhancing MADB's performance, thus improving its outreach, sustainability, and positive impact on Myanmar's rural economy. As a first step to developing a strategy and restructuring plan to achieve self-sustainability, a thorough diagnostic study of its operations and policies should be conducted, along with an external financial audit to international accounting standards to present policy makers with an accurate representation of its financial situation.

Objectives

20. The objectives of the first phase of the project will be to (i) provide the Government's policy makers and MADB's management with a thorough understanding of MADB's current operations, policies, and financial situation; (ii) assess the consequences in terms of MADB's financial sustainability, outreach, and contribution to achieving the Government's economic objectives; (iii) compare MADB's operations and policies to international best practices; and (iv) make recommendations on a set of institutional and policy reforms to transform MADB into a financially self-sustainable, market-oriented rural finance institution that can better contribute to national economic objectives.

21. In the second phase, the approved restructuring plan will be put into effect, significantly improving the management and operations of the MADB, both at headquarters and at field level.

Principal Components

Phase I: Diagnostic Study

22. The diagnostic study will take place over 6 months and include the following:
- review the organizational structure and governance of MADB, its level of autonomy and decision-making procedures, and its business practices, pricing policies, and business culture;
 - review MADB’s operating systems and procedures, including accounting policies and practices that have a significant bearing on its operations and financial health;
 - assess the quality of the loan portfolio, estimate loan recovery rates for a sample of branches, classify the non-performing loan portfolio into substandard, doubtful, and loss categories in accordance with the internationally accepted standards, and determine the appropriate level of provisioning for non-performing loans;
 - assess the financial performance of MADB, including an analysis of its cost structure and the implications for financial viability, capital adequacy, deposit mobilization operations and subsidy dependence;
 - identify the major problems of MADB concerning governance, autonomy, organizational structure, business culture and practices, operating systems and procedures, accounting policies and practices, management information systems, risk management systems, and staff incentives, motivation, and skills;
 - formulate, in consultation with MADB, CBM, Ministry of Agriculture and Irrigation, and the Ministry of Finance, a comprehensive reform programme to address the identified issues with a view to transforming MADB into a viable rural financial institution, including an evaluation of the means by which MADB’s subsidized and directed lending portfolio should be managed in the achievement of this objective; and
 - define the Terms of Reference to assist MADB with the introduction of a corporate planning process that will set out MADB’s mission, business conduct, strategies, operational policies, and detailed action plans for the agreed reform programme.
23. Parallel to the diagnostic study, the project will also conduct an external financial audit of MADB under international accounting standards (IAS) for the financial statements of the previous two years. In accordance with IAS, the audit will examine the financial statements of MADB and express an opinion on any material items that vary from IAS. The audit will also examine MADB's accounting policies and procedures and submit to MADB's management a statement of recommended modifications.

24. Based on the results of the diagnostic study and financial audit, a restructuring plan will be prepared in relation to the areas studied under the diagnostic. The restructuring plan will include cost estimates for its implementation, recommendations regarding external assistance to assist MADB to implement it, and recommendations on staff training to accompany restructuring.

25. MADB would be the main Government counterpart in the project and contribute staff to assist the consulting team in carrying out project activities.

Phase II: Implementation of the Restructuring Plan

26. The diagnostic study of MADB should lead to the preparation of a restructuring plan to transform MADB into a financially self-sustainable, market-oriented rural financial institution that provides a range of rural financial services for a diverse clientele on a demand-driven basis. While the details can only be prepared following the diagnostic study, it can be expected that the restructuring plan include some reorganization, phasing out of interest rate subsidies and directed lending, improved credit policies and procedures, improved pricing of services, diversification of client base and lending products, improved risk management, introduction of a corporate planning process, implementation of improved loan provisioning and classification, increased management autonomy, revisions to human resources policies and practices including recruitment and training of staff, upgrading of physical facilities and MIS, and capitalization conditioned on meeting performance targets. Preparation of the restructuring plan could be completed within 3 months of the completion of the diagnostic and audit. Implementation, however, would likely be an ongoing multi-year process, with major activities being completed within 2 to 3 years and the project having a complete life span of 4-5 years.

Outputs

27. Key short-term outputs would include the following:

- Diagnostic papers on MADB's: (i) governance; (ii) strategic planning; (iii) organizational structure; (iv) human resources management; (v) pricing policies and procedures; (vi) credit policies and procedures; (vii) risk management policies and procedures; (viii) products and demand; (ix) compliance review; (x) financial and accounting systems; (xi) management information systems; and (xii) financial analysis;
- Financial audit report and management letter; and
- MADB restructuring plan.

28. Long-term outputs would be a restructured MADB, in accordance with the agreed upon plan, including an improved management and governance structure, strengthened human resources, functioning management information system, improved local office facilities, effective and timely approval of loans and management of loan portfolios.

Indicative Cost

29. Costs for this project in the short-term would be approximately US\$460,000. An indicative budget is presented below. Although specific needs for strengthening of MADB cannot be indicated at this time, an amount of US\$30 million is indicated as a likely investment requirement in the medium-term.

Indicative Budget (US\$)

Item	Short-Term (Year 1)	Medium-Term (Years 2-5)
TA: International Consultants ^a (60 months at US\$15,000)	180,000	720,000
TA: Domestic Consultants ^a (60 months at US\$1,500 p.m.)	18,000	72,000
Financial audit of MADB	80,000	0
Training and Workshops for MADB staff	10,000	125,000
Internal travel	10,000	75,000
Office Equipment ^b	10,000	400,000
Project Office Supplies, Reports, Communications	20,000	100,000
Vehicles and operations		250,000
International training of MADB staff		350,000
Recapitalization of MADB ^c		25,000,000
Contingencies	37,000	2,709,000
Total	405,000	29,801,000
^a Includes fees, per diem, and international travel expenses.		
^b Includes computers (hardware and software), printers, fax machine, furniture, etc. to equip project office, and later MADB MIS system and regional offices.		
^c Subject to meeting performance targets.		

PROFILE 3: DEVELOPING AN ENABLING LEGAL, REGULATORY, AND SUPERVISORY FRAMEWORK FOR RURAL AND MICROFINANCE

Background and Rationale

30. Current availability of formal rural financial services in Myanmar is low—while 70% of the population is engaged in agriculture, which produces 57% of GDP, only 1 to 3% of formal bank credit is provided for agriculture, and the rural population continues to rely mostly on informal sources of finance, especially moneylenders, traders, and input suppliers, most of whom charge high interest rates.

31. Myanmar's microfinance sector is at an early stage of development, but some microfinance projects are demonstrating the potential of microfinance in Myanmar. These include three UNDP microfinance projects in the Delta, Dry Zone, and Southern Shan State. Each has focused on international best practice and financial sustainability since their inception. Operational self-sufficiency of each programme is over 100%, reported repayment rates are from 98 to 100%, and all 3 projects are experiencing considerable success in terms of outreach, impact, and financial performance. Collectively, they reach over 100,000 clients in the 11 townships in which they are authorized to operate—in their respective project areas, each is the largest source of institutional credit, significantly surpassing the outreach and loan volume of the Myanmar

Agricultural Development Bank (MADB). Two of the three projects report approaching the saturation point in the townships where they operate—further expansion will require operating in townships other than those stipulated in the project agreement with the Government. Other microfinance projects supported by international donors, such as the Dawn Programme of Save the Children (US) and the Micro-enterprise Development Programme of World Vision, also focus on international best practice and long-term financial sustainability and, therefore, have the potential to provide sustainable access to rural financial services and eventually transform into a formal microfinance institution once a legal and regulatory framework is in place.

32. On the other hand, other microfinance projects, especially those implemented by some local associations, suffer from lack of experience and training in microfinance, as well as funding to upgrade their methods and services. As a result, despite best intentions, they follow practices that have proved unsuccessful in other contexts. All microfinance programmes in Myanmar should establish long-term financial sustainability as a goal from the outset of their operations.

33. There is significant potential for several of the best-practice microfinance projects to expand and/or be replicated, as well as serve as valuable models and lessons for Government policy makers and new microfinance practitioners. However, the lack of a clear legal framework for MFIs is a major constraint because their status is generally defined by project agreements that must be individually negotiated and signed with the Government. Such agreements generally define the area of operations, pricing (i.e., interest rates) allowed, and products and services offered. Revisions to such terms require further agreement with the Government. As a result, MFI operations are sometimes legally uncertain, MFIs lack sufficient flexibility, and their growth is unnecessarily constrained.

34. Several private banks have expressed a desire to conduct microfinance activities in rural areas, and two banks successfully piloted microfinance to community-based organizations formed under UNDP's Human Development Initiative (HDI) Project. However, formal banks have been discouraged from providing rural financial services for a number of reasons. First, MADB's mission has been interpreted to mean that MADB shall be the *only* source of institutional credit for agricultural production in Myanmar. Other formal banks are thus prohibited from providing credit for agricultural production, and the two private banks that piloted microfinance under HDI were directed by the Central Bank of Myanmar (CBM) to cease. Second, interest rate ceilings set by CBM, coupled with recent rates of inflation, have resulted in negative real interest rates—negative deposit rates discourage the savings mobilization that is necessary to fund lending operations, and negative lending rates discourage lending by making it inherently unprofitable. Third, banks are further discouraged from lending to rural households by the inability to accept agricultural land-use rights as collateral. Such land is generally rural households' most important asset, and prohibition of its use as collateral represents a severe restriction on access to loans by rural households.

35. Hence, the current legal and regulatory environment distorts the rural finance system and results in misallocation of resources, crowding out of commercial finance by MFIs and other banks, and consequently limits outreach. Restrictions on interest rates and institutional forms limit the development of MFIs, hindering the development of a competitive marketplace and further limiting outreach to the poor. Both international and local experience demonstrates that the poor

are willing to pay market interest rates. Moreover, the poor tend to value sustained access more than a low interest rate; it is generally the non-poor that benefit from subsidized interest rates since they have greater access and can absorb larger loans, thus reaping larger subsidies. A survey of hundreds of Myanmar villagers in September and October 2003, including several groups of clients of MADB and microfinance programmes, similarly indicated a unanimous preference for larger loans at commercial interest rates, rather the current small loans at subsidized interest rates available to a few MADB clients. Development of an appropriate, enabling regulatory framework for rural and microfinance will therefore facilitate investment in rural and microfinance institutions, ensure the development of a viable sector, and consequently promote increased outreach, access, economic growth, and poverty reduction in rural areas.

36. A further constraint to the growth in provision of rural and microfinance is the limited capacity in CBM to regulate and supervise them. Depositors are most concerned with the security of their deposits, which in turn requires a strong central bank responsible for licensing and supervising financial institutions, and which can intervene appropriately and decisively when necessary to maintain the integrity of the financial system. The banking crisis of 2003 underlines the need to strengthen CBM's capacity in this respect. In particular, CBM will need to build its capacity to make appropriate licensing decisions and supervise deposit-taking MFIs.

Objectives

37. The objective of the project will be to assist CBM and other relevant Government ministries and agencies⁶² to develop an enabling legal, regulatory, and supervisory framework for rural and microfinance, and will build capacity in CBM to implement and supervise the framework. The project will also promote the adoption of international best practice and a focus on long-term sustainability by MFIs in Myanmar. Consequently, the development of a diversified, competitive, sustainable, market-oriented rural and microfinance sector in Myanmar will be promoted. The development of a viable sector will in turn contribute to the achievement of national economic objectives by increasing outreach and investments in agriculture and rural enterprises, adoption of improved agricultural technologies, increased crop yields, increased and improved livestock raising activities, and therefore higher rural incomes and reduced rural poverty.

Principal Components

38. The project will be implemented over approximately 12 months and assist CBM and the inter-ministerial policy group to:

- review all existing laws and regulations that affect rural and microfinance;
- develop a draft legal, regulatory, and supervisory framework to support and enable development of the sector;

⁶² In principle, this should include the inter-ministerial policy group on rural finance established as part of the “Building Understanding of Rural Finance” project that should precede this project.

- conduct participatory workshops to analyze, discuss, and finalize the draft with key policymakers and stakeholders;
- create institutional capacity for implementing the framework through:
 - training for CBM staff, including both in-country training and two persons attending a short duration international course such as that offered at Boulder in microfinance;
 - study tours for CBM and policy group staff to other countries in the region implementing enabling rural and microfinance frameworks;
 - establishing a publicly accessible data centre and library within CBM; and
 - workshops for microfinance practitioners to familiarize them with disclosure and reporting requirements under the new framework.

39. The project should also facilitate the creation of a Microfinance Forum, consisting of microfinance practitioners and policy makers, to ensure a continual dialogue to maintain and enhance the enabling environment for microfinance. The Forum should also agree to an industry-wide “code of conduct” to ensure, among others, that all microfinance practitioners adopt international best practices and focus on long-term financial sustainability from the outset of the operations.

40. CBM, with its responsibility for regulating and supervising the financial sector, would be the main Government counterpart in the project and contribute staff to assist the consulting team in carrying out project activities. However, the rural and microfinance policy group previously established in the “Building Understanding of Rural and Microfinance Project” would actively participate in project activities and contribute staff where appropriate.

Outputs

41. Key outputs would include the following:

- a set of enabling microfinance regulations that support the development of a sustainable, market-oriented rural and microfinance sector;
- regulatory improvements that allow banks to engage in agricultural lending and that ease interest rate ceilings;
- legal improvements that allow land-use rights to be used as collateral within the overall Myanmar legal framework for land under the Land Nationalization Act of 1954;
- increased capacity in CBM to implement the regulatory and supervisory framework;
- capacity in MFIs to meet their regulatory, disclosure, and reporting requirements; and
- creation of a Microfinance Forum to maintain policy dialogue between practitioners and policy makers, and to agree to a best-practice code of conduct.

Indicative Cost

42. Costs for this project would be approximately US\$367,000. An indicative budget is presented below.

Indicative Budget (US\$)

Item	Total Costs
International Consultants ^a (7 months at US\$15,000 p.m.)	105,000
Domestic Consultants ^a (9 months at US\$1,500 p.m.)	13,500
International training in microfinance (2 persons)	15,000
Training courses - CBM staff (3 courses)	30,000
Workshops – Microfinance practitioners (2 workshops)	20,000
Study Tours	30,000
Data Centre Establishment	75,000
Office Space	10,000
Office Equipment ^b	10,000
Project Office Supplies, Reports, Communications	20,000
Contingencies	33,000
Total	361,500
^a Includes fees, per diem, and travel expenses.	
^b Includes computers (hardware and software), printers, fax machine, furniture, etc. to equip project office.	

TOTAL INDICATIVE SUB-SECTOR INVESTMENT COSTS

43. Total indicative sub-sector costs for rural finance related investments total approximately US\$31 million. All are short-term initiatives with the exception of the strengthening of MADB, which is expected to cover a 5 year period.

Estimated Investment Profile Costs (US\$'000)

Profile	Short-Term	Medium-Term	Long-Term	Total
1. Building Understanding of Rural and Microfinance	277.0			277.0
2. Diagnostic Study and Strengthening of MADB	405.0	29,801.0		30,206.0
3. Developing an Enabling Legal, Regulatory, and Supervisory Framework for Rural and Microfinance	361.5			361.5
TOTAL	1,044	29,801	0	30,845