

Myanmar-Japan Joint Cooperation for the Structural Adjustment
of Myanmar Economy

**AGRICULTURE AND RURAL DEVELOPMENT IN MYANMAR:
CURRENT SITUATION AND PRIORITY NEEDS FOR ITS SUSTAINABLE DEVELOPMENT**

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I. INTRODUCTION

The agriculture sector, as a dominant force in Myanmar's national economic development, plays a significant role in providing overall domestic food self sufficiency, promoting external trade and availing raw materials to meet the domestic agro-based industries. Agriculture, livestock and fisheries and forestry at present contribute to 43% of Myanmar's GDP, and to 51% of export earnings and remain as the principal pillars in the national economy.

At the same time, about 66% of the total population remain locative to the rural areas and dependent on the sectors for their livelihood; and the government is highly aware that there is still a strong need for balanced growth, and in particular, the establishment of an infrastructure that would accrue the benefits of prosperity also to the major rural populace in all the state and divisions.

The government has accordingly, since 1988, accorded strong development support to all these sectors. The agriculture, livestock and fisheries, and forestry sectors, though formerly under a single Ministry, have since 1992, been placed the domain of separate ministries, with a view to pay more close attention to the respective sectors.

In tandem, the Ministry of Border Areas and National Races Development was established in 1992, and dually remains engaged in the development of the border areas, that constitutes a major undertaking in rural up-lift. It embraces (20) different border locative regions, covering 74905 square miles and a population of 5.06 million. A complete package of overall infrastructure development remains apace- and apart from progress made in agriculture, livestock and fisheries, forestry, health and opium poppy eradication, 366 primary schools, 48 middle schools and 19 High Schools have been established; and about 3612 miles of new roads laid, while funds totaling 19.404 billion kyats have been expended.

II. NATIONAL AND SECTORAL DEVELOPMENT OBJECTIVES

As at the turn of the 21st Century, agriculture in Myanmar has undergone only a little over a decade of restructuring under its new economic, social and development strategies, in shifting towards a market-oriented economy. The salient liberalization thrusts for enhanced agricultural development and production have been:-

- a) freedom of choice of crops and trade;
- b) decontrolling of prices;
- c) appropriate legislation for private investment
- d) private sector engagement in domestic and external trade; and
- e) enhanced opportunities for private sector participation in opening up of new tracts of land.

Myanmar has since 1988 set in motion many portent economic changes. The most significant changes in the agriculture sector have been the removal of former restrictions on choice of crops, price control, movement, milling and marketing and trading of agricultural products.

Compulsory delivery quotas for paddy were also drastically scaled down and official procurements prices increased. The measure have favoured farmers with enhanced farm-gate prices, while providing them with complete freedom in their livelihood. The export of all agricultural produce, with the exception of the country's staple food - rice, has also been opened to the private sector.

The agricultural, livestock, fisheries and forestry sector development, while being accorded the highest priority, have the following national and sectoral objectives :-

A. NATIONAL ECONOMIC OBJECTIVES

The overall national objectives have been: -

1. for the agriculture sector to serve as the basis for other sectors' development;
2. for a progressive move towards a market-oriented economy;
3. for the establishment of appropriate settings for increasing domestic and foreign participation in terms of technical know-how and investments, and
4. for the retention of national economic development initiatives within the framework of the state and its peoples.

B. SECTORAL OBJECTIVES - AGRICULTURE

1. to generate surplus paddy production
2. to generate self-sufficiency in edible oil, and
3. to generate increasing production and export of pulses and industrial crops

C. SECTORAL OBJECTIVES - LIVESTOCK and FISHERIES

1. to accelerate production of meat, fish, milk products and number of livestock and poultry
2. to improve the quality of livestock and fisheries
3. to provide increasing preventive and curative veterinary services, and
4. to generate livestock and fishery exports and value added products.
5. to upgrade the socio-economic status of livestock and fisheries community.

D. SECTORAL OBJECTIVES - FORESTRY

1. the protection of land, water, vegetation and wild life,
2. the sustainability of forest resources and environment,
3. the provision of basic needs of urban and rural populace,
4. the increasing export of value added wood products,
5. the stepping up of reforestation programmes, and
6. the establishment of programmes, pertaining to rural community development.

III. PRESENT PRODUCTION SITUATION IN AGRICULTURE

In pursuance of the development objectives, the Government accorded full support to the

- a) development of new agriculture land;
- b) provision of increased irrigation water supply;
- c) availability of increasing farm mechanization;
- d) transfer of modern technology, including high yielding planting materials; and
- e) development of agro-based industries.

Agriculture, including the livestock and fisheries and forestry sectors, still play a highly extensive role in the national economy, having accounted for about 47% of GDP and 40% of export earnings in 1988-89 against 43% and 51% respectively in 1999-2000.

Table-1 Gross Domestic Product

(kyats million)

Sr.	Particulars	1988-89		1999-2000(p)	
		Value	% of Total GDP	Value	% of Total GDP
1	Goods	28004.2	59.40	52936.6	60.29
1	Agriculture	18137.6	38.48	30131.6	34.31
2	Livestock & Fishery	3780.2	8.02	6973.3	7.94
3	Forestry	677.4	1.44	820.3	0.93
4	Processing & Manufacturing	4094.3	8.68	8351.3	9.51
5	Power & Mining & construction	1314.7	2.78	6660.1	7.58
2	Services	8578.7	18.20	16535.5	18.83
3	Trade	10558.2	22.40	18338.2	20.88
4	Gross Domestic Product (1+2+3)	47141.1	100.00	87810.3	100.00

Table-2 Export Earnings

(Kyats million)

Sector	1988-89		1999-2000(p)	
	Value	%	Value	%
Total Export	2168.9	100.00	9394	100.00
(a) Agriculture	127.6	5.88	2176	23.16
(b) Livestock and Fisheries	66.5	3.07	954	10.16
(c) Forestry	701.5	32.34	1671	17.79

A. Agriculture

The year 1988-89 witnessed the lowest period in growth, during the past decade. Growth in that year was (-13.2%). Next in 1989-90 and 1990-91, it recovered to 5.2% and 2.0% respectively. Thereafter it took a strong turn during the Short Term Four Year Plan (1992-93 to 1995-96), registering an average annual growth rate of (7.3%). It, however, slid again to 3.2% in the first four years of the current Five Year Short Term Plan (1996-97 to 2000-2001).

Nonetheless, the net sown area, irrigation, value of net out and production of some major crops did move forward and performance as at 1988-89 and the end 1999-2000 were:

Table-3 Performance in 1988-89 and 1999-2000

Sr.	Particular	1988-89	1999-2000 Provisional	Increase	
				Between 1988- 2000	Average Annual Increase
1	Net sown area(000 ha)	8055	10104	2049	171
2	Cropping intensity	119.6	145.0	25.4	2.1
3	Irrigated area %	12.6	17.3	4.7	0.4
4	Value of net output- at constant producers' prices- (kyats in million)	18137.6	30131.6	11994	999.5
5	Crop Production (000'MT)				
1	paddy	13165	19887	6722	560
2	other cereals (wheat, maize, millet)	436	611	175	15
3	oil crops (groundnut and sesamum)	737	1309	572	48
4	peas and beans	409	1921	1512	126
5	industrial crops (cotton, jute, sugarcane, rubber, virginia tobacco)	2329	5414	3085	257
6	food crops (chillies, onion, garlic, potatoes)	389	893	504	42

However, the yields per hectare over the decade were not impressive in comparison to world and Asian averages- and the following (Table-4) relates to the performance of some major crops in 1999-2000. There is still immense potential for further intensification, and improvement in yields, and is a clear indication for the need of addressing the issues appropriately, both from policy as well as technical aspects.

Table-4 Yield performance of some major crops in 1999-2000

(Kilograms per hectare)

Sr.	Crop	Myanmar	World	Asia
1	Paddy	3128	3845	3913
2	Wheat	973	2711	2836
3	Maize	1650	4313	3773
4	Peas and beans	865	839	791
5	Groundnut	1145	1336	1546
6	Sugarcane	44210	65690	66206
7	Cotton	545	1573	1464
8	Jute	897	1708	1716

Crop Production Development

The prevalence of different agro-ecological zones within the country has enabled the growing of over more than 60 different crops. In Myanmar's agriculture, cereal crops remain the most important group with its area constituting 47.6% of the total crop sown area of 14.660 million hectares. It is followed by oilseed crops as the second most important next to cereals and with pulses and industrial crops ranking third and fourth respectively. Union data pertaining to the sown area and production of different crop groups for crop year 1999-2000 are given in Table 5.

Table-5 Crop Production by Group (1999-2000)

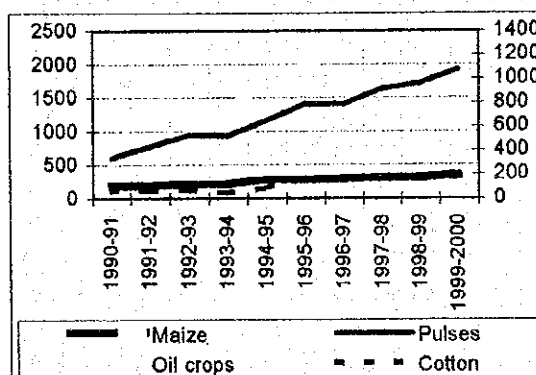
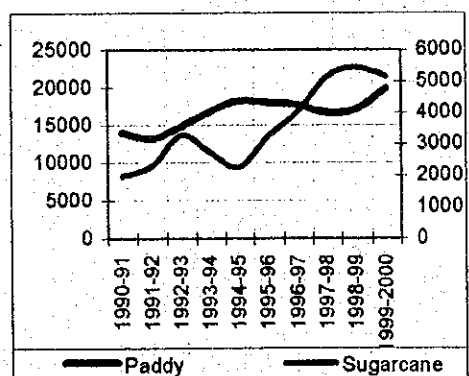
Crop Group	Area(000' ha)	per cent
Cereals	6982	47.6
Oilseeds	2546	17.4
Industrial crops	813	5.5
Peas and beans	2680	18.3
Culinary crops	223	1.5
Others	1416	9.7
Total	14660	100.00

Agricultural development has been accorded strong support through horizontal as well as vertical expansion, while the deregulation of choice of crops, pricing and marketing has given it further impetus. And the measures on the whole led to an increasing trend of major crops production as shown in Table-6.

Table-6 Major Crop Production Trend

(Thousand MT)

Year	Paddy	Maize	Pulses	Oil crops	Sugarcane	Cotton
1990-91	13969	187	602	812	1962	62
1991-92	13202	191	770	662	2308	63
1992-93	14837	208	940	787	3281	68
1993-94	16760	205	923	768	2719	43
1994-95	18195	284	1161	956	2254	86
1995-96	17953	275	1403	1099	3250	165
1996-97	17676	286	1398	1034	4042	168
1997-98	16654	308	1631	969	5137	164
1998-99(p.a)	17078	303	1720	1042	5429	158
1999-2000(p)	19887	349	1921	1309	5147	176



The dividends for prioritizing support for some major crops for specific development has led to remarkable improvements ; and as a result, the value of net output of the agriculture sector at 1985-86 constant prices increased to 30.132 billion kyats in comparison to 19.741 billion kyats in 1991-92, registering an increment of 154.75% during the decade.

Table-7 Performance of Agricultural Sector(Value in 1985-86 constant prices)

Year	Value of Total Net	Contribution of	Percent	Growth Rate of
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	Out Put (mil. ks)	Agri-sector (mil. ks)	Contribution of Agri-sector	Agri-sector
1990-91	50260	19471	38.7	2.0
1991-92	49933	18708	37.5	-3.9
1992-93	54757	21029	38.4	12.4
1993-94	58064	22009	37.9	4.7
1994-95	62406	23483	37.6	6.7
1995-96	66742	24765	37.1	5.5
1996-97	71042	25698	36.2	3.8
1997-98	75057	26480	35.3	3.0
1998-99(p.a)	79460	27417	34.5	3.5
1999-2000(p)	87810	30132	34.3	9.9

However, population growth has negated the increase in production, and led to lesser substantial surpluses for export. There accordingly is a clear need to further expand the cultivated area and also increase the productivity substantially.

The scenario of Myanmar's sown area and production of major crops as at the end of the 20th century remain as follows: (Table-8)

Table-8 Sown Area and Production of Some Major Crops

(In thousand)

Sr.	Crops	Sown Acreage		Production (MT)	
		1998-99	1999-2000	1998-99(p.a)	1999-2000(p)
1	Paddy	5759	6245	17078	19987
2	Maize	188	209	303	349
3	Groundnut	503	1351	562	640
4	Sesame	1199	1351	210	302
5	Pulses (Total)	2459	2680	1720	1921
(1)	Matpe (Black gram)	529	555	444	483
(2)	Pedisein (Green gram)	707	744	464	488
(3)	Pesingon (Pigeon pea)	270	308	160	189
(4)	Gram (Chick pea)	113	131	68	86
(5)	Other pulses	840	942	584	675
6	Cotton	325	341	158	176
7	Jute	40	38	33	33
8	Sugarcane	126	134	5430	5147
9	Rubber	149	169	23	24
10	Potato	23	25	245	248
11	Onion	46	65	476	507
12	Vegetables	214	244	-	-
13	Fruits	292	311	-	-
14	Others	1984	2281	-	-
	Total	13307	14660		

B. Livestock and Fisheries

Growth relative to the sector remained negative at -4.0% and -0.6% for the years 1989-90 and 1990-91. It climbed again to 5.7% in 1991-92, while the annual average growth rate during the Four Year Short Term Plan (1992-93 to 1995-96) was 4.6%. There were further improvements during the first (1996-97) and second (1997-98) years of the Five Year Short Term Plan, and the achievements in growth were 11.8% and 6.4%, respectively.

The livestock sub-sector witnessed a steady increase in the number of livestock as shown in Table-9.

Table-9 Animal Population

Year	No. in million				
	Cattle	Buffalo	Sheep/Goat	Pig	Poultry
1990-91	9.4	2.1	1.3	2.4	28.6
1991-92	9.5	2.1	1.4	2.6	31.2
1992-93	9.6	2.1	1.4	2.6	31.4
1993-94	9.7	2.1	1.4	2.7	31.6
1994-95	9.9	2.2	1.5	3.0	34.4
1995-96	10.1	2.3	1.6	3.3	38.1
1996-97	10.3	2.3	1.6	3.5	39.8
1997-98	10.3	2.3	1.6	3.5	38.7
1998-99(p.a)	10.1	2.3	1.7	3.5	42.0
1999-2000(p)	10.7	2.4	1.7	3.9	49.6

Consequently, meat productions rose from 243.8 thousand metric tons in 1995-96 to 378.9 thousand metric tons in 1999-2000, as shown in Table-10.

Table-10 Production of meat

Particulars	Unit	1995-96	1996-97	1997-98	1998-99 (p.a.)	1999-2000 (p)
Meat Production	M.T (000)	243.8	265.4	295.9	313.8	378.9
Beef	"	50.0	51.3	52.3	53.9	61.2
Pork	"	66.5	72.7	76.2	82.5	101.7
Mutton	"	7.7	7.8	8.3	8.8	10.1
Fowl meat	"	101.2	113.8	138.6	147.1	180.2
Duck meat	"	16.6	18.0	18.7	19.7	23.7
Turkey, geese & others	/	1.8	1.8	1.8	1.8	2.0

The livestock sub-sector will continue to take concerted efforts in stepping up further meat production, as having potential; and in being aware that current productions in comparison to some neighbouring countries- Malaysia (0.95 million MT), Thailand (1.35 million MT) and Vietnam (1.43 million MT), remain low and still need further development.

The government had maximized fisheries development, over the past decade, with appropriate settings for increasing private participation, and dividends contingent to the new policies have been highly substantial. Production of fish increased from 0.82 million tons in 1994-95 to 1.2 million tons in 1999-2000 as shown in Table-11.

Table-11 Production of fish

Category	Metric tons in million			
	94-95	96-97	98-99(p.a.)	99-2000(p)
Fresh water fisheries	0.220	0.224	0.251	0.291
Marine fisheries	0.603	0.628	0.760	0.880
Total	0.823	0.852	1.011	1.171

Source: Ministry of Livestock and Fisheries, Oct, 2000

Contributions from aquaculture increased from 65 thousand tons (1994), to 85 thousand tons (1998-99). Future expansions, however, will have to place focus on marine captures (current sustainability is 719 thousand tons), and aquaculture, for which there is ample scope. And with research and development and appropriate inputs, the fisheries sub-sector should be able to catch up neighbouring regional productions, and provide further to enhanced food security and the national economy.

Table-12 Fish production in the region, 1998

(000MT)

Sr.	Particulars	Myanmar	Indonesia	Malaysia	Philippines	Thailand	Vietnam
1	Inland	153.6	315.7	4.6	146.5	191.3	70.0
2	Off-shore	719.3	3383.1	1149.1	1681.5	2709.0	1060.7
3	Acquaculture	85.3	696.9	129.0	311.9	569.6	521.9

The livestock and fisheries contributed to the export earnings have been: -

Table-13 Fishery Export

In Tons / Million US\$

Year	Fish	Shrimp	Other	Volume of Export/value	
				Tons	US\$
1990-91	11621.1	1273.0	1033.5	13927.6	13.0
1991-92	11032.0	2672.9	554.1	14259.0	22.5
1992-93	21053.0	5827.1	1607.5	28487.6	51.0
1993-94	12884.1	6195.0	4136.7	23215.8	68.4
1994-95	78590.0	7940.0	10210.0	96740.0	120.6
1995-96	34740.9	8814.5	10805.4	54360.8	113.7
1996-97	41068.3	12827.8	13504.7	67400.8	163.0
1997-98	45853.7	13467.2	14859.0	74179.9	167.1
1998-99(p.a.)	70906.4	13746.5	42202.9	126873.8	201.3
1999-2000(p)	72210.1	15536.0	28863.1	116609.2	183.7

C. Forestry

Growth rates in the forestry sector for the years 1996-97 and 1997-98, as the first and second years of the Five Year Short Term Plan were 2.7% and 1.3% as against the plans target of 2.6% and 0.9%.

Timber extraction, in particular teak, has been scaled down, and the annual allowable cut (AAC) restricted to 226,924 cu-tons for teak and 2,879,560 cu-tons for other hardwoods. As against it, the extraction of teak and hardwoods, in 1997-98, were 200,000 cu-tons and 1383000 cu-tons, respectively.

The "Myanmar Forest Policy" brought into force in 1995, in compliance to the principles adopted at UNCED, 1992, have placed high emphasis on the conservation and sustainability of Myanmar's forest resources. Consequently, more areas have been increasingly brought under reservation. Reforestation has been stepped up- and the urgent needs of watersheds, dry zone areas and mangroves are being addressed, in cooperation with and assistance of UN agencies.

Areas under reservation increased from 10.31 million ha in 1994-95 to 11.87 million ha in 1999. And forest plantations, including commercial, industrial village supply and watershed forests increased from 510,850 ha (1994-95) to 674,458 ha in 1999. Production of fuelwood has remained around 18 million cu-tons annually, but charcoal output dropped from 0.761 million cu-tons (1988-89) to 0.174 cu-tons (1997-98). The forest sector continues to make available non-wood forest products to the private sector under licensing. Annual drawals from the forest come to about 992.6 million and 75 million numbers of bamboos and canes, respectively.

The forestry sector's contribution to the net value of output in 1997-98 was 1.64% and 13.56% to export earnings.

IV. PRIORITY NEEDS FOR FUTURE DEVELOPMENT

A. Agriculture

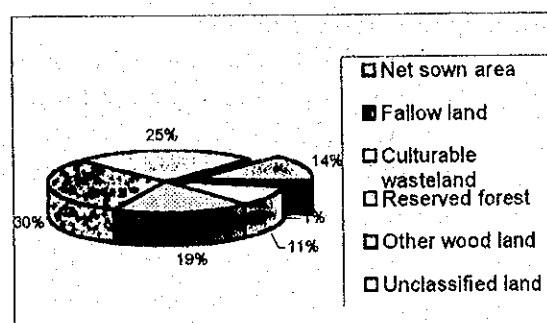
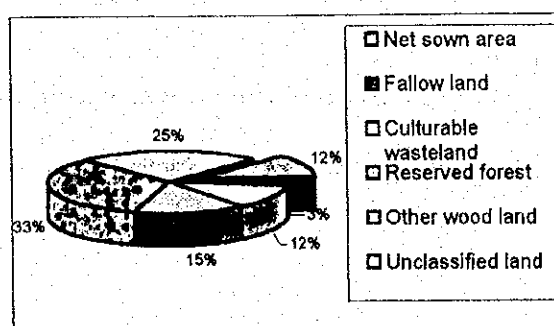
(a) Land Utilization

Myanmar has a total land area of 67.66 million hectares, and currently only about 9.66 million hectares, (13 per cent) is being utilized for farming, which is roughly half of the total cultivable land area. The land utilization status in 1999-2000 is shown in Table-14.

Table-14 Land Utilization in Myanmar

(million hectares)

Categories	1989-90	1999-2000
Net sown area	8.04	9.66
Fallow land	2.03	0.78
Culturable wasteland	18.5	17.7
Reserved forest	10.15	12.57
Other wood land	22.25	20.24
Unclassified land	16.76	17.15
Total	67.66	67.66



With a view to accelerate land development, the government has on one hand, taken corrective measures to reclaim fallow and waste land; and on the other with increasing grants for the right to private entrepreneurs and organizations for participation in agriculture, livestock and rice-fish farming on the other. Under the programme, land in deepwater areas of delta regions, agricultural waste lands in dryzone and hilly regions are being reclaimed and developed with careful consideration on environmental effect. The main objective of this programme is to introduce private-owned large-scale commercial farming systems. Private sector response has been satisfactory and since 1998, has gradually gathered increasing momentum. The government has accorded strong administrative support and other incentives such as fuel for land preparation, technology, extension services, etc. In bringing inundated areas into productivity, 94 national companies and associations have been participating in this development scheme for the cultivation of seasonal as well as estate crops as shown in Table-15.

Table-15 Land Utilization by Private Sector

Region	No. of Co/Association	Area(acre)
Kayin	1	1000
Ayeyarwady	27	240130
Yangon	7	61316
Magway	11	244733
Tanintharyi	16	287743
Bago	20	166709
Shan	7	25893
Mandalay	2	1608
Kachin	3	31800
Total	94	1060932

However, besides of being well endowed with land and water resources and the strong encouragement by the state, objectives as to the full utilization of potential land will only be achieved if the following drawbacks can be addressed :-

- (a) that many of the underutilized land are located in remote areas with poor access,
- (b) the lack of capital investment and heavy machineries for land development,
- (c) the lack of physical infrastructure such as irrigation facilities and farm roads, and
- (d) the need for mobilization of human resources in land development areas.

(b) Irrigation and Water Resources Utilization Development

As an important thrust to the development of the crop production, irrigation works have been undertaken throughout the country in accordance with the planned strategic measures for irrigation development as:-

- the construction of new reservoirs and dams;
- the proper management for the storage and utilization of run-off water from the watershed areas;
- the renovation of existing reservoirs, for raising storage capacity and efficient delivery of irrigation water;

- the diversion of water from streams and rivulets, during high water levels into adjacent depressions and for storage with sluice gates;
- the lifting of water from rivers and streams through pump irrigation; and
- the efficient utilization of ground water.

Prior 1988-89, around 1 million hectares of the cultivated area was under irrigation. However, irrigation projects numbering 114, and completed between 1988-89 to 2000-2001 (October), further brought an additional area of 0.64 million hectares under irrigation, so that the total irrigated area at present, stands a 1.7 million hectares, covering 18% of the total sown area.

Parallely 253 small, medium and large scale pump irrigation projects comprising 69 electric-pump and 184 diesel-pump irrigation works with water resources from major rivers, were undertaken and together with the development of ground water resources, has contributed to the rural water needs of about 14.9 million from among the total populace of 32.5 million within the project areas.

Insufficient capital investment in foreign exchange and machineries, however, remain major hindrances for further expansion of irrigation development. Apart from this, more trained personnel in advanced technology, particularly in relation to irrigation water distribution, drainage and water management, need to be strengthened in the support of agricultural development. At present capital outlay for irrigation projects are bore by the Government in totality.

In these aspects there will be a need to explore the possible participation of the beneficiary groups in terms of cost sharing and water distribution, water supply and maintenance of the irrigation projects through the formation of water user groups. Similarly, present revenue systems and rates for irrigated land should also be reviewed and reconsidered, to be in line with the changing economic systems.

(c) Agricultural Mechanization Development

Increased cropping intensity has in turn, led to an increasing reliance of machineries in agriculture, from land preparation to harvesting and drying. The farm machinery factories under the Ministry of Agriculture and Irrigation, Ministry of Industry and many small-scale private factories, established since the early 90s, continue producing and are striving to meet the expanding demands of farm machinery. Agricultural machineries in use are shown in Table-16.

Table-16 Utilization of Machineries

<u>Machinery</u>	<u>Nos.</u>
Tractor	8692
Power tiller	36784
Thresher	7297
Threshing machine	3268
Dryer	900
Inter-cultivator	15765
Seeder	2655
Paddy Reaper	2728
Water pump	58242

As a major government's familiarization initiative, 23 model-mechanized villages have been established in various states and divisions to with a view to acquaint farmers with the benefits of farm mechanization.

Presently land preparation and threshing of paddy constitute major usages in farm mechanization, but machineries for transplanting and harvesting are being gradually introduced. Increasing private sector participation needs to be further encouraged through appropriate incentive schemes, while foreign investment in this very important area is a necessity to enhance the technology.

(d) Agricultural Inputs Development

Input supplies such as fertilizers, agro-chemicals and diesel oil for farm machineries are being procured domestically or imported to fulfill the needs of the farmers. In 1999-2000, the total utility of fertilizers amounted to 0.627 million metric tons, comprising 0.517 million metric tons of urea, 67 thousand metric tons of TSP, 8.85 thousand metric tons of MOP and 35.79 metric tons of compound and other fertilizers. Fertilizer imports by the private sector has been on the increase annually, and accounted for 60% of total import volume in 1999-2000 and indications are that private sector supply and distribution is bound to increase in future.

On one hand, there is a need to support and encourage active private sector participation in this large potential business, while on the other hand to ensure that such inputs are easily accessible and affordable by farmers.

At the same time, the government's initiatives in promoting the use of EM, green manure, rizobium, by products of sugar mills, and organic waste from cities should be commercialized.

Availability of "improved varieties" also constitute an important input in Agriculture. Towards this end, a Seed Development Project, under World Bank financing, was implemented during 1978-79 to 1994-95. The project has and continues to avail farmers with improved varieties of paddy, groundnut, long staple cotton, green gram, butter bean, mung bean, chick pea and pigeon pea. Private sector interest still remains minimal and with the exception of engaging in some corn varieties and vegetables, participation has been negligible and needs further promotion. At the same time there is an urgent need to enact appropriate legislation to encourage and enable private participation and investment in the vital field.

For further development of the seed industry, following points merit consideration:-

- (1) Strengthening of the advisory of National Seed Committee and its technical sub-committee
- (2) Establishing more seed farms under private sector investment
- (3) Technical Trainings, seminar and workshop for seed development
- (4) Coordination with International Seed Associations, and
- (5) Enacting a Seed Law

(e) Rural Employment

Currently more than 70% of Myanmar's total population and 51% of the total labour force reside in rural areas while depending on the agriculture, fisheries, livestock and forestry sectors for their livelihood. However, existing land and potential for further development remain compatible to the population, so that land man ratio in Myanmar can still be considered favourable.

Development trends in industry and construction have not outpaced agriculture, so that urban migration has not posed problems as yet. Nevertheless, there is some seasonal migration of rural labour in relation to agriculture and construction and movement of labour from Central to the North East of Shan States, during the harvesting of tea is a case in front.

There is no denying that there is a need to address the problems of an increasing rural labour force and of the landless farmers and shrinking land holdings. Myanmar has the land and water resources, for expansion, irrigation and intensification. However, it will be necessary to implement a comprehensive master-plan-study and prepare medium and long term development programmes that will strengthen existing agriculture infrastructure, provide towards meaningful further expansions, and bring prosperity to an exploding rural labour force.

(f) Agricultural Credit and Finance Development

The Myanma Agricultural Development Bank (MADB) annually grants various types of seasonal loans to farmers based on the type of crops but which only partly covers the cultivation cost due to the increasing prices in agricultural inputs. New credit schemes which emphasize more on small farmers and with medium and long-term nature rather than only on seasonal nature should be considered. Small farmers are in need of credit that covers not only the cost of inputs such as seeds, fertilizer and hired labour for cropping but also for land development, machineries and implements. Appropriate credit policies need to be prepared and submitted to the government for its consideration based on wider surveys and studies on present credit schemes of MADB. It should also cover the needed credit facilities for agricultural commodity traders, millers and related agro-businesses.

(g) Agricultural Research and Extension Development

Development of agricultural research; improvement of the agricultural technology and technical skill of extension personnel; and dissemination of the technical know-how to farmers remain essential for sustainable development of agriculture.

The Central Agricultural Research Institute (CARI) located at Yezin is the core research institute which constitutes ten disciplinary divisions and seven crop divisions. The research work at the institute is fully oriented to increase crop production. Scientists in crop divisions are assisted by specialists from different disciplines so that agricultural research as a whole is integrated in multidisciplinary approach. Collaborative research activities for agricultural development are being carried out between CARI and various research institutions such as IRRI, ICRISAT (International Crop Research Institute for Semi-Arid Tropics), CYMMIT, CGPRT and among others. Varietal improvement of rice, cropping systems research and research on small-scale farm machineries and implements are important research activities, being undertaken in collaboration with IRRI.

Technology dissemination from research to field level is channeled through agricultural extension agents under MAS, MCSE, MSE, MJL, MPCE for their respective crops. Extension methods in practice are: (a) launching demonstration programmes in selected areas for selected crops; (b) establishing efficient contacts between farmers and extension agents; (c) training and visit programmes based on production camps established at village levels.

In these aspects, Myanmar needs to strengthen its level of efficiency in post harvest technology and biotechnology so as to remain competitive with other developing countries, in productivity and quality of agricultural commodities.

(h) Agricultural Marketing and Trade Development

It will be necessary to streamline and strengthen Myanmar's internal as well as external trade as it attempts to expand into world markets, in its shift towards a market economy. To remain vibrant, up to date information on crop prices, consumers choices, world demand, import/export prices, transport facilities, etc. need to be available. Currently, access to information is not as yet easily available, while farmers in remote areas lack the means and as competition intensifies, it will be essential for such information to be easily available.

Currently, well-developed crop exchange centres are situated in urban area like Yangon and Mandalay while other townships are playing as the transit points of commodities. Current market information including price, demand and supply is exchanged by telephone among traders, primary collector and wholesalers which means that market information is only shared within the small group. Updated market information are not assessable to farmers who are out of the trader's community.

By disseminating market information, it can support farmers to

- decide whether harvested crop should be sold immediately or not;
- know what market should be chose, what standards are demanded, and when is the best for selling;
- change their cropping pattern;
- make decision about several options in selling stages (i.e., farm gate, nearest town, or wholesaler); and
- study the price trend for a certain period.

MOAI started a project, named, "Market Information Service Project", in 1999 with a view to provide the necessary market information within the country. The project has made market surveys in 8 States and Divisions to study the daily price collection of agricultural produce and trend of commodity flow from one place to another. At present, market information is being disseminated through the weekly Agri-business News published by MAOI. Monthly market analysis is distributed through Monthly Bulletins to government agencies concerned and traders' Association in Yangon and Mandalay. Efforts are now being made to disseminate it via television and daily newspapers in the near future.

(i) Agro-based Industry Development

The share of food product industries contribute to more than half of the total small and medium enterprises of the industry sector of Myanmar. The industries are scattered all over the country but the majority are situated in big cities with higher concentration around

Yangon and Mandalay. The present situation of private sector food industries are listed in Table-17.

Table-17 Type and Number of Food Industries

Sr. No	Product type	No. of Food business
1	Rice milling	12397
2	Oil milling	3434
3	Powder processing	1723
4	Confectionary	496
5	Pulses & beans processing	492
6	ice factory	474
7	sugar	819
8	Popsicle factory	441
9	Monghingar factory	437
11	wheat	328
12	Processed food(others)	287
13	Noodle factory	259
14	Tapioca	187
15	Alcoholic products	125
16	Tea(dried)	114
17	Vermicelli	114
18	Salt	109
19	Soft drinks	107
20	Refrigeration	42
21	Toffee	42
22	Purified water	41
23	Meat products	29
24	Condensed milk	27
25	candy	27
26	Sauces	19
27	Cheroot	16
28	Tea(fresh)	11
29	Cigarettes	9
30	Pulses and beans processing	8
32	ginger	6
33	agri-product cleaning	5
34	canned food	4
35	dried shrimp	3
36	wine	1
37	marine products	1
38	sausage	1

Undeniably, agro-based industries have developed encouragingly, but still remain weak in technology, marketing, capital and government support policies, and so far most commodities have room for domestic markets only. Most products are below international standards for the competition in global market and is a hindrance for the development of viable agro-based industries in future. The development of viable agro-industries remain essential in providing employment and raising the living standards of the rural populace. There is strong potential for it in Myanmar, and the Government has been encouraging further participation from both local as well external sources. Agro-products from within the Asian region has had favourable response in international super-markets globally. Their

basis from the same raw materials plentifully available in Myanmar. The field remains lucrative and should be explored further.

B. Livestock and Fisheries

(a) Quality of feed

The availability of sufficient qualities of good and safe feed is one of the most important factors for successful livestock production. The needed raw material is available sufficiently within the country but the lack of adequate processing facilities such as feed mills, fish meal plants etc. has rendered proper animal feed production difficult. Feed additives are imported and production of quality feed in pellet form is nearly non-assistance.

(b) Disease control

For prevention and control of infectious diseases, the National Vaccine Production Laboratory, under the Livestock Breeding and Veterinary Department produces (11) kinds of vaccines. Vaccines produced are not sufficient to cover the whole animal population. Foot and mouth disease, haemorrhage septicemia, black leg and anthrax are the four major diseases occurring in cattle and buffalo. FMD is the only infectious disease of high incidence, which has never been brought under proper control in Myanmar. However, with some assistance from international organizations such as OIE and FAO, the government has assigned over 1200 veterinarians to contain disease outbreaks. Privately operated G.Ps also participate in disease eradication programmes.

(c) Utilization of land

Priority is given to agriculture farmers, and if it is not suitable for agriculture, livestock farmers and fish farmers are prevailed to use the land. When granting a request for the use of land, a non-degradation of the land guaranteed, by the user is usually sought by the authority.

(d) Resources of seed stock

Facilities for multispecies seed production and sustainable aquaculture production using new technology has been introduced or expanded. Seed and fry producing farms for prawns and fish are established in areas with good potential for aquaculture, and existing spawning and nursery areas such as estuaries and mangroves are protected.

At present no accurate information (breed wise) exists in Myanmar. Hence it has not been possible to record the production of each breed systematically. Hence, the usefulness of breeds have not been fully understood.

Urgent measure should be taken for conservation of some domestic breeds of poultry like Inbyinwa chicken in Meiktila township, which is capable of growing up to 2.5 to 3.0 viss of live weight, under scavenging condition. Genetic breeds of cattle like Shweni in Magwe division and Pyar Zein in Mandalay and Sagaing division have been developed into distinctive breeds prevalent in its own breeding traits.

(e) Limitation in financing

As financing is a major constraint to livestock and fishery development, the Myanmar Livestock and Fisheries Development Bank and its branches were established at strategically important areas and are making available short term and long term loans to livestock and fisheries entrepreneurs. Financing by a single bank is limited and external assistance investment is warmly welcomed by the livestock and fishery industries.

Due to the above mentioned weakness in the livestock and fisheries sector, the following points merit consideration for the further development of the sector.

- **Establishment of Livestock Research Centre/ Institute**

The main objective to establish this centre is :

- to strengthen and improve the genetic performance of livestock, small ruminants and poultry.
- to upgrade and increase the animal population for domestic consumption and for possible export.
- to study the health, status and performance of local breeds
- to establish disease free zones where appropriate
- to train personnel.

- **Establishment of Fisheries Research Centre/ Institute**

Myanmar has identified over 460 species of marine fish and some 100 or so of freshwater fish. For the sustainable exploitation and maximum utilization of the resources there is a need for proper investigation, identification, monitoring, evaluation and good management. Therefore, a research unit is a necessity.

Marine fisheries, coastal fisheries, inland fisheries and aquaculture development, on an environmentally friendly basis, leads to sustainable development. Under present conditions, the Ministry has to be cautious in determining the maximum sustainable yield and the total allowable catch for lack of proper research.

The government needs assistance to determine the above factors and, the degradation of the environment and natural resources. Therefore, establishment of a Research Institute is urgently needed.

The Institute should cover research programs both for freshwater and marine fisheries, including aquatic plants.

- **Establishment of model farms**

To improve the performance of the livestock sector model livestock farming villages have been established with the provision of technical assistance, extension services. Extensive efforts have been made to improve the quality of livestock through artificial insemination, detection of oestrus by RIA technique vaccination programme and distribution of livestock breeds from the State's breeding farms.

- Improvement of technical know-how

Livestock farmers education is well covered in the portion of technology transfer through the extension agents. Improvement in technical skill of extension staff and exchange of technical information is an important issue. In- country trainings are being conducted in research and training centres to upgrade the capability of technical skill of the staff. In- country courses, seminars, and workshops are also held in training centres collaborating with international organization. Oversea training, workshops and seminars are arranged for development of technical skill and capability of staff with the assistance of various organizations.

- Upgrading of Quality Control Laboratories equipment, processing equipment, etc.

The livestock and fisheries sector, similarly is of vital importance to the economy of Myanmar. Its contribution to the nation's protein requirements remain highly substantial and of late, export earnings from fish and prawns have been on the ascent.

Equipment/instruments used for inspection are in adequate and quite substantial. Exporters, processors, producers in livestock and fisheries are mostly from the private sector, and there is a need to upgrade their food preparation skills, upgrade their existing equipment, and instruments used in the Quality Control laboratories and processing plants.

V. CONCLUSION

The current situation and performance of the agriculture, and fisheries and livestock sectors have been reviewed in the paper; indicating the constraints, hindrances, financial and human resources restraints and potential for further development and the essential needs necessary for overall national uplift. It is a summarized version intended to serve as a basis for dialogue and cooperative interaction between Myanmar and Japan.

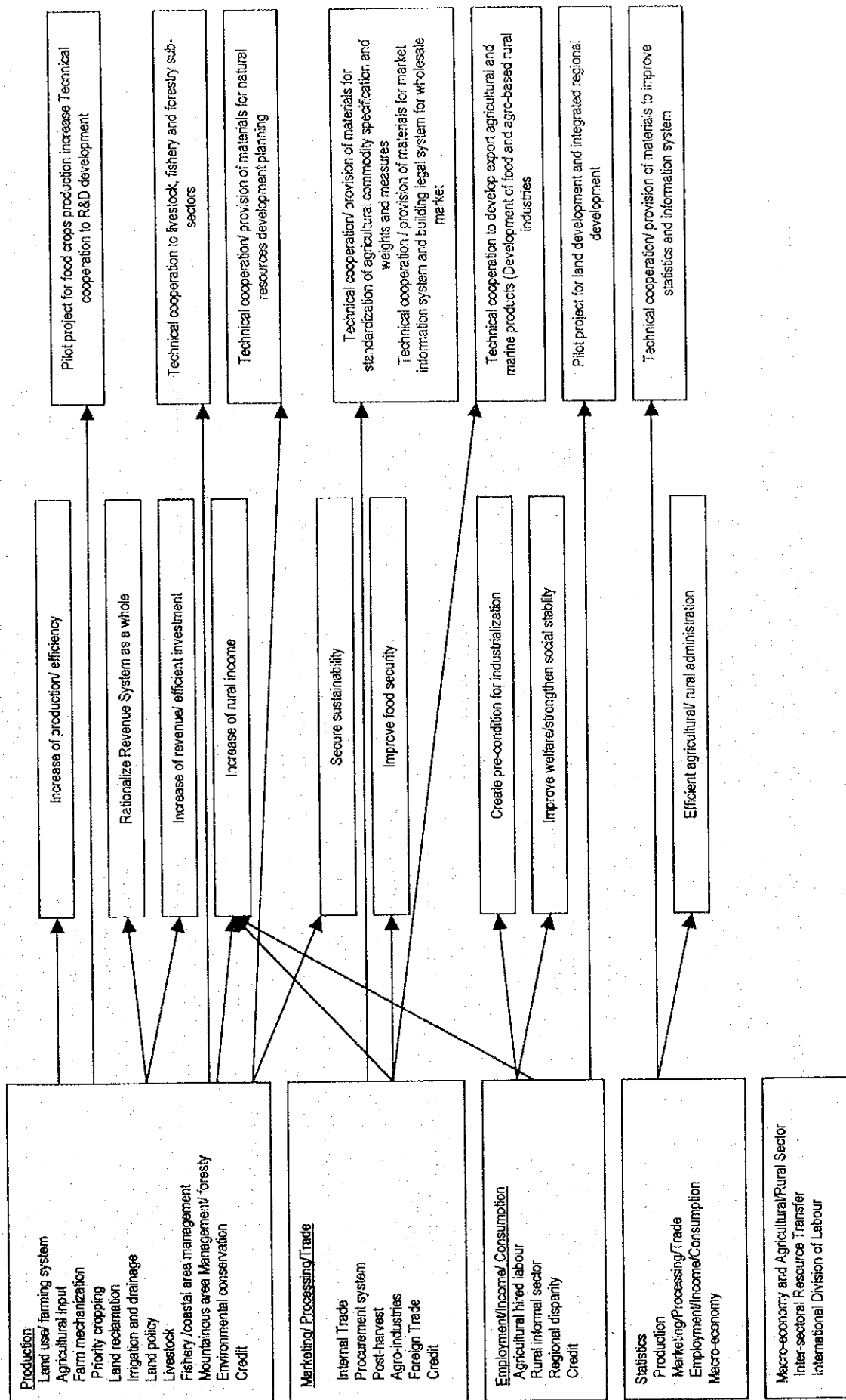
Consequent to reaching consensus on specific issues, it is hoped more detailed work plans and schedules could be formulated through the joint cooperation of the respective Task Force Groups.

Activity Plans and Perspectives of the Agriculture and Rural Development Working Group

Expected Action Plans

Expected effects

Activities and Policy Advice



Activity Plans and Perspectives of Agriculture and Rural Development by Myanmar Task Force Group

Topic	Sub-topic(1)	sub-topic(2)	policy recommendation	expected effects	Expected Action Plan
Production	Land use farming system Agricultural Inputs	Present situation Marketing of fertilizers/chemicals Production of fertilizers/chemicals	Policy advice for improvement Advice for crop diversification Policy advice to MAS Policy advice on import substitution Policy advice	Increase of production/ efficiency	2KR Pilot project for food crops production increase for regional food self-sufficiency
	Farm Mechanization	Seed development and dissemination Present situation, especially power tillers Use of draft animals Present situation/ effects/ background	Policy advice Policy advice for reform Policy advice Policy advice	Increase of production/ efficiency Increase of production/ efficiency Increase of production/ efficiency Efficient investment	Land Development Planning
	Priority cropping Land reclamation	Present situation Development policy (including dam construction) Water revenue Land Revenue	Rationalize revenue Rationalize revenue	Increase of revenue/ O&M improvement Increase of revenue/ Rationalize revenue system as a whole Increase of production/efficiency Increase of rural income	
	Irrigation/drainage	Land policy Present situation Present situation of fisheries	Policy advice for improvement Advice for development/health Advice for development	Increase of rural income/ Secure sustainability	Land use planning and agro-ecological zoning Technical cooperation/ Provision of materials Technical cooperation/ Provision of materials
	Land policy Livestock In land & marine fishery/ Coastal Area Management	Present situation of coastal area use	Advice for development/ protection	Increase of rural income/ Secure sustainability	Technical cooperation for coastal area development and marine fisheries including marine aquaculture and shrimp cultivation
	Mountainous Area Management/ forestry	Present situation of forestry Present situation of non-timber forestry products	Advice for development/ protection	Increase of rural income/ Secure sustainability	Technical Cooperation for Highland agriculture with emphasis on income generating activities including livestock and cottage industries Technical cooperation for forest management and SALT.
	Environmental Conservation	Present situation of soil improvement/ conservation Present situation of conservation of water quality Present situation and needs	Advice for protection Policy advice (including establishment of new credit scheme)	Secure sustainability Increase of production/ efficiency	Technical cooperation/ Provision of minerals for natural resources monitoring
	Credit	Present situation and needs Standardization of weights and measures Present situation of specification domestic marketing	Policy advice Policy advice	Efficient agricultural/ rural administration	Technical co-operation/ Provision of materials Technical co-operation / Provision of materials
	Statistics	Market information system Infrastructure (road, railway, inland water, port etc.) Present situation / effects / background	Policy advice Advice for development Policy advice for reform	Efficient marketing Efficient marketing / Remove disincentive	Technical co-operation for building market information system and legal system for wholesale market Technical cooperation / Provision of materials Development of on-farm Post-Harvest technology
	Internal Trade Procurement System				

			Management of public / private rice mills Buffer stock of food Present situation and problems Impact of deregulation of rice export Export policy for agricultural products Import policy for agricultural products Present situation and needs Present situation and needs Economy of Landless households Necessity / Suitability of mechanization Present situation and problems Present situation of rural poverty Present situation and needs Present situation and needs Present situation of inter-sectoral resources transfer Fiscal policy for agriculture and rural sector Identify comparative advantage Present situation and problems	Policy advice Policy advice Advice for development Policy advice Policy advice Policy advice for improvement Policy advice Policy advice Policy advice Policy advice Advice for development Advice to trade and price policy Policy advice Policy advice Policy advice Policy advice	Reduce loss / Remove disincentive Improve national food security Increase of rural income Increase of production / efficiency Increase of production / efficiency Efficient agricultural / rural administration Improve welfare / Strengthen social stability Create pre - condition for industrialization Increase rural income Welfare improvement / Social stability Increase of production / efficiency Efficient agricultural / rural administration Implication to trade policy Implication to trade policy Efficient agricultural / rural administration	Rehabilitation of rice mills Technical cooperation for export agricultural & marine products Technical cooperation for small-scale food & agro-based rural industries development Technical co-operation / Provision of materials Pilot project for regional development Technical cooperation / Provision of materials Technical cooperation / Provision of materials
Post - Harvest Agro - Industries						
Foreign Trade Credit Statistics						
Agricultural Hired Labor Rural Informal Sector Regional Disparity Credit Statistics	Employment / Income / Con sumption					
Inter-Sectoral Resource Transfer International Division of Labor Statistics	Macro-Econo my and Agri cultural / Rural Sector					

Activity Plans and Perspectives of Agriculture and Rural Development by Myanmar Task Force Group

Topic	Sub-topic(1)	Sub-topic(2)	Policy recommendation	expected effects	Expected Action Plan
Production	Land use farming system Agricultural Inputs	Present situation Marketing of fertilizers/chemicals Production of fertilizers/chemicals	Policy advice for improvement Advice for crop diversification Policy advice to MAS Policy advice on import substitution Policy advice	Increase of production/ efficiency	2KR Pilot project for food crops production increase for regional food self-sufficiency
	Farm Mechanization	Seed development and dissemination Present situation, especially power tillers Use of draft animals	Policy advice Policy advice for reform Policy advice Policy advice	Increase of production/ efficiency Increase of production/ efficiency Increase of production/ efficiency Efficient investment	Land Development Planning
	Priority cropping Land reclamation	Present situation/ effects/ background Present situation Development policy (including dam construction)	Rationalize revenue Rationalize revenue	Increase of revenue/ O&M improvement Increase of revenue/ Rationalize revenue system as a whole	
	Irrigation/drainage	Water revenue Land Revenue	Policy advice for improvement Advice for development/health Advice for development	Increase of production/efficiency Increase of rural income	Land use planning and agro-ecological zoning Technical cooperation/ Provision of materials Technical cooperation/ Provision of materials
	Land policy Livestock In land & marine fishery/ Coastal Area Management	Land policy Present situation Present situation of fisheries Present situation of coastal area use	Advice for development/ protection Advice for development/ protection	Increase of rural income/ Secure sustainability	Technical cooperation for coastal area development and marine fisheries including marine aquaculture and shrimp cultivation
	Mountainous Area Management/ forestry	Present situation of forestry Present situation of non-timber forestry products	Advice for development/ protection	Increase of rural income/ Secure sustainability	Technical Cooperation for Highland agriculture with emphasis on income generating activities including livestock and cottage industries Technical cooperation for forest management and SALT.
	Environmental Conservation	Present situation of soil improvement/ conservation Present situation of conservation of water quality Present situation and needs	Advice for protection Policy advice (including establishment of new credit scheme)	Secure sustainability Increase of production/ efficiency	Technical cooperation/ Provision of minerals for natural resources monitoring
	Credit	Present situation and needs Standardization of weights and measures Present situation of specification domestic marketing	Policy advice Policy advice	Efficient agricultural/ rural administration	Technical cooperation/ Provision of materials Technical co-operation / Provision of materials
	Statistics	Market information system Infrastructure (road, railway, inland water, port etc.) Present situation / effects / background	Policy advice Advice for development Policy advice for reform	Efficient marketing Efficient marketing / Remove disincentive	Technical co-operation for building market information system and legal system for wholesale market Technical cooperation / Provision of materials
	Internal Trade Procurement System				Development of on-farm Post-Harvest technology

					Rehabilitation of rice mills	Technical cooperation for export agricultural & marine products Technical cooperation for small-scale food & agro-based rural industries development Technical co-operation / Provision of materials
					Reduce loss / Remove disincentive	Improve national food security Increase of rural income Increase of production / efficiency Increase of production / efficiency Efficient agricultural / rural administration Improve welfare / Strengthen social stability Create pre - condition for industrialization Increase rural income Welfare improvement / Social stability Increase of production / efficiency Efficient agricultural / rural administration Implication to trade policy Implication to trade policy Efficient agricultural / rural administration
					Policy advice Policy advice Advice for development Policy advice Policy advice for improvement Policy advice Policy advice Policy advice Policy advice Advice for development Advice to trade and price policy Policy advice Policy advice Policy advice Policy advice	
					Management of public / private rice mills Buffer stock of food Present situation and problems Impact of deregulation of rice export Export policy for agricultural products Import policy for agricultural products Present situation and needs Present situation and needs Economy of Landless households Necessity / Suitability of mechanization Present situation and problems Present situation of rural poverty Present situation and needs Present situation and needs Present situation of inter-sectoral resources transfer Fiscal policy for agriculture and rural sector Identify comparative advantage Present situation and problems	
	Post - Harvest Agro - Industries Foreign Trade Credit Statistics Agricultural Hired Labor Rural Informal Sector Regional Disparity Credit Statistics Inter-Sectoral Resource Transfer International Division of Labor Statistics					
Employment / Income / Consumption						
Macro-Economy and Agricultural / Rural Sector						

Activity Plans and Perspectives of the Agriculture and Rural Development Working Group

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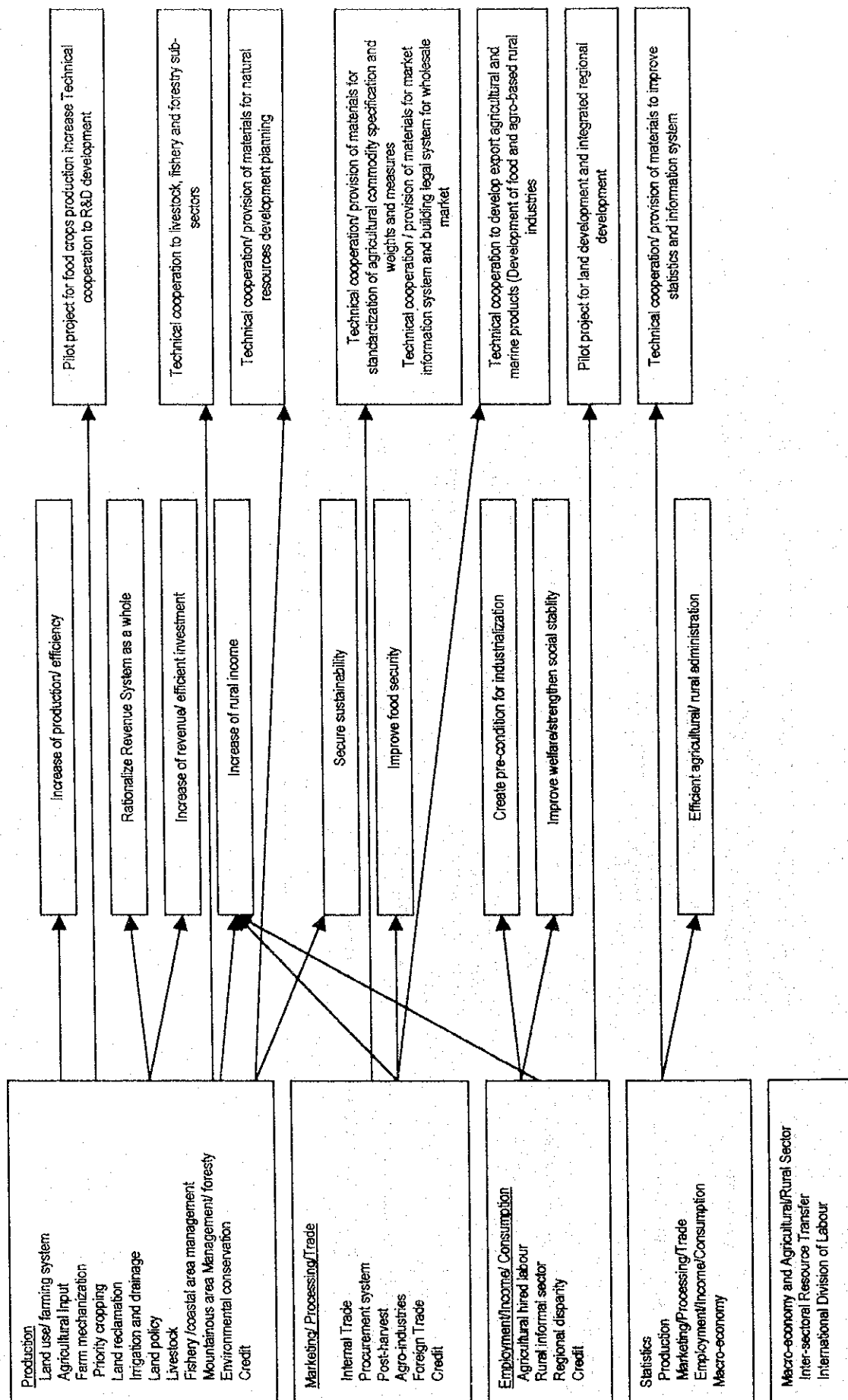


Figure 1: Activity Plans and Perspectives of the Agriculture and Rural Development Working Group

