Myanmar Agriculture Sector in Brief

2018

Basic Country Data of Myanmar (2017-18)

Land Area 676,577
square kilometers

Population

- Whole country	53.388	million
Male	25.648	million
Female	27.740	million
- Population density	79	per square kilometer

GDP

- GDP at Constant price (US$ Billion)	47.990
- GDP at Current price (US$ Billion)	68.008
- GNI per Capita	$ 899

Social Indicators

- Life Expectancy	65.9 (Male 61.4, Female 70.5)
- Under One Year Mortality Rate (per 1000 live birth)	54.2
- Under Five Years Mortality Rate (per 1000 live birth)	65.3 (2015-16)
- Adult Literacy Rate (%) (Male)	92.72
(Female)	87.06
- Crude Birth Rate (per 1000)	19.8
- Telephone Use (per 1000)	952

Structure of Gross Domestic Product

Goods	**57.4**	**%**
- Agriculture	17.6	%
- Livestock and Fishery	8.0	%
- Forestry	0.1	%
- Energy	0.2	%
- Mining	1.0	%
- Processing and Manufacturing	23.6	%
- Electric Power	1.3	%
- Construction	5.6	%
Services	**24.1**	**%**
Trade	**18.5**	**%**
Gross Domestic Product	**100.0**	**%**

MYANMAR ECONOMY AND AGRICULTURE SECTOR

- Myanmar is an agricultural country, and the agricultural sector is the back bone of its economy. The agricultural sector includes Crops, Livestock and Fishery sub-sectors which contribute 25.6% of GDP, 24.4% of total export earnings in 2017-2018, and employ 61.2% of the labour force.

- The new democratic government has laid down twelve economic policies of which two are related to agriculture: "**Establishing an economic model that balances agriculture and industry, and supports the holistic development of the agriculture, livestock and industrial sectors, so as to enable rounded development, food security and increased exports"** and **"Achieving financial stability through a finance system that can support the sustainable long-term development of households, farmers and businesses".**

VISION, MISSION, POLICY AND OBJECTIVES

VISION

- An inclusive, competitive, sustainable agricultural system in which food and nutrition are secured, that contributes to the socio-economic well-being of farmers and rural people and to the further development of the national economy.

MISSION

- To enable the rural population and agribusiness enterprises to benefit from production and trade of diverse, safe and nutritious foods and agricultural products, using innovative and sustainable production, processing, packaging, logistics and marketing technologies to meet growing domestic and global demands.

POLICY

- Land Use and Management Policy
- Water Use and Management Policy
- Financing Policy
- Agricultural Mechanization and Input Sector Policy
- Cooperative Enterprise and Cooperative System Development Policy
- Rural Infrastructure Development Policy
- Research, Development and Extension Policy

- Marketing, Value-added Processing and Export Policy
- Governance, Institutional and Human Resource Development Policy
- Environmental Conservation and Climate Change Resilience Policy

OBJECTIVES

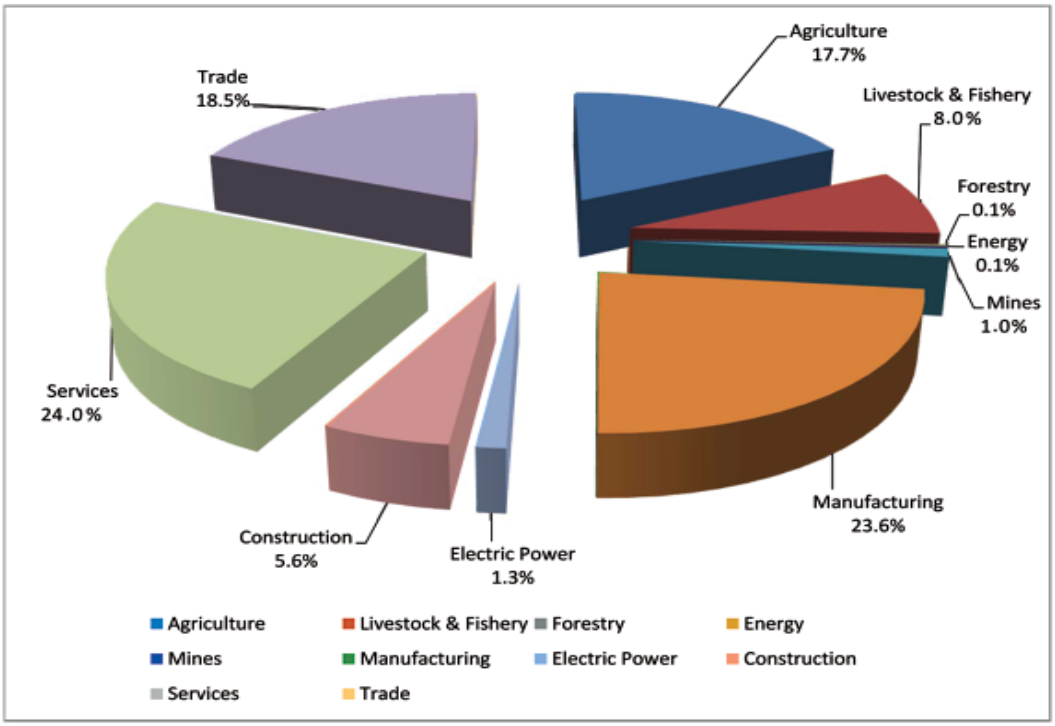
- To ensure food and nutrition security and food safety
- To safeguard the rights of farmers and to enhance their welfare and livelihoods
- To advance and upgrade the agricultural sector by organizing farmers' associations and cooperatives, inclusive of smallholders and subsistence farmers, with promotion of gender equality
- To attain sustainable rural development and to upgrade socio-economic conditions of rural people including farmers, by improving rural infrastructure, access to markets, by establishing small-scale enterprises, and by designing participatory land use plans and land management
- To seek technical assistance and mobilize financial resources from national and international agencies in support of crop production, livestock husbandary, fisheries and rural development, in the agricultural sector
- To promote domestic and foreign direct investment in the agricultural sector
- To promote competitiveness and value-added production of exportable commodities
- To encourage the development of agro-based industries, small-scale enterprises, cottage industries and other income-generating activities, including the ten traditional arts and crafts
- To improve the livelihoods and income-generating capacity of rural people through the development of the cooperative system and enterprises
- To develop effective linkages between production, trading, processing, services and consumers along the value chains of agricultural commodities
- To improve the coordination mechanism of inter-governmental agencies, to foster public-private partnerships (PPP), and to establish collaboration among all stakeholders including public agencies, academia, research institutions, farmers' associations, civil societies, and the private sector, with a view to enhance rural development and reduce poverty
- To develop the necessary governance and regulatory framework for the agricultural sector, to provide the enabling environment for effective participation by all stakeholders both public and private in order to enhance the welfare of rural communities and the national income

GROSS DOMESTIC PRODUCTS (2017-2018)

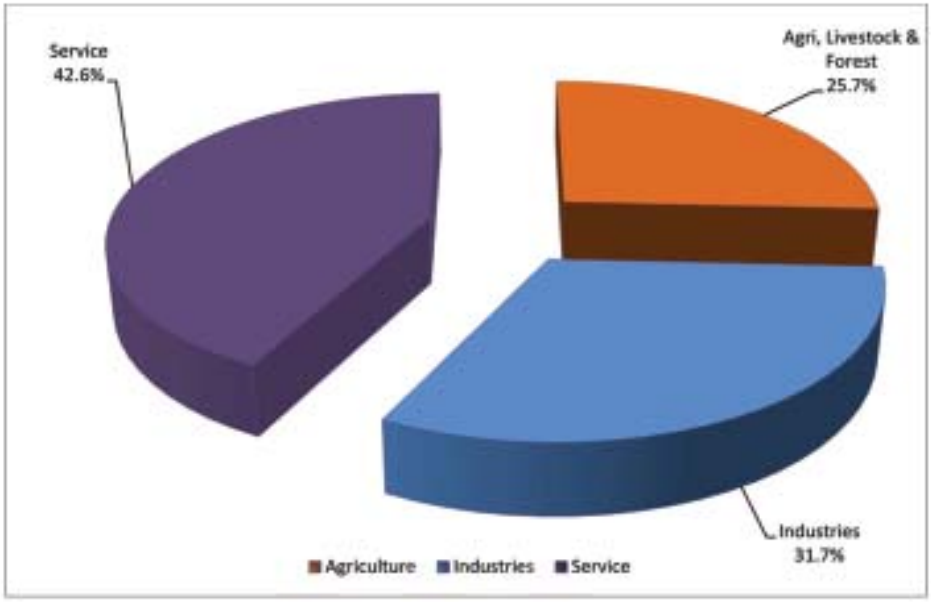
(Constant Price 2010-2011)

Sector	(Billion Kyat)
Agriculture	11,272.922
Livestock & Fishery	5,099.501
Forestry	66.833
Energy	92.637
Mines	643.874
Manufacturing	15,060.282
Electric Power	822.014
Construction	3,597.555
Services	15,345.557
Trade	11,826.740
GDP	**63,827.918**

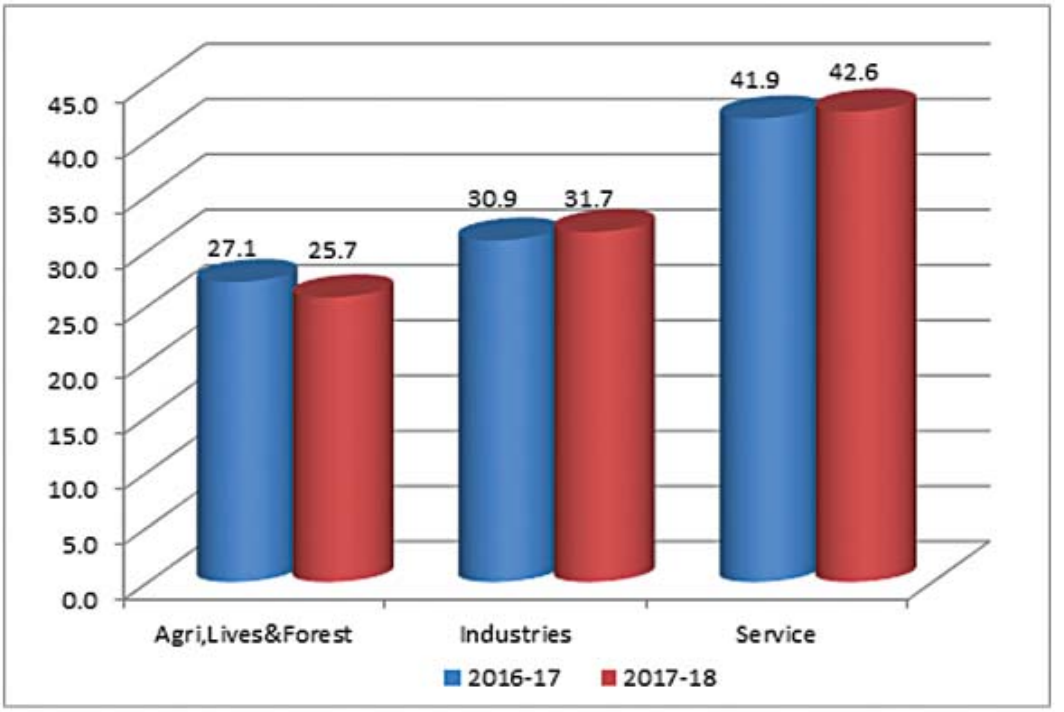
GROSS DOMESTIC PRODUCTS (2017-2018)
(Constant Price 2010-2011)



GROSS DOMESTIC PRODUCTS (2017-2018)



GROSS DOMESTIC PRODUCTS (2016-2017 and 2017-2018)



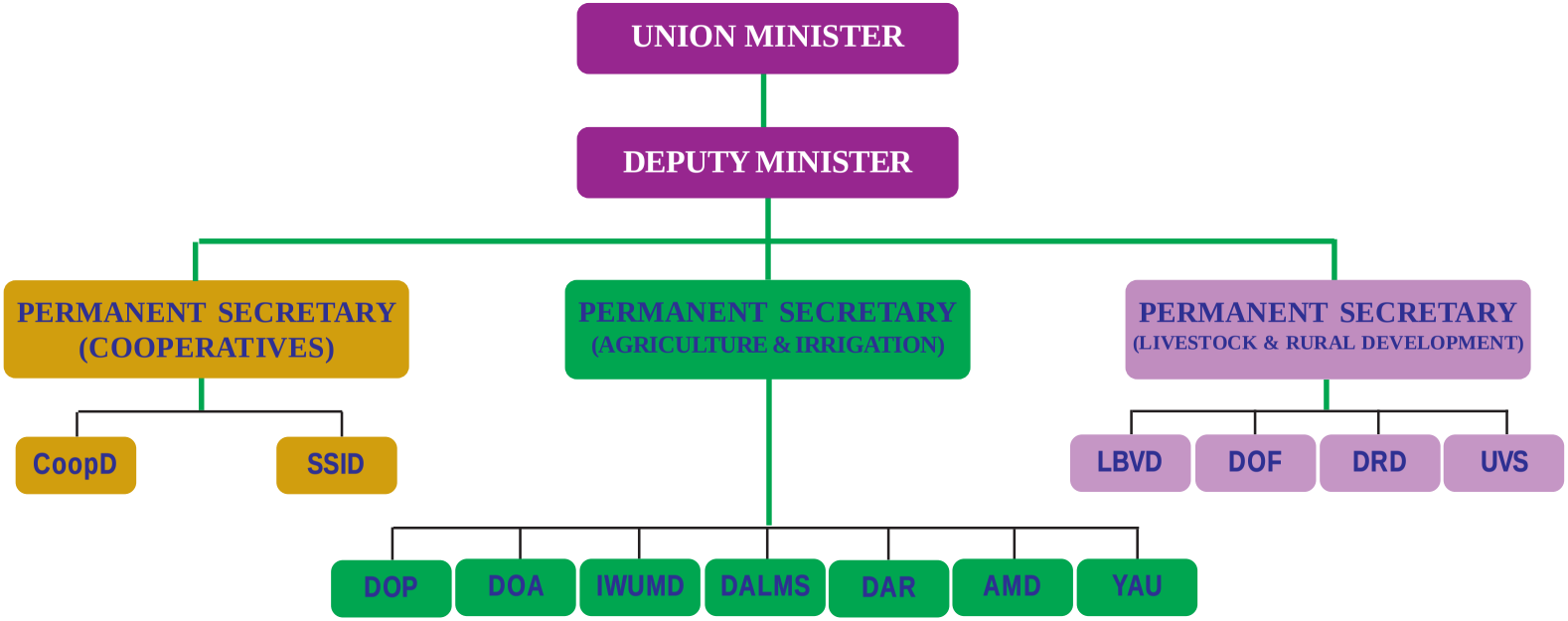
Note - Agriculture include agriculture, livestock and fishery and forestry
Industries include energy, mines, manufacturing, power, construction
Services include service and trade

REFORM MEASURES UNDERTAKEN BY MINISTRY OF AGRICULTURE, LIVESTOCK AND IRRIGATION

INSTITUTIONAL STRUCTURE REFORM

- According to the approval of Cabinet Meeting No. 5/2016, held on 9th June 2016, the three former ministries, i.e, Ministry of Agriculture and Irrigation (MOAI), Ministry of Cooperatives (MoCoop), Ministry of Livestock, Fishery and Rural Development (MLFRD), were merged into one ministry namely "Ministry of Agriculture, Livestock and Irrigation (MoALI)".

THE MINISTRY OF AGRICULTURE, LIVESTOCK AND IRRIGATION
INSTITUTIONAL SETUP



CoopD - Cooperative Department

SSID - Small Scale Industries Department

DOP - Department of Planning

DOA - Department of Agriculture

IWUMD - Irrigation & Water Utilizations Management Department

DALMS - Department of Agricultural Land Management & Statistics

DAR - Department of Agricultural Research

AMD - Agricultural Mechanization Department

YAU - Yezin Agricultural University

LBVD - Livestock Breeding and Veterinary Department

DOF - Department of Fisheries

DRD - Department of Rural Development

UVS - University of Veterinary Science

Civil Servants of Ministry of Agriculture, Livestock and Irrigation in 2017-2018 Fiscal Year

The total number of staff of the whole ministry in 2017-2018 was 65,742; in that total, the number of officer was 6,816 and the number of non-officer personnel was 58,926.

Of the total number of officer, the staff of the Department of Agriculture was the greatest, at 1,668 officer. The second largest department was the Irrigation and Water Utilization Management Department, with 1,115 officer.

Of the total number of non-officer personnel, the staff of the Irrigation and Water Utilization Management Department was the greatest with 13,793 personnel. The second largest department was the Department of Agriculture, with 13,065 personnel.

SN	Department	Officer	Non-officer Personnel	Total
1.	Minister's Office	79	157	236
2.	Department of Planning	61	103	164
3.	Department of Agriculture	1,668	13,065	14,733
4.	Department of Land Management & Statistics	361	10,641	11,002
5.	Irrigation & Water Utilization Management Department	1,115	13,793	14,908
6.	Agricultural Mechanization Department	362	5,989	6,351
7.	Department of Agricultural Research	144	573	717
8.	Yezin Agricultural University	177	345	522
9.	Livestock Breeding & Veterinary Department	596	2,492	3,088
10.	Department of Fisheries	309	1,445	1,754
11.	Department of Rural Development	776	4,433	5,209
12.	University of Veterinary Science	93	190	283
13.	Cooperative Department	644	5,078	5,722
	- Cooperative University(Thanlyin)	125	123	248
	- Cooperative University(Sagaing)	113	124	237
14.	Small Scale Industries Department	193	375	568
	Total	**6,816**	**58,926**	**65,742**

Ministry of Agriculture, Livestock and Irrigation
Capital Expenditure and Current Expenditure in 2017-2018

In the 2017-2018 Fiscal Year, Current Expenditure of the Ministry of Agriculture, Livestock and Irrigation was 460.416 billion Kyat, and Capital Expenditure was 312.802 billion Kyat.

Of Current Expenditure, the expenditure of the Department of Rural Development was the greatest, at 170.903 billion Kyat; about 37% of total Current Expenditure. The second greatest component of Current Expenditure was in the Department of Irrigation and Water Utilization Management: its expenditure was 118.672 billion Kyat; about 26% of total Current Expenditure.

Of Capital Expenditure, the expenditure by the Department of Rural Development was the greatest, at 174.745 billion Kyat; about 56% of total Capital Expenditure. The second greatest component of Capital Expenditure was in the Department of Irrigation and Water Utilization Management: its expenditure was 91.018 billion Kyat; about 29% of total Capital Expenditure.

Kyat Millions

SN	Department	Current Expenditure	Capital Expenditure
1.	Minister's Office	1,293.652	1,451.071
2.	Department of Planning	848.880	19.595
3.	Department of Agriculture	40,189.305	22,348.282
4.	Department of Land Management & Statistics	30,215.287	1,808.703
5.	Irrigation & Water Utilization Management Department	118,672.435	91,018.239
6.	Agricultural Mechanization Department	42,144.305	12,731.349
7.	Department of Agricultural Research	5,334.584	2,639.929
8.	Yezin Agricultural University	2,608.957	2,159.545
9.	Livestock Breeding & Veterinary Department	11,605.090	525.581
10.	Department of Fisheries	5,967.439	453.117
11.	Department of Rural Development	170,902.754	174,745.162
12.	University of Veterinary Science	1,057.523	440.998
13.	Cooperative Department	28,442.910	2,245.623
14.	Small Scale Industries Department	1,133.021	215.497
	Total	**460,416.142**	**312,802.691**

Agriculture Development Strategy (ADS)

- The Agriculture Development Strategy (ADS) is a tool to plan, organize, and fund the operationalization of Agricultural Policy to guide the Myanmar agricultural sector development for over the next 5 years (2018-2019 to 2022-2023). The ADS was officially launched on 7th June 2018 in Nay Pyi Taw.
- In order to achieve the Agriculture Policy vision, the ADS will accelerate agricultural sector growth through the three strategic pillars of governance, productivity and competitiveness; while promoting social and geographic inclusiveness, sustainability and resilience to climate change, transparency, clear public and private sector roles, democratic farmer and private sector organizations, and connectivity to market, information and power infrastructure. The three strategic pillars are based on the solid foundation of collaborative relationships among government, farmers and enterprises.
- The overall impacts of the ADS consist of the five dimensions of - 1) increased food and nutrition security; 2) poverty reduction; 3) competitiveness; 4) higher and more equitable incomes of rural households; and 5) strengthened farmers' rights.
- Moreover, the ADS comprises three main objectives to 1) enhance governance and capacity of institutions responsible for agriculture development; 2) increase productivity and farmers' incomes; and 3) enhance market linkages and competitiveness. It consists of 27 outcomes and 250 outputs/ activities. To achieve the impacts of ADS, 15 quick-win activities commenced in 2018 in accordance with activities defined under the three main pillars.
- The formulation of ADS has been supported by the technical assistance from Asian Development Bank (ADB), Food and Agriculture Organization(FAO) of the United Nations(UN), FAO and Livelihoods and Food Security Trust Fund (LIFT Fund) in collaboration with the Ministry of Agriculture, Livestock and Irrigation (MOALI). Furthermore, the implementation of ADS will be closely coordinated with the Agriculture and Rural Development Sector Coordination Group (ARDSCG) to ensure that its targeted program maximizes the impact of other interventions carried out by multi-agencies and Non-government Organizations (NGOs) involved on food and nutrition security.

Crop Sub-Sector

STRUCTURE OF MAJOR CROPS

CULTIVATED CROPS IN MYANMAR

Under the different topographies, local climates and soil types, more than 61 kinds of crops are usually cultivated in Myanmar, as categorized below:

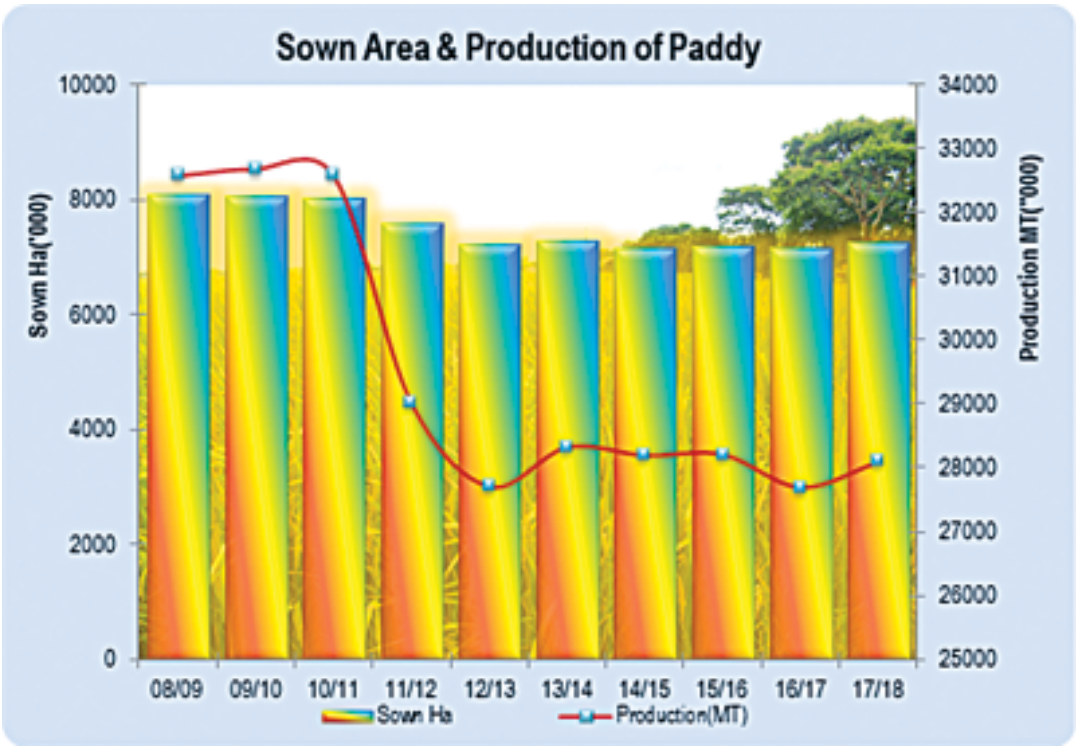
Cereals	.....	paddy, wheat, maize, sorghum
Pulses	.....	17 kinds of pulses including black gram, green gram, pigeon pea, soy bean, cowpea, kidney bean, butter bean, chick pea, garden pea, sultapya
Oilseeds	.....	groundnut, sesame, sunflower, mustard, niger
Industrial Crops	.....	cotton, sugarcane, jute, rubber, coffee, mulberry, oil-palm, Tea
Kitchen Crops	.....	chilly, onion, garlic, ginger, tumeric, potato
Fruits & Vegetables	.....	mangos, bananas, apple, citrus, pears, durian, mangosteen, pineapple, cabbages, tomatos, rambutan and other tropical and temperate vegetables

PADDY

- Myanmar stood as a major rice exporter in the colonial period between 1921 and 1941, with export that amounted to about 3 million tons per year.
- In 1977-1978, a pilot project for high-yielding paddy was launched at Shwebo and Teikkyi with support in technology and input distribution.
- A summer paddy program was introduced in 1992. By using short-duration high-yielding varieties together with proper irrigation management, 0.3 million hectares(mil ha) of summer paddy were grown.
- Therefore, the total paddy sown area reached 5.7 million hectares and rice export was increased to 1 million ton in 1994-1995.
- Among the Regions and States, Ayeyarwaddy, Sagaing, Bago, Mandalay and Yangon are major rice growing areas.

Paddy Production

Year	Sown Area(mil ha)	Yield (mt/ha)	Production (mil MT)
2008-2009	8.09	4.03	32.57
2009-2010	8.07	4.06	32.68
2010-2011	8.05	4.07	32.58
2011-2012	7.59	3.83	29.01



Year	Sown Area(mil ha)	Yield (mt/ha)	Production (mil MT)
2012-2013	7.24	3.84	27.70
2013-2014	7.28	3.90	28.32
2014-2015	7.17	3.94	28.19
2015-2016	7.21	3.97	28.21
2016-2017	7.16	3.92	27.69
2017-2018	7.26	3.92	28.09

- According to the National Planning Targets, the total area of paddy was 7.42 million hectares, comprising 6.27 million hectares under monsoon paddy and 1.15 million hectares under summer paddy, with average yield 4.06 mt/ha in 2017-2018. Actual paddy sown area in 2017-2018 was 7.26 million hectares and production reached 28.09 million metric tons.
- Measures have been taken to increase paddy production by using high-yielding varieties including introduction of hybrid rice varieties, adoption of Good Agricultural Practices (GAP), utilization of good quality high-yielding seeds, application of agricultural inputs such as irrigation water, agro-chemicals and natural fertilizers and promotion of farm machinery utilization as technological interventions.

⊙ The cultivated areas of ten most common monsoon paddy varieties in 2017-2018 were;

SN	Varieties	Sown hectare(mil)	SN	Varieties	Sown hectare(mil)
1.	Manawthukha	0.90	6.	Sinakayi	0.25
2.	Sinthukha	0.74	7.	Hnankar	0.24
3.	Ayarmin	0.41	8.	Ngasein	0.23
4.	Meedone	0.28	9.	Pawsanyin	0.22
5.	Shwewahhtun	0.27	10.	Pawsanmhwe	0.18

⊙ The cultivated areas of ten most common summer paddy varieties in 2017-2018 were:

SN	Varieties	Sown hectare(mil)	SN	Varieties	Sown hectare(mil)
1.	Theehtutyin	0.38	6.	90-days	0.12
2.	Shwethweyin	0.13	7.	Palethwe	0.02
3.	Sinthukha	0.13	8.	IR-747	0.03
4.	Manawthukha	0.10	9.	Pakhanshwewar	0.02
5.	Yadanartoe	0.07	10.	Hmawbi-3	0.01

⊙ Utilization of good quality seeds is vital to increase rice production. The Ministry encourages private companies for seed industry development. Some private companies namely Dagon International, Golden Sun Land, Sin Shweli, Green Asia, New Ayeyar, Great Wall, Ayeyar Hinthar, Myint Zayar companies have been cooperating with the ministry to improve seed industry development.

Seed Production by Departments, Farmers and Private Sector

Year	Sown Area (hectare)				Production
	Dept	Farmer	Private	Total	Ton
2011-2012	202	-	213	415	662
2012-2013	488	-	255	743	1,311
2013-2014	308	-	223	531	978
2014-2015	149	28	690	867	1,753
2015-2016	28	460	16	504	980
2016-2017	11	8	888	907	40,581
2017-2018	11	-	541	552	48,031

Production Costs (kyat) per acre for Paddy in 2017-2018

		Broadcast	Transplant	Direct sowing
1.	Land preparation	36,000	64,000	50,000
2.	Planting	40,000	40,000	-
3.	Crop Management	60,000	40,000	16,000
4.	Harvesting	40,000	45,000	45,000
5.	Inputs	53,500	51,200	64,000
	Total Costs	**271,500**	**280,200**	**175,000**
	Revenue	**467,500**	**528,000**	**308,000**
	Profit	**196,000**	**247,800**	**133,000**
	Cost/Benefit Ratio	**1:1.7**	**1:1.9**	**1:1.8**

MAIZE

⊙ In Myanmar, maize is the second most important cereal after rice, and is grown in the whole country except in Mon State. It is important for animal feed for domestic livestock farms, and for export. In 2017-2018, about 1,437 thousand metric tons of maize was

exported to China and the Philippines. As demand for maize has increased annually since 2009, the maize growing area has expanded and also hybrid maize varieties have been utilized.

Maize Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	355	3.39	1,203
2009-2010	363	3.43	1,245
2010-2011	389	3.54	1,376
2011-2012	412	3.61	1,485
2012-2013	422	3.64	1,526
2013-2014	441	3.70	1,626
2014-2015	459	3.75	1,721
2015-2016	472	3.78	1,777
2016-2017	490	3.81	1,860
2017-2018	504	3.88	1,940

- Many companies are distributing hybrid maize seeds in major growing areas where it accounts for 30.46 % of the total maize-sown area.

Sown Area of Different Maize Varieties (hectare)

Varieties	2014-2015	2015-2016	2016-2017	2017-2018
CP-888	323,257	335,134	347,595	291,645
CP-222	6,624	12,334	6,020	7,683
UH-008	1,397	1,364	1,995	2,113
SA-333	22	7,353	7,529	7,282
China Hybrid	12,269	9,705	10,057	14,749
Thailand Hybrid	14,314	6,773	5,216	3,933
Yezin-3	4,654	3,955	3,955	3,693
Yezin-4	14,120	11,106	6,540	3,888
Yezin-5	1,454	1,454	591	342
Yezin-6	1,678	1,695	1,043	773
Yezin-10	1,222	1,811	3,332	2,591
SUWAN-3	10,280	9,209	7,044	3,657
Thetletshwewa	20,062	20,621	20,854	13,667
Akayi	11,989	12,033	8,968	719
Local Varieties	27,064	24,429	22,970	31,463

- For various years, Myanmar has exported its maize to China, Thailand, Singapore, Vietnam, Malaysia, United Arab Emarates(UAE), Hong Kong, the Philippines, Indonesia, India, Bulgaeria and Spain as shown in the table below:

Maize Export Volume and Country of Destination

Year	Export (000'MT)	Country
2011-2012	166.5	China
2012-2013	566.2	China
2013-2014	933.6	China
2014-2015	1,356.2	China, Thailand
2015-2016	1,188.6	China, Singapore, Malaysia
2016-2017	1,288.7	China, UAE, Hong Kong, India, Malaysia,the Philippines, Singapore, Thailand, Vietnam
2017-2018	1,437.0	China, the Philippines

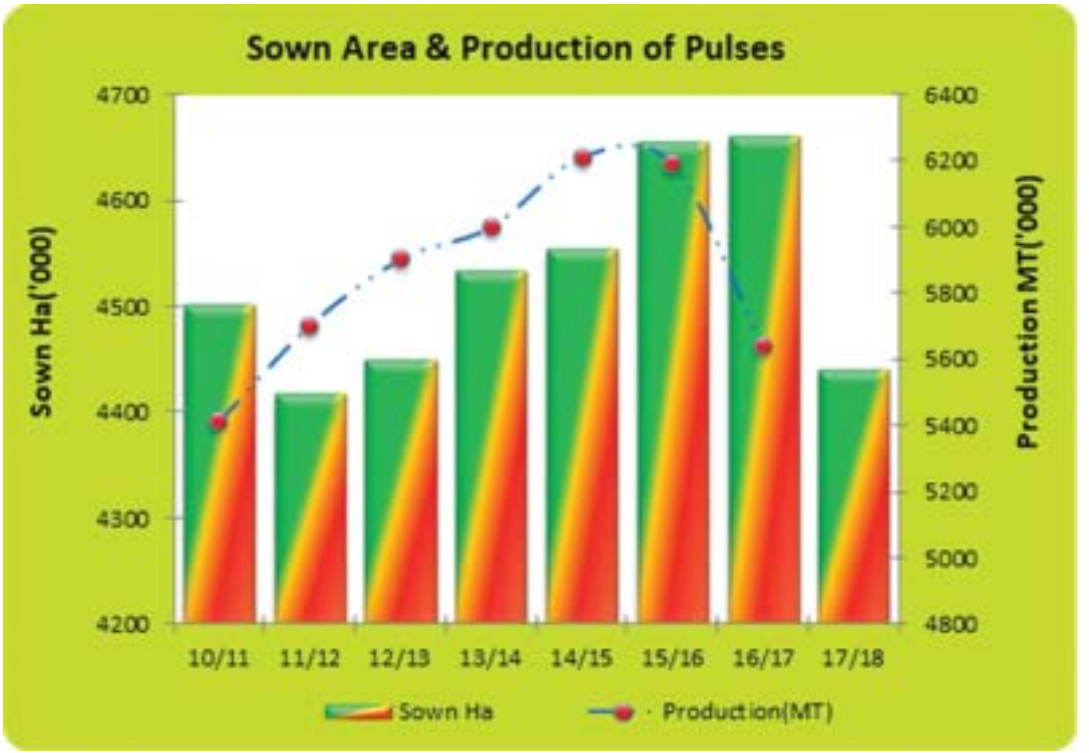
Production Costs (Kyat) per acre for Maize in 2017-2018

SN.	Items	Maize
1.	Land preparation	38,000
2.	Crop Management	70,000
3.	Harvesting	68,000
4.	Inputs	114,000
	Total Costs	**290,000**
	Revenue	**561,870**
	Profit	**271,870**
	Cost/Benefit Ratio	**1:1.52**

PULSES

⊙ Myanmar's pulses and beans is improtant because of its contribution to job creation, gross domestic product (GDP) and export generation. Myanmar is the second largest global producer of pulses, making the sector of strategic importance for the country. The National Export Strategy (NES) is aiming to increase this sector's productivity through enhancing the quality of seeds, advancing farming techniques, improving logistics and trade infrastructure, as well as improving branding and marketing techniques to boost the export.

- Myanmar is the world's second largest exporter of peas and beans after Canada and the largest exporter in the ASEAN region. The sown areas of pulses represent about 22 percent of the total sown areas of crops in Myanmar. Over twenty kinds of pulses are



being grown in Myanmar. Major exportable pulses are black gram, green gram, pigeon pea, soy bean, butter bean, kidney bean and cowpea. Pulses are mostly produced in the Dry Zone, Bago and Sagaing and Ayeyarwaddy. They can be grown in a wide range of climatic conditions.

- At present, the annual sown area of pulses is around 4.4 million hectares across all states and regions.
- Cultivation of pulses, with relatively low production cost and increased demand from domestic consumption and export, has substantially increased from 0.73 million hectares in 1988-89 to 4.66 million hectares in 2016-2017. But the area declined to 4.43 million hectares in 2017-2018. Export of pulses increased from 17,000 metric tons in 1988-89 to around 1.25 million metric tons in 2017-2018.

Production and Export of Pulses

Year	Sown Area (mil ha)	Yield (mt/ha)	Production (mil MT)	Export (mil MT)
2008 - 2009	4.28	1.23	5.27	1.45
2009 - 2010	4.38	1.25	5.49	1.23
2010 - 2011	4.50	1.28	5.79	0.83
2011 - 2012	4.42	1.23	5.41	1.30
2012 - 2013	4.45	1.28	5.70	1.48
2013 - 2014	4.53	1.30	5.90	1.30
2014 - 2015	4.55	1.32	6.00	1.46
2015 - 2016	4.66	1.33	6.21	1.19
2016 - 2017	4.66	1.33	6.19	1.31
2017 - 2018	4.44	1.27	5.64	1.25

- To increase pulse production, new improved local varieties such as Yezin-6, Yezin-8, Yezin-9, Yezin-11 and Yezin-14 for green gram, Yezin-3 and Yezin-4 for pigeon pea, and Yezin-4 and Yezin-5 for black gram have been released since 2011-2012.
- In Myanmar, black gram, green gram, and pigeon pea are main export commodities whereas cowpea (black eyed bean), kidney bean, chick pea, rice bean, lab lab bean and butter bean are exported, but trade volumes for these are low compared to the

major pulse export commodities. The expansion of area of black gram and green gram can be observed in upper and lower Myanmar, mainly driven by rising demand for export. Similarly, pigeon pea area expansion which has occurred in upper Myanmar is mainly caused by demand from India.

- An un-expected announcement from India was its decision to change policy on pea and bean imports from Myanmar at the beginning of August 2017. Under this policy, India has limited the amount of pea and bean products from Myanmar. The import quotas are 200,000 tons for pigeon pea and 300,000 tons for mung bean and green gram. As a result of this policy, 100,000 tons of pigeon pea and 300,000 tons of mung bean have been left in the hands of local Myanmar merchants.

Production of Black gram

Year	Sown Area (000'ha)	Harvested Area (000'ha)	Yield (mt/ha)	Production (000'MT)
2008-2009	980	980	1.46	1,381
2009-2010	988	988	1.48	1,446
2010-2011	1,054	1,055	1.52	1,604
2011-2012	1,090	1,090	1.26	1,375
2012-2013	1,108	1,108	1.40	1,548
2013-2014	1,102	1,102	1.43	1,574
2014-2015	1,098	1,098	1.44	1,580
2015-2016	1,133	1,133	1.47	1,671
2016-2017	1,179	1,179	1.45	1,703
2017-2018	977	976	1.41	1,377

Production of Green gram

Year	Sown Area (000' ha)	Harvested Area (000' ha)	Yield (mt/ha)	Production (000'MT)
2008-2009	1,039	1,039	1.19	1,240
2009-2010	1,077	1,077	1.24	1,336
2010-2011	1,121	1,121	1.26	1,410
2011-2012	1,098	1,098	1.22	1,344
2012-2013	1,087	1,086	1.28	1,387

Year	Sown Area (000' ha)	Harvested Area (000' ha)	Yield (mt/ha)	Production (000'MT)
2013-2014	1,123	1,123	1.29	1,452
2014-2015	1,173	1,173	1.31	1,536
2015-2016	1,210	1,209	1.32	1,595
2016-2017	1,221	1,216	1.31	1,590
2017-2018	1,240	1,238	1.27	1,578

Production of Pigeon pea

Year	Sown Area (000' ha)	Harvested Area (000' ha)	Yield (mt/ha)	Production (000'MT)
2008-2009	612	612	1.27	777
2009-2010	616	616	1.25	773
2010-2011	633	633	1.32	837
2011-2012	644	643	1.32	849
2012-2013	613	613	1.31	803
2013-2014	639	639	1.33	847
2014-2015	619	619	1.36	841
2015-2016	648	647	1.36	881
2016-2017	668	668	1.37	918
2017-2018	658	658	1.23	812

Good Agriculture Practices (GAP) introduction to Pulses in 2017-2018

(Thousand Hectare)

Crop Name	Total Sown	GAP Sown	GAP Sown(%)
Green gram	1,240	19	1.52
Black gram	977	7	0.73
Pigeon pea	66	0.15	0.02
Cow pea	141	0.16	0.12

Production Costs (Kyat) per acre for Pulses in 2017-2018

SN	Item	Black gram	Green gram	Soy bean
1.	Land preparation	43,000	42,000	38,000
2.	Planting	35,000	40,000	41,000
3.	Crop Management	27,500	23,500	19,000
4.	Harvesting	44,000	47,000	52,000
5.	Inputs	88,050	90,500	61,500
	Total Costs	**237,550**	**243,000**	**211,500**
	Revenue	**419,760**	**467,480**	**469,420**
	Profit	**182,210**	**224,480**	**257,920**
	Cost/Benefit Ratio	**1:1.7**	**1:1.9**	**1:2.2**

OIL SEED CROPS

- Major oilseed crops include groundnut, sesame, sunflower, mustard and niger which play a vital role in Myanmar due to its high consumption of edible oils compared to neighbouring countries.
- As the amount of edible oils produced is not sufficient for local consumption, approximately 200,000 MT of palm oil is being imported annually to meet local requirements.

- In order to reduce the imported palm oil, efforts to increase yield and production of oil seed crops such as by the use of high yielding varieties and hybrid seed, modern cultivation practices and appropriate cropping patterns are being implemented.
- In upland farming system, hybrid sunflower seed has been introduced in areas where it is suitable, to double the existing average yield.

Oilseed Crop Cultivation

(Thousand Hectare)

Year	Groundnut	Sesame	Sunflower	Mustard	Niger
2008-2009	844	1,570	884	98	152
2009-2010	866	1,634	883	100	156
2010-2011	877	1,585	859	101	158
2011-2012	887	1,595	543	72	156
2012-2013	914	1,553	624	63	156
2013-2014	931	1,622	481	61	155

(Thousand Hectare)

Year	Groundnut	Sesame	Sunflower	Mustard	Niger
2014-2015	949	1,581	484	59	157
2015-2016	955	1,640	466	59	157
2016-2017	989	1,636	408	57	155
2017-2018	1,035	1,590	275	48	146

Production Costs (Kyat) per acre for Oilseed Crops in 2017-2018

Item	Groundnut	Sesame	Sunflower
1. Land preparation	52,000	34,000	46,000
2. Planting	22,000	18,000	18,000
3. Crop Management	30,000	30,000	20,000
4. Harvesting	54,000	46,000	38,000
5. Inputs	129,500	66,500	63,000
Total Costs	**287,500**	**194,500**	**185,000**
Revenue	**576,000**	**350,000**	**300,000**
Profit	**288,500**	**155,500**	**115,000**
Cost/Benefit Ratio	**1:2.0**	**1:1.8**	**1:1.6**

Good Agricultural Practices (GAP) introduction to Oilseed Crops in 2017-2018

(Thousand Hectare)

Item	Total Sown	GAP Sown	GAP Sown (%)
Groundnut	1034	0.22	0.02
Sesame	1589	2.67	0.17

COTTON

- Cotton was introduced into Myanmar in the Pyu era. Annual exports during the colonial time were about 15,000 tons. Long staple cotton (LSC) has been widely grown since 1962. Cotton is one of the major industrial crops and widely grown in the Central Dry Zone of Myanmar, both long staple and short staple cotton. Local varieties, Mahlaing-5 and Wagyi are planted throughout the entire short staple cotton growing area. Long staple cotton, Ngwe Chi-6, Shwe Daung 8 and Ngwe Chi 9 are grown in Sagaing, Mandalay, Magwe and Bago Regions, Nay Pyi Taw council area and Shan State (South).

- Utilization of high yielding varieties with wide adaptation to local conditions, modernized cultural practices, and application of Integrated Pest Management (IPM) are being implemented in order to increase yield per unit area and production of cotton.
- Significant progress has been made in cotton yield and production since 1988-1989; the production has reached approximately 0.30 million metric tons on a sown area of 1.76 million hectares in 2017-2018.

- Research and extension activities are also being carried out to release improved varieties of long-staple cotton. Collection of germplasm of the new varieties, hybridization, and selection have been carried out at cotton research and technical development farms, for further seed multiplication under the systematic seed flow scheme.
- Ngwe Chi-6 variety which is high yielding and almost tolerant of cotton bollworm was developed and released in 2006-2007. In 2017-2018, 82% of the total cotton sown area has planted to this variety, amounting to 184,040 hectares with an average yield of 2.04 mt/ha.
- Recently, two long staple cotton varieties, Shwe Daung -8 and Ngwe Chi -9 with high yield and other favourable qualities, as well as moderate resistance to cotton sucking pests and tolerance of bollworm attack have been produced and released in 2014-2015. In 2017-2018, the total sown area of Shwe Daung-8 and Ngwe Chi-9 reached

65,962.36 hectares with an average yield of 1.99 MT and 2.39 MT respectively. The highest yields have been achieved by cotton farmers using these varieties.

- The production of Ngwe Chi-6 cotton is shown in table below:

Production of Ngwe Chi-6 Cotton

Year	Sown Area(ha)	Yield(mt/ha)	Production(MT)
2011-2012	247,796	1.97	392,943
2012-2013	212,180	2.06	436,609
2013-2014	229,696	2.08	476,945
2014-2015	237,328	2.12	501,522
2015-2016	224,881	2.18	489,975
2016-2017	112,747	2.28	256,920
2017-2018	184,040	2.04	375,404

Production of Cotton

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	367	1.23	453
2009-2010	359	1.46	523
2010-2011	351	1.57	550
2011-2012	326	1.64	533
2012-2013	278	1.68	467
2013-2014	299	1.70	509
2014-2015	304	1.75	532
2015-2016	291	1.79	521
2016-2017	260	1.82	473
2017-2018	225	1.76	395

Production Costs (Kyat) per acre for Cotton in 2017-2018

SN	Item	Wagyi/Mahaling	Long Staple
1.	Land preparation	32,000	38,000
2.	Crop management	82,500	321,000
3.	Input	5,000	50,595
	Total Costs	**119,500**	**409,595**
	Revenue	**150,000**	**770,000**
	Profit	**30,500**	**360,405**
	Cost/Benefit Ratio	**1:1.26**	**1:1.88**

SUGARCANE

- The area planted to sugarcane in Myanmar has stagnated over the last decade. However, sugarcane yield is about 42% higher than it was a decade ago.
- The Department of Agriculture is conducting a varietal replacement program, and now nearly 65% of the area planted to the old sugarcane varieties has been planted with advanced varieties. Besides that, high yielding production technology has been transferred to farmers by conducting demonstration plots and field days.
- Research and Development programs have been recently carried out to transfer advanced sugarcane varieties and advanced production technology to cane growers.
- Despite the stagnation in area planted to cane, the total production has increased in response to sugar price increase and seasonal loans provided to sugarcane growers.

⊙ The production of sugarcane is shown in table below:

Sugarcane Production and Sugar Export

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)	Sugar Export (000' MT)
2008-2009	165	61.20	9,901	9
2009-2010	160	61.61	9,715	58
2010-2011	152	62.64	9,398	-
2011-2012	154	63.22	9,690	-
2012-2013	154	62.26	9,564	-
2013-2014	169	61.83	10,473	78.8
2014-2015	181	63.41	11,307	30.2
2015-2016	162	63.67	10,305	581.4
2016-2017	164	64.80	10,604	1233.8
2017-2018	163	64.54	10,536	404.0

Production Costs (Kyat) per acre for Sugarcane in 2017-2018

SN	Item	Kyats
1.	Land preparation	24,000
2.	Planting	8,000
3.	Crop Management	14,000
4.	Harvesting	100,000
5.	Input	268,000
	Total Costs	**422,000**
	Revenue	**750,000**
	Profit	**328,000**
	Cost/Benefit Ratio	**1:1.8**

RUBBER

- Rubber was introduced into Myanmar in 1876 and commercial plantations were started in 1905 and in 1909. The sharp increase of rubber area in the 1960s was due to the result of implementing a Rubber Project under the Agriculture and Rural Development Corporation (ARDC), started in 1956. Under the Socialist Government in 1962, many rubber estates owned by both local citizens and foreigners were nationalized between 1964 and 1973. Thereafter, the rubber area declined between 1970 and 1980.

- Under the 1988 economic policy, many agricultural crops including rubber could be freely planted, produced and marketed.
- The varieties of rubber grown in Tanintharyi Region, Mon and Kayin State of Myanmar are BPM-24, RRIC-100, RRIM-717, PB-260 and PB-235. In Bago, Yangon and Ayeyarwaddy Regions, PB-260, RRIM-717, PB-235, RRIM-623 and GT-1 are suitable, and in Kachin and Shan States, RRIM-600, GT-1, PR-255, PR-107 and RRIM-623 are prominent varieties.
- It is estimated that the rubber sector currently employs between 350,000 and 400,000 workers, making it a real job-creator nationwide. The aim of the rubber sector strategy is to create an attractive climate for investors. In doing so, structural issues such as the use of outdated technologies, limited technical skills of labour, difficulty to comply with the highest quality standards, and the lack of a specialized rubber institute will be addressed.

Rubber Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	428	0.65	93
2009-2010	463	0.67	112
2010-2011	504	0.69	128
2011-2012	543	0.75	150
2012-2013	581	0.77	164
2013-2014	610	0.76	177
2014-2015	641	0.77	198
2015-2016	651	0.75	212
2016-2017	654	0.77	225
2017-2018	657	0.78	242

Production Costs (Kyat) per acre for Rubber in 2017-2018

SN	Item	Kyats
1.	Land preparation	100,000
2.	Planting	14,000
3.	Crop Management	37,500
4.	Harvesting	175,000
5.	Input	267,500
	Total Costs	**530,000**
	Revenue	**875,000**
	Profit	**345,000**
	Cost/Benefit Ratio	**1:1.65**

OIL PALM

- Oil palm was introduced into Myanmar in 1921 at the Central Farms under the Agriculture Department, in Mudon, Hmawbi, Myaungmya and Sittwe Townships. Systematic planting of oil palm was started in 1926, with a total of 115 hectares of plantation farm at Egani Village, Yebyu Township in Tanintharyi Region.
- Extension services for oil palm were provided by the Agricultural Corporation in Pagawzun (Dawei), Tanintharyi Region and Ingabo(Kyaikhto), Mon State in 1972-1973,

at Thandwe, Rakhine State in 1978, at Launglon (Dawei) estate and Nyaung-bin-kwin (Tanintharyi Region) estate in 1979 and in Myitkyina, Kachin State estate in 1980. The Prison Department also planted oil palm at Kawthaung estate, Tanintharyin Region in 1982.

- In 1999, 0.2 million hectares of oil palm plantation were established in Tanintharyi Region to meet the demand for palm oil in Myanmar. In 2017-2018, a total area of 0.24 million hectares of virgin land were allotted to 384 private company firms and 0.09 million hectares have been planted so far.
- Due to favourable climatic and soil conditions in parts of Myanmar, oil palm can be planted commercially. However, expansion of oil palm plantations is limited by land availability.
- The production of oil palm is shown in table below:

Oil Palm Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	102	2.04	59
2009-2010	112	2.13	69
2010-2011	125	2.47	93
2011-2012	134	3.09	121
2012-2013	144	3.37	134
2013-2014	148	3.28	138
2014-2015	153	3.33	145
2015-2016	158	2.78	123
2016-2017	160	1.76	100
2017-2018	162	2.44	138

COFFEE

- Coffee growing was initiated in the colonial era in Myanmar. The "Director of Agriculture Burma Office Research in 1940" reported that Christian missionaries introduced Robusta coffee to Tanintharyi Region, in the Southern part of Myanmar since 1885.
- According to statistics by the Department of Agricultural Land Management and Statistics in 2017-2018, the coffee planting area is about 19,659 hectares, but the actual production area is about 12,395 hectares with the total production of 8,683 metric tons for the whole country.
- There are two major types of coffee grown in Myanmar: Arabica in highland (2500' above sea level) and Robusta in low land (2500' below sea level)
- The new plant varieties recognized by the National Seed Committee are CRIECT-1, CRIECT-2, CRIECT-3, CRIECT-4, CRIECT-5, CRIECT-6, CRIECT-7, CRIECT-8, CRIECT-9, CRIECT-10, CRIECT-11 and CRIECT-12.

- The production of coffee is shown in the table below:

Coffee Production

Year	Sown Area (000' Ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	24	0.66	6
2009-2010	24	0.67	7
2010-2011	25	0.68	7
2011-2012	25	0.69	8
2012-2013	20	0.70	8
2013-2014	20	0.71	8
2014-2015	20	0.72	8
2015-2016	20	0.72	8
2016-2017	20	0.70	9
2017-2018	20	0.70	9

TEA

- Tea was introduced into Myanmar more than 1,000 years ago. Myanmar is ranked fourth among ASEAN countries in tea production. The most widely grown varieties are Assam (*Camellia assamica*) and China (*Cammelia sinensis*). Namhsan, Manton and Kyaukme in Northern Shan State, and Pinlaung, Pindaya and Yatsauk in Southern Shan State are major tea production areas. With increased market demand since 2007, tea plantation area has also been increasing in Myanmar.

- The production of tea is shown in the table below:

Tea Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	90	1.18	92
2009-2010	93	1.20	94
2010-2011	95	1.21	96
2011-2012	96	1.20	94
2012-2013	91	1.20	96
2013-2014	94	1.20	98
2014-2015	96	1.20	100
2015-2016	96	1.20	101
2016-2017	96	1.21	104
2017-2018	96	1.20	106

Kitchen Crops

KITCHEN CROPS

The culinary crops such as dry chilli, onion, garlic and potato are important items for daily consumption and dietary diversity for people in Myanmar.

At present, the annual sown area of culinary crops is over 0.2 million hectares across all states and regions. Chilli is mainly grown in Mandalay, Ayeyarwaddy and Magway Regions and Rakhine State. Onion is predominantly grown in Mandalay region. The main growing area for garlic and potato are found in Southern Shan State, while they are also widely grown in Sagaing region and Northern Shan State .

Among the culinary crops, about 7,916.304 MT of onions was exported to China, Thailand, Malaysia, Singapore and Vietnam from April to September 2018.

POTATOES

- Potatoes are grown throughout the world.
- Although potato consumption of developing countries is only about a quarter of the consumption of European countries, Asian potato consumption has increased since 1960.

- In developing countries, living standards increase according to per capita income, and potato consumption has continued to rise with per capita income.
- In Myanmar, potatoes are cultivated year-round by irrigation in summer and winter crops, and by rainfed methods in monsoon and late monsoon potatoes in Southern Shan State Areas.
- Myanmar, the potato is one of the major crops in the culinary crop group, and it can be cooked with meat or fish. Also, potato is used domestically and for processed food, such as snack and chips.
- The production of potatoes is shown in the table below:

Potato Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	38	14.77	557
2009-2010	38	14.76	563
2010-2011	39	14.80	573
2011-2012	37	15.12	565
2012-2013	37	15.16	560
2013-2014	36	15.05	549
2014-2015	37	15.11	551
2015-2016	37	15.38	563
2016-2017	37	15.42	563
2017-2018	33	15.53	508

CHILLI

- Chilli is an important seasoning spice crop and is also the most significant culinary crop in Myanmar. India, China, Turkey, Nigeria, Mexico, Spain, Indonesia, Korea, Italy, Romania, Tanzania and Egypt are among the largest chilli producing countries in the world.
- In Myanmar, the largest areas for cultivation of chilli are in Mandalay, Magway Ayeyarwady and Sagaing regions.

- Good quality seeds of dried-chilli cultivars in reliable climate regions are required to meet the market demand. Cultivation practices should make minimum possible use of pesticides and use techniques that reduce negative environmental impacts.
- The production of chilli is shown in the table below:

Chilli Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	130	0.97	124
2009-2010	132	1.01	133
2010-2011	127	1.02	129
2011-2012	117	1.01	118
2012-2013	113	1.06	119
2013-2014	110	1.07	117
2014-2015	112	1.11	123
2015-2016	110	1.17	129
2016-2017	111	1.19	131
2017-2018	109	1.21	133

ONIONS

- The World Food and Agriculture Organization has classified onions as a vegetable crop. But in Myanmar it is also classified as a culinary crop.
- The production of onions is mainly in the monsoon and winter season occupying about 68,798-80,939 hectares.
- The average yield for onions is about 0.57 MT per hectare. The central dry zone represents the largest onion cultivation area.
- Cultivation practices are in accordance with local traditions. Onion growing in the rainy season is called winter onion due to entry into the market in winter, and onion growing in the winter season is called summer onion due to the entry into the market in the summer.
- Onion is easily damaged, shedding its outer layers, and is often excessively watery. Therefore, there is annual storage loss usually of 20% to 30%.
- The production of onion is shown in the table below:

Onion Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	69	15.15	1,040
2009-2010	72	15.33	1,109
2010-2011	72	15.63	1,131
2011-2012	72	15.88	1,143
2012-2013	72	16.11	1,161
2013-2014	77	15.94	1,224
2014-2015	78	16.16	1,265
2015-2016	77	16.49	1,264
2016-2017	70	16.31	1,141
2017-2018	70	14.66	1,023

GARLIC

- Garlic cultivation is mainly in Mandalay, Sagaing and Bago regions, Shan state and various other regions and states. These garlic areas occupy about eighty thousand acres, and Myanmar stands as the third largest garlic growing country in the world. Southern Shan state is the most significant garlic growing area.

- The months of October and November is the planting season for garlic and it takes four months to reach harvest time, in February and March. The first week of April is the time of maximum garlic availability in the market.
- The cultivated kinds of garlic are Htoo-1, Htoo-2 ,Htoo-3 ,Htoo-4 and Htoo-5; recognized as different types and grades in the domestic market.
- The production of garlic is shown in the table below:

Garlic Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	26	6.96	181
2009-2010	28	7.11	201
2010-2011	29	7.19	209
2011-2012	29	7.28	213
2012-2013	29	7.36	212
2013-2014	29	7.39	215
2014-2015	28	7.50	212
2015-2016	28	7.54	212
2016-2017	29	7.54	216
2017-2018	28	7.48	207

Fruit & Vegetables

MANGOS

- Myanmar has approximately 300 kinds of mango. Sein Ta Lone, Shwe Hin Tha, Yingwe and Myakyauk are the most popular mangos for commercial sale. There is higher market demand for these because customers value their unique flavor and taste.
- Mangos can be made into desserts and value-added products. And also they can be canned. In addition, they are consumed in juices, flavoured yogurts and jams. In Asian cultures, green mangos are used in sweet-and-sour pickled salad. And also mango timber is used for boat construction, flooring, furniture and other items.

- In Myanmar, mangos produce annually. The production of mangos is shown in the table below:

Mangos Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	78	6.30	435
2009-2010	79	6.74	482
2010-2011	80	7.19	504

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2011-2012	83	6.64	492
2012-2013	94	6.88	525
2013-2014	96	6.83	531
2014-2015	97	7.00	557
2015-2016	100	6.13	495
2016-2017	103	6.88	577
2017-2018	104	6.83	623

BANANAS

⊙ Banana is an important food plant in Asia, Africa, Latin America and many tropical countries around the world and it is a popular fruit in Myanmar. Banana is consumed in large amount in temperate countries.

⊙ Banana is one kind of fruit with year round production. The advantages of bananas compared to other fruits are as follows:

(1) Easily consumed

(2) No need for refrigerator storage

(3) Easily digested and quite nutritious

- Banana can be consumed by all ages from children to older age. In Myanmar, Banana is used traditionally in worship and cultural events. Most farmers cultivate and market bananas according to traditional practices. Therefore, income from banana cultivation is usually low compared to other crops.
- Banana has potential as part of Myanmar's export strategy. Myanmar is part of banana's centre of origin, with wide genetic diversity.

Banana Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	68	11.50	770
2009-2010	72	12.31	842
2010-2011	76	12.67	951
2011-2012	76	12.91	955
2012-2013	82	13.09	953
2013-2014	83	13.34	985
2014-2015	86	13.72	1,041
2015-2016	87	13.86	1,110
2016-2017	91	14.09	1,150
2017-2018	99	13.29	1,179

APPLE

- It is a good all round fruit recognized as nutritious and health-giving, and fecthing high market prices because of attractive colour and pleasant taste. In Myanmar, it is best grown in hilly regions. It is good to eat daily, because it provides vitamins and minerals.
- The production of apple in Myanmar is shown in the table below:

Apple Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	1	5.14	4
2009-2010	1	5.00	4
2010-2011	1	5.00	4
2011-2012	0.5	4.84	2
2012-2013	0.5	4.85	2
2013-2014	0.5	4.84	2
2014-2015	0.5	8.97	4
2015-2016	0.5	8.18	3
2016-2017	0.5	9.23	4
2017-2018	0.5	9.72	5

VEGETABLE CULIVATION

CABBAGES

- Cabbage is an essential item on the Myanmar dining table and it belongs to the *Brassica* genus. Cabbage can be consumed fresh in salads or cooked in various dishes, both the outer green leaves and soft white heart.
- It is consumed all over the world in a variety of cooked and raw forms. In Myanmar, it is planted year round in Shan State but it is grown in winter in the lowlands. So it is a vegetable crop that can be traded all the year.
- The production of cabbage in Myanmar is shown in the table below:

Cabbage Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	28	15.92	449
2009-2010	29	24.03	698
2010-2011	30	14.97	453
2011-2012	32	14.57	471
2012-2013	31	15.27	474
2013-2014	30	15.33	471
2014-2015	31	15.26	476
2015-2016	31	15.69	489
2016-2017	32	15.51	496
2017-2018	30	15.23	460

TOMATOES

- Botanically, tomato is a fruit, eaten as vegetable. It orginates in Southern America and has distributed around the world as a valuable vegetable crop. There are four types of varieties namely: wild type, table type, cherry type and processing type. Although there is wide variety of tomato cultivar grown around the world, Myanmar has focused on just two types: Red Tomato and Yellow-Red Droop Tomato. Droop Tomato has been mostly used because it has a thin skin, and is juicy and sour. Red Tomato is used in salad and for juice because it is fleshy. In Myanmar local markets, it is not only a household vegetable crop but also useful for skin beauty and general good health.
- The production of tomato in Myanmar is shown in the table below:

Tomato Production

Year	Sown Area (000' ha)	Yield (mt/ha)	Production (000' MT)
2008-2009	110	11.71	1,290
2009-2010	110	11.93	1,317
2010-2011	111	11.83	1,323
2011-2012	107	11.95	1,284
2012-2013	110	12.51	1,380
2013-2014	112	12.25	1,379
2014-2015	110	12.19	1,343
2015-2016	113	11.64	1,319
2016-2017	112	11.81	1,327
2017-2018	104	11.50	1,197

AGRICULTURAL INPUTS

LAND

IRRIGATION

MACHINERY

OTHER INPUTS

AGRICULTURAL LAND

- The total area of Myanmar is 67.66 million hectares and one fourth of the total area is land that can be utilized for cultivation.
- The utilization of land is as shown below:

Land Utilization 2017-2018

Items	mil ha	%
Net Sown Area	12.06	17.8
Fallow Land	0.46	0.7
Waste Land that can be Cultivated	5.54	8.2
Reserved Forests	18.88	27.9
Other Forests	14.51	21.4
Others	16.21	24.0
Total	**67.66**	**100.0**

- Presently, the net sown area is about 12.06 million hectares of which 4.2 million hectares, 34% of the total net sown area, is currently cultivated by small-holder farmers with an average land holding of 1.92 hectares. The fallow land is about 0.46 million hectares and waste land that can be cultivated is about 5.54 million hectares. This can be utilized for expansion of agricultural land.

- To be in line with the democratic government system and market-oriented economy, two land laws, namely **"The Farm Land Law"** and **"The Vacant, Fallow and Virgin Land Management Law"** were passed in March 2012. According to these laws, existing farmers or peasants have to have official registration of the land plots on which they are currently utilizing. This ensures their rights to own, mortgage, rent out, exchange and pass on the land as inheritance. When compared with the old land laws, the new ones motivate the farmers who enjoy a real sense of ownership. This is a driving factor for increase of agricultural production. In 2013, **"The Law of Protection of the Farmer Rights and Enhancement of their Benefits"** was enacted. **The Farm Land Law** and **The Vacant, Fallow and Virgin Land Management Law** are being amended to be consistent with **The Law of Protection of the Farmer Rights and Enhancement of their Benefits**. To be in line with the democratic government system and market-oriented economy, the **"Myanmar Investment Law"** was passed on 18th October, 2016.
- National companies and the private sector are encouraged and granted rights to develop virgin land and fallow land for the cultivation of paddy, pulses, oil crops, sugarcane,

cotton, maize, onion, cashew nut, rubber, oil palm, and other crops. At present, 384 private companies have been granted 0.933 million hectares for commercial farming.

Granted Area to National Entrepreneurs for Large-scale Commercial Farming (31-3-2018)

State/Region	No. of Company	Granted Area (ha)
Naypyitaw	4	3,114
Kachin	113	371,715
Kayin	1	392
Sagaing	30	136,913
Tanintharyi	53	160,181
Bago	13	5,511
Magwe	19	35,629
Mandalay	10	7,050
Yangon	9	4,820
Rakhine	10	45,487
Shan	65	84,967
Ayeyarwaddy	57	77,087
Total	**384**	**932,866**

- The following activities have been undertaken for agricultural land development:
  - reclamation of fallow and waste land that can be cultivated
  - development of farm embankments and paddy-fish integrated farming systems in deep water areas
  - prevention of soil erosion by terrace farming practices and the modern farm reclamation scheme in highland areas
- The modern upland farm reclamation project is being undertaken to meet the following objectives:-
  - replacing slash and burn methods with terrace farming
  - facilitating people in hilly regions to live in permanent settlements
  - eliminating opium cultivation by substituting high value cash crops through terrace farming
  - conserving soil fertility and preventing deforestation

SEED

- Seed means planting material obtained from a fruit, which can be propagated and cultivated into mature plants.
- Grain means a kind of seed or kernel not used for planting but used for food.
- An amendment to the Seed Law 1/ 2011 was passed on 18th February, 2015.

Varieties released from the National Seed Committee

Crop	No. of Variety
Rice	165
Wheat	12
Corn	130
Sorghum	13
Groundnut	17
Sesame	10
Sunflower	8
Cotton	22
Tobacco	10
Eucalyptus	2
Jute	9
Kenaf	1
Sugarcane	14
Rubber	23
Legumes	48
Sacha Inchi	2
Coffee	12
Potato	3
Horticultural Crops	249
Total	**750**
Parental Lines	**102**

FERTILIZER

By fertilizer we mean chemical fertilizer, bio-fertilizer or natural fertilizer which are materials that cause chemical changes in the soil providing plant nutrition for the growth of fruits, flowers and plants. We do not here include any natural fertilizer made by growers for use in their own farms.

CHEMICAL FERTILIZER

By chemical fertilizer we mean fertilizer prepared chemically, not by composting or other natural means. This includes inorganic mineral fertilizer and organic fertilizer produced in a factory.

BIO-FERTILIZER

Bio-fertilizer means a fertilizer produced by multiplying organisms such as bacteria, fungi, etc., beneficial for the growth of plants.

NATURAL FERTILIZER

Natural fertilizer means the remains, wastes or by-products of fauna and flora, process by composting.

An amendment to the Fertilizer Law (7/2002) was passed on 23 March, 2015.

PESTICIDE

By pests we mean insects, arachnids, organisms causing plant diseases or that interfere with crop and livestock production, stored food and human health. These include destructive rodents, moles, snails, nematodes, fungi and weeds etc.

Pesticide means chemicals to prevent and control insects, organisms causing plant diseases, weeds etc.

The original Pesticide Law (10/ 1990) was passed on 11 May, 1990 by the State Peace and Development Council. An amendment to this law (24/ 2016) was passed on 20 January, 2016 by the Pyidaungsu Hluttaw.

Issuance of Phytosanitary Certificate – PC for Exported Commodities from Myanmar to the Top Ten Importing Countries (1.4.2017- 31.3.2018)

Countries	Number of Phytosanitary Certificates – PC						Total
	Peas & Beans	Oil Crop	Maize	Rice	Others	Timber	
China	1,247	373	2,239	2,513	4,213	549	**11,134**
India	4,712	62	-	9	540	2,056	**7,379**
Malaysia	1,591	33	15	278	201	158	**2,025**
Pakistan	1,532	-	-	-	249	2	**1,783**
Bangladesh	339	1	-	469	291	73	**1,173**
Indonesia	901	62	-	129	68	11	**1,171**
Singapore	689	44	7	119	105	54	**1,018**
Vietnam	482	43	83	82	131	31	**852**
Nepal	565	1	-	-	3	111	**680**
UAE	417	-	-	2	43	57	**519**
Total	**12,475**	**619**	**2,344**	**3,350**	**5,844**	**3,102**	**27,734**

Others - Broom, Bamboo, Rattan, Finger Turmeric, Ginger, Jute, Betel nut, Betel vine, Dry Taro, Water melon, Musk melon, Cassava, Jujube, Cashew nut, Pepper, Rubber Sheet, Chinese Chives, Onion, Chilli, Tea, *Limonia acidissima* (Thanakha) and Coffee.

Pesticide Formulator Licence

Company Name	No. and Type of Pesticide
Myanma Pesticides Industry Co.,Ltd.	35 (Pesticides)
Power House Co.,Ltd.	16 (Household Use)
Diesel King Co.,Ltd.	41 (Household Use)
Myanma Awba Group Co.,Ltd.	163 (Pesticides)
Kyin Ywan Mosquito Coil Company	1 (Household Use)
Moving Forward Generation Co. Ltd.	1 (Household Use)
Red Dragon Co. Ltd.	1 (Household Use)

Company Name	No. and Type of Pesticide
Good Day Mosquito Coil Work	1 (Household Use)
Happy Pest Control & Pesticide Co. Ltd.	Rat Control
Golden Dragon Industries Co.,Ltd.	1 (Household Use)
Leo Pest Control Team	Safe Snake Removal
Control Star Co.,Ltd.	1 (Household Use)
Shan Maw Myae Manufacturing Co.,Ltd.	2 (Neem Pesticides)
Myanmar Golden Crop Co.,Ltd.	2 (Neem Pesticides)
Min Naing Khant Co.,Ltd.	1 (Household Use)
Yo Chan Co.,Ltd.	1 (Household Use)
Myanmar Mosfly Industry Co.,Ltd.	1 (Household Use)

Pesticide Repacking Licence

Company Name	Nos. of Pesticide
Pyti Pyae Sone Co.,Ltd.	191
Farm Link Co.,Ltd.	8

Pesticide Fumigation Licence

Company Name

Overseas Merchandise Inspection Corporation (OMIC)
SGS Myanmar Ltd.
Myanmar Overseas Commodity Inspection Co.,Ltd. (MOCIC)
General Inspection & Testing Enterprise Co.,Ltd.
Myanmar Pest Control Service
Diamond Win Co. Ltd.
Mahar Inspection & Service Co.,Ltd.
Super Standard Fumigation Services
Top Pest Control Services
Chin Su Myanmar Co.Ltd.
Myanmar Inspection & Testing Services (MITS)
ASK Inspection and Fumigation Service
Mandalar Pest Control
Green Pest Management
Min Naing Khant Co.,Ltd.
Aung Nann Daw Inspection and Fumigation Services

Company Name

Powerful Asia Galaxy Empire Co., Ltd.
International Great Future Fumigation and Inspection Co.,Ltd.
Golden King Fumigation Services
Aung Group Inspection and Fumigation Services
Natural Pest Control
Myanmar Bureau Veritas Co.,Ltd.
The King Pest Control Co.,Ltd.
Myanmar-Kokant Agricultural Co.,Ltd.
August Pest Management Services
Competitive Pest Services Co.,Ltd.
Swan Htet Pests Busters Enterprise
Active Pest Control Service
Myanmar Agro pest Control Team.
Javelin Services Limited
Titan Pest Management Co.,Ltd.
CCIC Myanmar Inspection and Certification Co.,Ltd.
Particular Service Co.,Ltd.
Geo-Chem Inspection & Fumigation Services

PROVISION OF IRRIGATION WATER

- As agriculture remains pivotal for the overall economic development of the nation, the government has been rendering comprehensive assistance and strong support for its enhancement.The Irrigation and Water Utilization Management Department (IWUMD) has diligently pursued the State's objectives; constructing new infrastructure, and maintaining and efficiently operating the existing irrigation facilities. In addition, one

of the department's main tasks has been to actively engage in water development planning and the furtherance of irrigation for food security.

- Food production and rural communities utilize over 70% of the total fresh water supply in Myanmar, and most of this water is used for irrigation. With 40% of food being grown on irrigated lands, irrigation is of significant importance to food security, socio-

economic development and social stability. With socio-economic development, more and more water is being requisitioned by industry and domestic water supply.

- In the past, the government has made significant efforts to construct irrigation facilities, wherever feasible, in areas throughout the country. Moreover, the advancement of irrigation water supply technologies with changing time and space encompasses not only building dams, weirs and sluice gates, but also river-pumping works and tube-well water supplies, especially in the central part of Myanmar.
- At present, only about 6% of the total water resources of 1,081,300 million cubic meters per annum are being utilized annually. The measures being taken for irrigation development are: -

1. Construction of some irrigation facilities
2. Proper management for the storage and utilization of run-off water from the watershed areas
3. Renovation of existing reservoirs for raising storage capacity and efficient delivery of irrigation water
4. Diversion of water from streams and rivulets during periods of high water level into adjacent ponds and depressions for storage, sometimes with sluice-gates

5. Lifting water from rivers and streams through pump-irrigation
6. Efficient utilization of ground water

- The Government and Ministry of Agriculture, Livestock and Irrigation takes responsibility to meet the rising demand for food and water, and also develops strategies that improve the welfare and socio-economic well-being of local people. The IWUMD provides irrigation facilities to meet the demand for water and for flood protection using all feasible approaches, drawing upon available local resources and expertise to achieve its agricultural objectives. Up to the end of June 2018, 786 irrigation facilities have been completed by the department across the regions and states of the country, further increasing the total irrigable land areas to 2.14 million hectares, of the net sown area of 13.36 million hectares. So, the irrigated area is about 16% of the net sown area of the nation.

Irrigation Facilities completed by the Department, and Area benefited in the States and Regions

SN	State/ Region	Number of Irrigation Facilities	Benefited Area (ha)
1	Kachin	10	12,925
2	Kayah	35	22,102
3	Kayin	20	8,008
4	Chin	1	202
5	Sagaing	75	347,650
6	Tanintharyi	32	2,264
7	Bago	89	374,440
8	Magway	98	165,666
9	Mandalay	135	363,536
10	Mon	21	40,579
11	Rakhine	23	3,325
12	Yangon	69	155,102
13	Shan	43	82,249
14	Ayeyarwaddy	102	194,665
15	Naypyitaw	33	65,877
	Total	**786**	**1,838,590**

- Area benefited by completion of irrigation facilities by the department is 1.838 million hectares, where 1.584 million hectares of farmland is serviced by 581 dams and 0.254 million hectares of farmland by 205 river-pumps and tube-wells. In addition, 0.302 million hectares of irrigation is provided by other ways. The total irrigated area is 2.14 million hectares.
- IWUMD also carries out water resource development and furtherance of irrigation for food security, by rehabilitating dams, weirs and etc.
- Moreover, it also undertakes flood protection work for farmland and residential areas. About 1.63 million hectares have been protected by construction, rehabilitation, operation and maintenance of embankments, dikes, polders, drainage channels and sluice-gates along the main river systems and deltas.

- Irrigation infrastructure such as dams, weirs and sluice-gates are being built formally, where possible. However, in low rainfall areas on more-or-less flat plain regions, where building of hydraulic structures are difficult, and where availability of water from river and creek sources is the only option, pump stations are being installed, and where ground water is available, tube-wells are being drilled for irrigation.
- In detail, the department has implemented 205 pump irrigations schemes to supplement the irrigated area by 0.254 million hectares.
- The department has also implemented rehabilitation work of ancient tanks, lakes and irrigation structures in the central dry zone of Myanmar for irrigation purposes and household consumption, where diversified crops are cultivated. The continued renovation of existing water-related facilities has provided not only for the greening of the region but also has improved the socio-economic conditions of the local people.

- The department is implementing land consolidation and mechanized farming systems in collaboration with other departments of the ministry, to speed up agricultural development. Land consolidation has great benefits: providing for effective irrigation networks; proper canal drainage systems; easy access to mechanization of agricultural processes; and easy transport of agricultural inputs and products. It also stimulates active farmer participation.
- One type of the Renewable Energy is hydro-power generation. It can provide rural electrification with low cost; easy operation and less maintenance; no carbon emissions; and less adverse effects on environmental and climatic conditions. It is a clean energy production technology compared to other sources of energy.
- Apart from irrigation, flood protection and domestic water supply, the department has implemented some small, medium and large-scale, multipurpose, dam projects for hydro-electricity generation throughout the country. With these projects, about 720 Mega Watt(MW) of hydro-electricity has been generated by 13 large-scale projects; 2.6 MW by 9 medium-scale projects; and 0.9 MW by 27 small-scale projects.

AGRICULTURAL MECHANIZATION

- Utilization of farm machinery and equipment for various activities of agricultural production has increased in both public and private sectors in attempts to boost the agricultural production.
- Cropping intensity has increased the use of machinery for land preparation, harvesting and post-harvest activities. The required machinery is being produced and assembled locally or is imported for distribution to the farmers.

Utilization of Farm Machinery

(Number)

Type of Machinery	2015-16	2016-17	2017-18
Tractor	20,568	28,143	33,425
Power Tiller	300,247	467,872	487,546
Harrows and Disc-ploughs	7,467	13,319	13,329
Thresher	61,997	80,667	81,741
Combine Harvester	2,521	4,759	6,158
Transplanter	286	167	272

- Efforts are being made to replace the traditional way of paddy threshing, to achieve better quality products and to increase productivity by using advanced harvest technology like threshers, combine harvesters and paddy dryers.
- A two-year installment plan for sale and distribution of agricultural machinery to farmers is being offered by the Agricultural Mechanization Department (AMD). This results in easy access and affordability for farmers. The farmers need only a thirty-five percent down payment of the machine's value. The remaining sixty-five percent is paid in installments once every year over the next two years.

- A three-year, seven part installment plan is already arranged and offered to farmers, to make available higher quality agricultural machinery at affordable prices, in cooperation with private importers. Farmers wishing to possess such machinery are required to make only a ten-percent down payment of the machinery's value, followed by six payments of fifteen percent every six months for up to three years.
- The AMD provides farm mechanization services for land preparation, transplanting, harvesting, and threshing in paddy cultivation. This aims to enhance the farmers' economic and social circumstances, by increasing high quality products and mitigating losses.
- In transforming to mechanized farming, the AMD expands the private sector's participation by establishing Private Agricultural Service Groups and by organizing and supporting the following activities:
    (1) inviting, and making necessary arrangements for, those farmers who are also owners of agricultural machinery, to form Private Agricultural Service Groups,

(2) repairing farm machinery,

(3) distributing frequently used and demanded spares for popular farm machinery.

⊙ Altogether, 101 Private Agricultural Service Groups have been formed in 89 townships within two years.

Status of Private Agricultural Service Groups

Region/ State	Township	Services Groups	Total Members	Tractors	Power Tillers	Combine Harvesters
Kachin	3	3	145	20	166	2
Kayah	1	1	31	22	1	-
Sagaing	7	7	176	138	43	138
Naypyitaw	3	3	72	79	15	21
Bago	19	22	352	322	27	59
Magway	13	16	257	269	42	21
Mandalay	16	20	255	214	18	4
Mon	2	2	33	33	10	4
Yangon	9	9	243	216	4	43
Shan (South)	3	5	97	98	28	1
Shan (North)	1	1	13	15	-	-
Shan (East)	1	1	12	12	-	-
Ayeyarwady	11	11	282	61	278	22
Total	**89**	**101**	**1,968**	**1,499**	**632**	**315**

⊙ Apart from agricultural machinery hiring services, the AMD has also provided repair workshops at 45 Agricultural Mechanization Stations, for convenient repair and maintenance services.

LAND TRANSFORMATION FOR THE MECHANIZATION OF AGRICULTURE

⊙ Land development activities for the transformation of conventional agriculture into mechanized agriculture, and land consolidation processes are being undertaken as follows:

(a) construction of farm roads

(b) construction of irrigation canals and drainage by cooperation with IWUMD

(c) transforming small-plots systematically into larger acreages

⊙ Establishment of modern-mechanized farms throughout the country enables farmers to increase their productivity by growing two or more crops per year. It enables farmers to quickly achieve increases in crop production as well as per capita income.

⊙ In the last five years, 21,010 hectares have been transformed into modern mechanized farms by consolidating fragmented farm lands into larger acreages throughout the country, as indicated in the table below:

Systematic Mechanized Farms Established in the Last Five Years
(From 2013-2014 to 2017-2018)

(Ha)

State/ Region	2013-14	2014-15	2015-16	2016-17	2017-18
Kachin	226	325	224	81	134
Kayah	44	127	146	121	26
Kayin	47	427	638	202	22
Sagaing	57	247	324	226	229
Thanintharyi	40	40	105	81	162
Nay Pyi Taw	1,310	219	130	122	401
Bago	623	501	1,230	844	569
Magway	62	190	410	143	-
Mandalay	170	356	252	253	22
Mon	42	162	348	253	769
Rakhine	40	299	16	-	-
Yangon	147	69	65	1,559	-
Shan (South)	40	89	133	81	40
Shan (East)	-	9	-	-	-
Shan (North)	-	43	40	40	-
Ayeyarwaddy	84	1,187	2,658	-	-
Total	**2,932**	**4,290**	**6,719**	**4,006**	**2,374**

- The AMD always participates in early restoration of distaster-affected areas, by removing fallen trees and recovery of crop land affected by deep sedimentation. Similarly, AMD has already managed the harvesting of about 9,136 acres of monsoon paddy in Rakhine conflict areas faced with inadequate number of workers between 26 October and 26 December in 2017.

CONDUCTING MECHANIZATION TRAINING

- The AMD also organizes and carries out Agricultural Machinery Operation, Repair, and Maintenance Training for farmers to train and for the development of skilled farm machinery operators and mechanics. This improves the technical know-how and resources of the agricultural workforce. Regarding Competency Standards (CS), AMD has a Test Centre in Meiktila. About 224 candidates out of a total of 240 candidates passed the test in the last year, and were awarded the National Certificate of Occuptional Competency for Motorized Farm Equipment Mechanic NC Level 1.

Status of Training in Farm Mechanization for Operators and Mechanics

Year	No. of Farmers		
	Operators	Mechanics	Total
2013-2014	1,757	-	1,757
2014-2015	3,257	-	3,257
2015-2016	2,422	-	2,422
2016-2017	983	3,266	4,249
2017-2018	3,598	685	4,283

LIVEST OCK SECTOR

LIVESTOCK SECTOR

One of the investment opportunities in the livestock sector is to establish milk production and processing plants in line with the ASEAN standard for production of safe milk and value-added dairy products, to substitute for imported dairy products. Slaughter-houses and livestock product processing plants are best established in accordance with the ASEAN standard for high quality and safe meat production for local consumption and export. We welcome livestock farming for production of value-added products and their export; businesses that produce and distribute livestock farming equipment; and businesses for the production and distribution of food-stuffs, products and accessories for pet animals.

The livestock sector also plays a vibrant role in agriculture in terms of parallel sources of income for farmers, supply of animal protein, and draft power for farming. Cattle, buffalo and pig raising is also a kind of flexible financial reserve for farmers. The target for the financial year of 2017-2018 is to achieve an improvement of 3.4% in the financial return from meat production compared to the year 2015-2016 based on 2010-2011 prices, and to achieve an average per year return of 5.04% in the second five year plan.

FARM ANIMAL RESOURCES

(million)

Items	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Buffalo	3.318	3.422	3.532	3.638	3.750
Cattle	14.993	15.481	15.993	16.507	17.036
Sheep/Goat	5.981	6.778	7.646	8.586	9.543
Pig	12.567	13.761	15.056	16.342	17.649
Poultry	217.115	241.861	269.286	293.603	318.957
Duck	18.332	20.002	21.805	23.572	25.382
Geese/Muscovy/Other	2.431	2.715	3.061	3.455	3.858

PRODUCTION OF LIVESTOCK AND LIVESTOCK PRODUCTS

All forms of commercial breeding and marketing of livestock and livestock products are owned, managed and operated by the private sector. Current activities of the Livestock Breeding and Veterinary Department (LBVD) are:

(a) improvement of genetic resources

(b) cooperation with International Organizations for upgrading farm animal resources
(c) improvement of Good Animal Husbandry Practices (GAHP)
(d) vaccine productivity
(e) disease diagnosis and control
(f) inspection for export and importation of animals and animal products
(g) current implementation of the Trans-boundary Animal Disease Agreements

IMPROVEMENT OF GENETIC RESOURCES

The LBVD promotes the development of the livestock sector, by supporting the use of highly productive livestock breeds and by upgrading of livestock breeds with the distribution of frozen semen straws for dairy cattle (Friesian), beef cattle (Brahman, Indobrazil) and draught cattle (Pyar Sein, Shwe Ni and Shwe Ni Gyi). The LBVD has upgraded the semen straw processing unit in the Animal Genetic Upgrading and Research Center in Yangon and established the new Artificial Insemination Center in Mandalay.

For upgrading the genetics of livestock farm animals, the LBVD supports artificial insemination (AI) services through training on artificial insemination of cattle and pigs, and by providing AI equipment and liquid nitrogen.

The LBVD has established a new liquid nitrogen plant in Mingalardon Township to support AI services in Myanmar. In cooperation with international organizations and donor countries, LBVD supports training of field staff officers on semen processing technologies, bull management and health certification, by upgrading laboratory technology and veterinary services.

In 2017-2018, the Liquid Nitrogen Plant in Mingalardon Township was able to produce 41,111 Litres of liquid nitrogen and distribute 53,501 Litres to Regions and States. The semen straw processing unit was able to produce 27,129 frozen semen straw for draught cattle (Pyar Sein and Shwe Ni Gyi), 32,910 for dairy

cattle (Friesian), 7,120 for beef cattle (Brahman), and distribute the frozen semen straw 15,620 for draught cattle (Pyar Sein and Shwe Ni Gyi), 28,486 for dairy cattle (Friesian and DLD Friesian), and 14,458 for beef cattle (Brahman and DLD Brahman) to Regions and States.

COOPERATION WITH INTERNATIONAL ORGANIZATIONS FOR UPGRADING FARM ANIMAL RESOURCES

Bilateral cooperation agreements between the LBVD and donor countries can make available technical know-how, laboratory equipment and frozen semen straws. The Department of Livestock Development (DLD) in Thailand donated 100,000 frozen semen straws for beef cattle breeding, while the Dairy Farming Promoting Organization (DPO) provided 20,000 cattle semen straws for dairy and beef cattle development.

In cooperation with the New Zealand Government, LBVD received 11,286 frozen semen straws of Friesian, Jersey and Kiwi Cross breeds, and distributed 2,710 frozen semen straws of Friesian, Jersey and Kiwi Cross breed in 2017-2018. With the support of the Italian Government, LBVD received technology to upgrade the AI centre in Yangon, including technology for embryo transfer and bull health management.

IMPROVEMENT OF GOOD ANIMAL HUSBANDRY PRACTICES (GAHP)

The LBVD has established the Good Animal Husbandry Practices (GAHP) programs with the objective of providing for local consumption of animal products and to support regional and international trade in good quality, safe animal products. LBVD drafted the GAHP (pig farm, pig-backyard farm, broiler farm, layer farm, native chicken farm, bee keeping) programs by conducting stakeholder meetings in preparation for the introduction of GAHP.

The first stakeholder meeting was held on 29th July 2016 and the GAHP was drafted from the suggestions of participants attending the meetings, and the drafted GAHP was submitted to the Ministry of Agriculture, Livestock and Irrigation. After that, a feasibility study was conducted and a second stakeholder meeting was held on 31st August 2017. The GAHP was finalized on 21st March 2018, with the suggestions of participants attended in the meeting.

The GAHP was publicized in the Myanma Alinn Newspaper on 28th February 2018, under the title "GAHP for Consumer Safety and Access to Market". The LBVD headquarter recently trained 28 personnel and drew up an action plan for the GAHP.

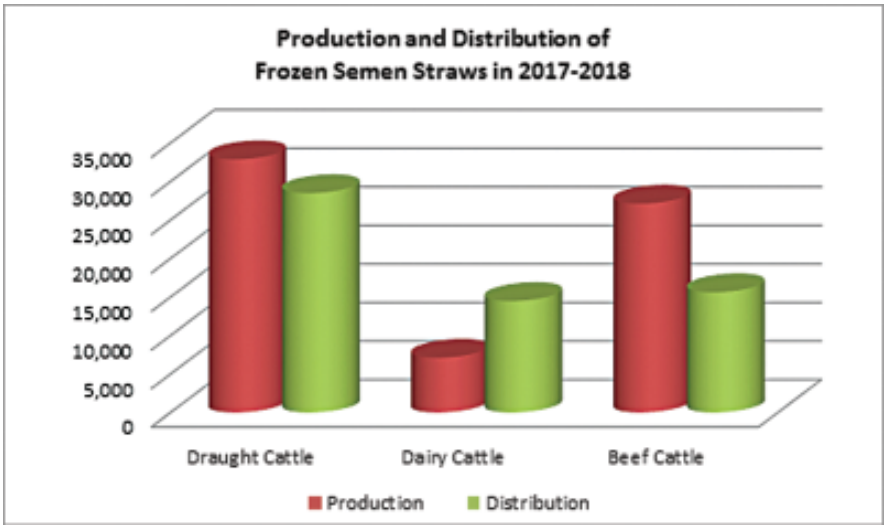
PRODUCTION OF VACCINES

The following vaccines were produced by Insein and Pyin Oo Lwin vaccine production laboratories, under control of the Research and Disease Control Division:

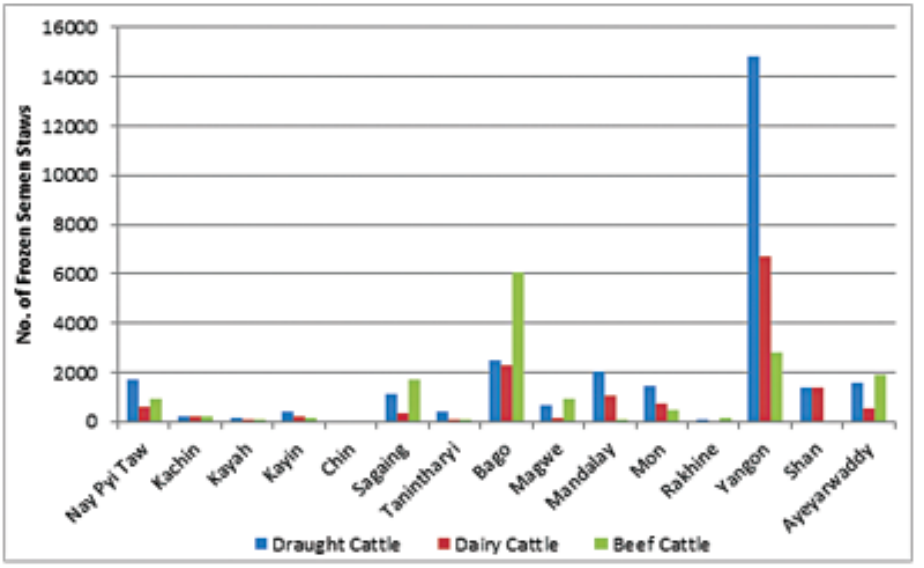
					Doses (Lakh)
Vaccine	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**
HS vaccine (Cattle, Buffalo)	34.66	24.68	37.24	33.93	34.81
AA vaccine (Cattle, Buffalo)	22.28	17.37	23.63	23.03	24.01
BQ vaccine (Cattle, Buffalo)	17.43	15.61	18.38	18.84	19.46
FMD vaccine (Cattle, Buffalo)	1.04	0.59	1.32	0.64	0.96
FMD vaccine (Swine)	0.35	0.22	0.17	0.26	0.81
Hog Cholera vaccine (Swine)	0.51	0.31	0.10	0.30	0.32
ND vaccine (Poultry)	-	198.42	151.61	153.81	131.10
AA vaccine (Elephant)	0.03	0.03	0.03	0.03	0.04

Plan, Production and Distribution of Frozen Semen Straws in 2017-18

SN	Item	Plan	Production	Distribution
1	Draught Cattle	15,000	32,880	28,486
2	Dairy Cattle	6,000	7,120	14,485
3	Beef Cattle	30,500	27,129	15,620



Distribution of Frozen Semen Straws to Region and State in 2017-2018



DISEASE DIAGNOSIS AND CONTROL

The Disease Diagnosis Section and Epidemiology Section of the Research and Disease Control Division conducted surveillance, diagnosis and control of infectious diseases. The Animal and Animal Products Export and Import Inspection Section conducted inspection and control of animal and animal products. The Veterinary Assay Laboratory conducted inspection of animal feeds and medicines, research in animal diseases and production of vaccines.

Analyzing the sperm motility

INSPECTION FOR EXPORT AND IMPORTATION OF ANIMALS AND ANIMAL PRODUCTS

Animal Quarantine Stations under the charge of the National Laboratory (Yangon) and Regional Disease Diagnostic Laboratories are being set up to prevent the transmission of infectious diseases from imported and exported animals and animal products, and to prevent infection by new emerging diseases via the International Airport in Yangon and Mandalay, Kyaukphyu Deep Seaport, Myeik Seaport and Thilawa International Seaport. Check points have been set up to prevent and control trans-boundary animal diseases at the six border areas of Muse, Tacheleik, Myawaddy, Kawthaung, Maungdaw and Tamu.

Animal Quarantine Stations and check points carried out the inspection of imported and exported animals, animal products and medicines and prevented the entry of trans-boundary animal diseases such as Foot-and-Mouth Disease (FMD), Rabies, Avian Influenza and Porcine Reproductive and Respiratory Syndrome (PRRS).

CURRENT IMPLEMENTATION FOR TRANS-BOUNDARY ANIMAL DISEASES

The LBVD and World Animal Health Organization (OIE) are implementing a project for Improvement of FMD Control so that Myanmar will be free of FMD by 2020. This project implemented a pilot vaccination program in 18 Townships in Sagaing and Mandalay Regions from 2012 to 2016, and is implementing the pilot program in 24 Townships in Sagaing and Mandalay Regions between 2017 and 2020.

The first pilot project for Rabies Vaccination supported by OIE was implemented in Lewe Township, Nay Pyi Taw, and the second pilot project is being conducted in Naung Oo Township, Mandalay Region.

For prevention and control of Avian Influenza and PRRS, the LBVD conducted the following activities:

(1) surveillance of the extent of disease
(2) Risk Area Assessment and Risk Management for Avian Influenza and PRRS
(3) supply chain study for identifying the trade routes of animals and animal products
(4) capacity building in the field of epidemiology, surveillance and performance of veterinary services by veterinary staff
(5) implementing epidemiological training with the aid of FAO/OIE, for the establishment of Epidemiology Units in States and Regions.

EXPORT AND IMPORT OF ANIMALS AND ANIMAL PRODUCTS

Export of animals and animal products ensures more tax earnings and also benefits livestock farmers. Importation of animals and animal products ensures local food security and upgrades local breeds by introduction of pure breed genetic resources. Animals and animal products were exported and imported by the LBVD as follows:

Exportation of Animals and Animal Products

US$ thousand

Year	Live Cattle and goat			Animal products	Total
	Number	Value	MT	Value	Value
2015-2016	2,000	60	17,225	9,796	9,856
2016-2017	51,000	1,845	24,727	17,891	19,736
2017-2018	173,647	27,437	34,570	38,001	65,437

Importation of Animals and Animal Products

US$ thousand

Year	Live Cattle and goat		Animal products		Total
	Number	Value	Kilogram	Value	Value
2015-2016	-	-	679,891	2,898	2,898
2016-2017	23,100	1,575	952,751	3,187	4,761
2017-2018	136,410	7,128	2063,251	6,991	14,119

LAWS AND REGULATIONS RELATED TO LIVESTOCK, FISHERY AND RURAL DEVELOPMENT

The Animal Health and Development Law of 1993 has been amended to become the Animal Husbandry and Health Law for the livestock sector. An existing law for the livestock sector, namely The Veterinary Council Law (1995), which is not appropriate to the present situation, has been redrafted and has been adopted as an Amendment of the Veterinary Council Law. A by-law of this was enacted in 1997.

LBVD organized a workshop on preparing the draft of the Animal Husbandry and Health Law with the relevant organizations, departments, livestock associations, stakeholder farmers, and consultants from international organizations.

For the development of the livestock sector, LBVD has prepared a National Livestock Policy and organized workshops to discuss those policies. Good Animal Husbandry Practice (GAHP) for farm animals is also being implemented by LBVD for food quality and food safety of farm animals.

Myanmar Marine Fisheries Law (1990) and Aquaculture Law (1989) is being implemented for Rights of Foreign Fishing Vessels (1989) and fisheries management of Myanmar. At the present time, in accordance with the constitution of the republic of the

Union of Myanmar, Department of Fisheries is preparing the Draft of the Union of Myanmar Marine Fisheries Law and Myanmar Aquaculture Law. For freshwater fisheries management, the Freshwater Fisheries Laws of regions and states have been enacted by approval of related states and regional parliaments.

Recently, during the term of the new government, the Ministry of Agriculture, Livestock and Irrigation (Livestock, Fisheries and Rural Development Sectors) has been developing a new law for rural development, namely the Rural Development Law.

ON GOING PLANS OF LBVD

(1) facilitating the private sector by encouraging small scale livestock owners

(2) upgrading and extensive establishment of laboratories for livestock infrastructure development, setting up the long term plan for a new generation of experts in respective fields, in order to fulfill the development of research work, technology and human resources

(3) coordinating with task-related departments in order to get permits for transport and legal trade of buffalo, cattle, sheep and goats

(4) emphasizing land-use issues - vacant land, fallow land and waste land - for livestock production zones, for increasing the production of livestock and livestock products, for market access, for maintenance of natural pastures, and for cultivation of honey-producing vegetation

(5) supplying fodder and veterinary medicines to contribute to the rehabilitation of disaster-affected areas

(6) undertaking steps to call for national/ international assistance, loans and investment in livestock sector development

(7) designing GAHP systems and taking appropriate steps to follow that GAHP systems

(8) enhancing extension efforts to raise farmers' awareness to follow the GAHP systems

(9) developing targets for vaccine production

(10) drafting a national Antibiotic Microbial Resistance (AMR) plan

DEVELOPMENT OF APICULTURE

The apiculture division maintains 6,200 bee colonies in 31 Townships in 10 States/ Regions, while being responsible for the generation and distribution of selected queen bees for development of the private apiculture sector, and for providing on-the-job training in bee-keeping, and for extension services. The number of private bee keepers has been increased to 924 head, and the number of bee colonies owned by the private sector is 164,930 , and the total number of bee colonies including the government sector is 171,130.

Pollination services were delivered to 1,566,726 acres of land in the private and government sectors. The honey production was 4,377.82 ton, and 2,672.02 ton was exported in 2017-2018.

Bee pollination research, bee pasture research and selected queen production and distribution for artificial insemination for apiculture development was carried out in cooperation with private agriculture businessman to increase crop production. Bee colonies were hired out with pollination charges to increase crop production.

Bees keeping training

In 2017-2018 financial years, 154 staff from the department and 3,033 trainees from the private sector, totaling 3,187 personnel have been trained. Apiculture workshops were provided at Magway Regional Office and Aung Pan Township, Shan State and 18 outcomes were fulfilled.

In 2018-2019 financial year, 250 bee colonies, 3,198,800 tons of honey, 604,188 acres of pollination services, and public extension training with 500 personnel have been provided.

FISHERIES

Myanmar Marine Fishery Waters means the waters along the sea coast of Myanmar from the high tide mark to the open sea; the waters on the sea side of the straight line

drawn from the outermost edge of one bank to the outermost edge of the other bank of rivers and creek mouths; the waters from the high tide mark to the edge of the Exclusive Economic Zone. Coastal line of Myanmar is 2,832 kilometer and the marine area is the 486,000 square meter.

There are three regions and two states in coastal areas, namely Yangon, Tanintharyi, Ayeyarwady, Mon and Rakhine. These states and regions take responsibility for issuance of fishing licences and for the monitoring, control and surveillance of marine fisheries. For administrative purposes, the Department of Fisheries has divided the marine waters into four fishing grounds, namely Tanintharyi, Ayeyarwady, Mon and Rakhine fishing grounds.

DoF has been conducting conservation and fisheries management measures in order to create responsible fisheries. Fisheries is defined as the carrying out of operations relating to fishing in a systematic manner, the production on a commercial scale and the conservation of fish, for future development of the industry. The term fisheries also includes catching, breeding, exploring, researching, seeding, propagating, processing, transporting, storing and selling of fish.

In accordance with fisheries laws, DoF has been conducting fisheries management measures including the identification of types of fishery, the volume of business, the determination of duties and fees, the issuance of licences, the appropriate methods of catching fish, the periods of fishing, species of fish permitted to be caught, fish size, fishing gear, fishing grounds and licence conditions.

At the same time, DoF has identified fishery reserves (fish refugia), in which fish and turtle are prohibited to be caught, sold, and stored. There are twelve crab protected areas and one lobster protected area in the coastal regions and states.

DoF also issued notification 2/2006 for the conservation of some commercial species such as Grouper and Sea Bass: it is not allowed to catch Grouper during 1st July to 30 September and Sea Bass during 1st January to 31st March. For some marine shrimp species (*Penaeus sp.*), females with eggs are not allowed to be caught. DoF has been conducting conservation measures for endangered species such as Shark, Rays, Dugong, Turtle and Dolphin.

Type of Fisheries and Fishery Resources

The type of fisheries in Myanmar is determined by the nature of the catch. It can be classified into freshwater fisheries and marine fisheries. Freshwater fisheries consist of (a) aquaculture, (b) leased waterways fisheries, (c) open fisheries. Marine fisheries include (a) inshore fisheries and (b) off-shore fisheries.

The first assessment of the state of the fishery resources of Myanmar was conducted through two surveys during 1979-1980, using the RV *Dr. Fridtjof Nansen1*. The results from those two surveys were used as the basis to estimate Maximum Sustainable Yield (MSY) for the marine fisheries of the Myanmar Exclusive Economic Zone (EEZ).

After more than 30 years, the RV *Dr. Fridtjof Nansen* returned to Myanmar and conducted two more surveys (in 2013 and 2015) to update those earlier assessments. Both 1979-1980 and 2013-2015 surveys covered the pre-monsoon and post-monsoon seasons. This was intended to account for major seasonal variations in fish abundance.

The average pelagic biomass estimated in the1979-1980 surveys was about 1 million tons. The average pelagic standing stock biomass estimated from the 2013 and 2015 in Myanmar waters was estimated at only 190,000 tons. The updated pelagic biomass estimate represents an 80% decrease from the 1970-1980 estimated biomass.

The average demurral biomass estimated in the 1979-1980 surveys was about 750,000 tons. The average demurral standing stock biomass in 2013-2015 survey was estimated at 320,000 tons. The updated demurral biomass estimate represents a 50% decrease from the 1970-1980 estimated biomass.

In order to manage the fishery resources sustainably, Fishing Rights for Foreign Vessels, Myanmar Aquaculture Law, Myanmar Marine Fisheries Law and Freshwater Fisheries Law have been enacted and procedures have been prescribed. The investors willing to invest in fishery industry in Myanmar need to follow the rules of Myanmar Investment Law.

Marine fishery grounds beyond the baseline in Myanmar shall be determined by the Department of Fisheries.

FISH PRODUCTION

(000'MT)

Year	Aquaculture	Leased Waterway	Open	Marine	Total
2010-2011	830	250	913	2,170	4,163
2011-2012	899	283	964	2,333	4,478
2012-2013	929	290	1,013	2,484	4,716
2013-2014	964	304	1,077	2,702	5,047
2014-2015	1,000	315	1,148	2,854	5,317
2015-2016	1,014	339	1,242	2,997	5,592
2016-2017	1,049	339	1,251	3,036	5,675
2017-2018	1,130	341	1,254	3,152	5,877

FISHERY EXPORT

Quantity - MT
Value - US$ (in million)

Year	Fish		Prawns		Other		Total	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
2010-11	273,044	342.44	19,143	68.66	81,706	144.41	373,893	555.51
2011-12	283,689	396.27	17,995	86.19	85,298	171.39	386,981	653.85
2012-13	266,465	378.05	17,268	89.29	93,113	185.50	376,846	652.84
2013-14	237,142	286.93	16,509	61.98	91,616	187.36	345,267	536.27
2014-15	225,975	258.61	17,527	56.89	94,788	166.75	338,291	482.25
2015-16	246,971	274.25	13,673	49.64	108,326	178.74	368,971	502.63
2016-17	290,580	319.04	13,082	58.21	135,044	228.57	438,707	605.82
2017-18	394,136	385.81	15,905	60.78	158,186	265.13	568,227	711.72

TOTAL AQUACULTURE PONDS AND PRODUCTION

Year	Area of Aquaculture Ponds (Acre)	Production of Aquaculture Ponds ('000 MT)
2010-11	443,695	830.48
2011-12	448,469	899.05
2012-13	449,692	929.38
2013-14	450,324	964.12
2014-15	469,153	999.63
2015-16	478,002	1,014.42
2016-17	487,525	1,048.69
2017-18	491,345	1,130.35

RURAL DEVELOPMENT SECTOR

RURAL DEVELOPMENT SECTOR

The Rural Development Strategic Framework (RDSF) was officially adopted by the Government at a National Workshop on November 2013. The purpose of the RDSF is to enhance stakeholder participation by adopting a Decentralization Approach to the implementation of sustainable rural development activities. The five key strategies of RDSF are: Prioritizing and implementing all-round development; Synergy of development intervention and multiplication of impacts; Sustainable financing for rural development; Effective collaboration; and Good governance procedures for progressive rural development. These strategies were incorporated into the policy and action plan of the Department of Rural Development (DRD).

Aligning with the RDSF, the following activities are implemented by the DRD to achieve sustainable rural development and to attain improvement of socio-economic life of the rural populace in Myanmar through people-centered approaches:

1. Rural infrastructure development activities: construction and maintenance of rural roads and bridges; rural water supply and sanitation; providing rural electrification and housing through public/ private partnership.
2. Rural livelihood and household income generation activities through evergreen village development projects.

Strengthening capacity of rural communities and DRD staff has been conducted through Livelihood Support Training (Vocational Training) and Capacity Development Training for staff.

RURAL DEVELOPMENT STRATEGIC FRAMEWORK

RURAL ELECTRIFICATION

Total - 63,899 villages

Completed - 20,807 villages

Remaining - 43,092 villages

PROGRESS IN RURAL ELECTRIFICATION

Year	Villages	Benefited Households	Benefited Population	Million Kyat
2012-2013	188	17,616	93,386	2,955.40
2013-2014	357	33,610	172,152	4,328.32
2014-2015	1,987	219,378	1098,523	40,202.23
2015-2016	2,510	231,506	921,787	38,818.43
2016-2017	2,718	142,968	714,840	43,998.82
2017-2018	1,399	94,329	471,645	36,858.27

RURAL WATER SUPPLY

Total - 63,899 villages

Completed - 42,309 villages

Remaining - 21,590 villages

PROVISION OF RURAL DRINKING WATER

Water is essential for human survival and socio-economic betterment, as well as for maintaining sustainability in the processes of development. Water can thus be considered as the most important resource for human civilization and the life of people. The provision of clean water supply is of vital importance to communities. DRD has been carrying out programs for safe drinking water supply for water-scarce rural areas.

Progress in Rural Water Supply

Year	Shallow tube	Deep tube	Dug Well	Pond/ Spring	Total
2012-2013	386	410	225	819	1,840
2013-2014	150	699	232	1,178	2,259
2014-2015	401	1,380	484	2,064	4,329
2015-2016	4,051	1,671	911	3,763	10,396
2016-2017	272	769	407	2,310	3,758
2017-2018	208	377	169	1,360	2,114

IMPROVEMENT OF RURAL ROADS AND BRIDGES

The speedy construction of roads and bridges is a basic need for rural development as well as a very important measure to eradicate rural poverty. Therefore, rural feeder roads and bridges connecting one village to another, villages to towns, and villages to highways are being constructed leading to the emergence of Township/District circular roads, and State and Regional circular roads.

Improvement of Rural Roads

Year	Concrete Roads	Tar	Gravel	Laterite Roads	Earth	Total
2012-2013	41/3	175/7	273/5	-	577/6	1068/6
2013-2014	100/2	262/2	744/5	-	1569/6	2676/7
2014-2015	167/3	389/6	1697/4	-	2262/6	4917/3
2015-2016	120/2	225/0	1265/0	164/2	2032/7	3805/3
2016-2017	133/2	117/3	633/1	348/1	993/0	2224/7
2017-2018	56/6	125/6	108/3	80/1	47/6	418/6

Improvement of Rural Bridges

Year	Concrete	Causeway	Wooden	Culvert	Others	Total
2012-2013	-	-	9,157	4,692	-	13,849
2013-2014	6,161	5,790	20,732	12,186	888	45,757
2014-2015	33,346	14,944	25,357	12,704	4,359	90,710
2015-2016	14,899	16,016	28,227	4,958	21,186	85,286
2016-2017	23,993	21,422	29,617	6,663	34,153	115,848
2017-2018	4,310	3,970	-	838	1,470	10,588

The Evergreen Village Development Project- MSY

In accord with the RDSF, the evergreen village development project has been piloted with the aim of livelihood development and income generation of the rural poor.

Modality	-	Revolving fund
Fund Size	-	$ 30,000 per participating village
Project Area	-	9,895 villages of 71 districts, 288 townships
Beneficiaries	-	4.98 Millions of poor people from 711,752 HHs
Project Activities	-	agriculture, livestock, fisheries, electricity, village productivities, small-scale enterprises and livelihoods
Estimated Budget	-	247.71 Billion MMK, USD 30,000 for each village
Fund Source	-	Government's budget
Key Development Partner	-	EcoDev, LIFT Fund, NAG

COOPERATIVE SECTOR

THE COOPERATIVE SECTOR

The cooperative system has been introduced since 1905 in Myanmar. Under the various regimes, there were success and failure in cooperative activities due to the weakness of implementation, and avaricious behaviour.

During the last 5 years term, reform measures were undertaken to strengthen the cooperative system by learning from the practices in other countries where there has been success in implementing this system.

The following tasks are being carried out to contribute to household agriculture and livestock husbandry for farmers and rural people in the cooperative sector:

(1) Carrying out more development of current cooperative businesses (microfinance, selling agricultural/ work-place machinery and other materials)

(2) Carrying out organization, regulation and education of cooperative societies in line with the cooperative law and by-laws

(3) Collaborating with concerned organizations for economy, education, health and socio-economic development of society's member families

(4) Networking with international cooperative societies

(5) Upgrading production, servicing and trade cooperative societies

(6) Developing of small-scale industries, weaving enterprises including ten Myanmar Traditional Arts and Crafts

THE COOPERATIVE DEPARTMENT

COOPERATIVE SOCIETIES AND COOPERATIVE SYSTEM DEVELOPMENT POLICY

The Cooperative Department in the Ministry of Agriculture, Livestock and Irrigation has adopted the following policies and initiatives;

1. Support cooperative enterprises including the existing microfinance schemes, acquisition of farm machinery and equipment, and inputs with the installment payment
2. Support the formation of cooperative societies; the monitoring and evaluation of these societies in accordance with Cooperative Laws and Procedures; and the conduct of Cooperative Education Training
3. Uplift the economy, education, health, and living standards of family members of cooperative societies, in collaboration with relevant organizations
4. Link with international cooperative organizations
5. Build capacity of cooperative societies focusing on production, service and trade aspects

COOPERATIVE SOCIETIES AND COOPERATIVE SYSTEM DEVELOPMENT STRATEGIC INITIATIVES

1. Support will be provided in accordance with the concepts, ethics, values and basic principles of cooperatives for successful development of cooperative enterprises.
2. Support the formation of cooperative societies, the monitoring and evaluation in accordance with the Cooperative Society Law and By-Laws; and reform the existing societies to make further progress.
3. Micro Capital Loans will be provided to people at the grass-root level to improve their income generating activities.
4. Assist farmers to purchase machinery and inputs for use in agriculture, livestock and fishery activities, under the hire-purchase system.
5. In connection with relevant departments, financial support will be provided to farmers to develop their land so as to pave the way for transforming traditional agriculture into mechanized agriculture.
6. Upgrade the capacity of cooperative societies to make them efficient in production, trading and service delivery.
7. Capacity building training will be conducted for personnel serving at different levels of the Cooperative Department and cooperative societies to develop an understanding of cooperative ethics and basic principles to guide the cooperative societies in the prevailing Cooperative Society Law and By-Laws.
8. Seek financial support, when deemed necessary, to obtain grants and loans from international sources for the development of cooperative enterprises.
9. Uplift the economy, education, health and living standards of family members of cooperative societies, in collaboration with relevant organizations.

For the effective implementing of policies and strategic initiatives of the Cooperative Department, priority is given to the following functions in collaborating with the cooperative societies:

1. Microfinance
2. Selling farm machinery, using the hire-purchase system
3. Farmland consolidation
4. Organizing the Agri-Support Service Cooperative Societies
5. Delivery of agricultural inputs
6. Seed production and distribution by Cooperative Societies

(1) Microfinance Business

There are various types of loans; such as, agriculture loans, livestock loans, micro-enterprise loans, agricultural input loans, agriculture worker loans and the societies-upgrading loans from the China EXIM Bank. In the 9th cycle, 534.473 billion kyat have been disbursed to 2,539,864 members of 30,724 cooperative societies in 291 townships from 15 regions and states.

(2) Selling farm machinery, using the hire-purchase system

The Cooperative Department has disbursed loans of 135.195 billion kyat for 10,854 various types of machinery to 10,384 members of 4,395 cooperative societies in 215 townships from 15 regions and states.

(3) Farmland Consolidation

To upgrade the agriculture cooperative societies and transform conventional farms to mechanized farms, 11,032.079 million kyat has been disbursed for land consolidation of 35,728.77 acres of 8,082 members from 611 societies in 162 townships from 15 regions and states in the 2016-2017 fiscal year; and 8,333.837 million kyat has been disbursed for land consolidation of 29,207.50 acres of 6,246 members from 458 societies in 145 townships from 15 regions and states in the 2017-2018 fiscal year. In total, 64,936.27 acres have been consolidated between 2016 and 2018. In the 2018-2019 fiscal year, we are planning to consolidate 24,901.80 acres with the disbursal of 7,276.562 million kyat in allocated loans.

(4) Organizing the Agri-Support Service Cooperative Societies

Agri-support service cooperative societies provide services such as: land consolidation, paddy harvesting, transportation and storage. As of today, there are 119 agri-support service cooperative societies using 687 tractors and 145 combine harvesters; in total, 832 machines.

(5) Delivery of agricultural inputs

There are 99 agricultural input shops in the regions and states and they sell quality seeds, pesticides and fertilizers to 93,143 cooperative member farmers from 4,159 societies in 161 townships from 14 regions and states. Loans of 14,607.330 million kyat have

been disbursed for 2,134 liters of pesticide, 72,234 bottles of pesticide and 384,181 bags of seed, fertilizer and pesticide.

(6) Seed production and distribution by Cooperative Societies

In accordance with guidance from the Union Minister of Agriculture, Livestock and Irrigation, seed production and distribution by cooperative societies have been organized. Altogether, 2,478 million kyat has been disbursed for quality seeds for 8,260 acres of 2,250 members from 100 cooperative societies in 93 townships from 10 regions and states.

SMALL-SCALE INDUSTRIES DEPARTMENT

Vocational Training

Vocational training courses by the Small-scale Industries Department (SSID) have been conducted 58 times in 2011-2012, 51 times in 2012-2013, 84 times in 2013-2014, 99 times in 2014-2015, 239 times in 2015-2016 , 287 times in 2016-2017 and 420 times in 2017-2018.

SN	Name of Course	2017 - 2018	
		Frequency	**Number**
1.	Value-added food processing technology courses	143	2,959
2.	Pharmaceutical and cosmetic production courses	91	1,826
3.	Lacquerware technology short-term courses	4	67
4.	Weaving technology short-term courses	47	878
5.	Vocational courses	119	2,463
6.	Technology-transfer courses	16	47
	Total	**420**	**8,240**

REGISTRATION

According to the Promotion of Small-scale Industries Law, the Small-scale Industries Department carried out registration for private industries (of 0.25-5.0 Horse Power (HP) capacity). Small-scale Industry is divided into three sectors such as Production sector, Servicing sector and General Industries sector. From 2015-2016 to 2017-2018, the total number of registrations of small scale industries in States and Regions were:

No	Sub-Sector	2015-2016	2016-2017	2017-2018
1.	Production	636	978	1,403
2.	Servicing	19	198	405
3.	General Industries	1,096	1,127	542
	Total	**1,751**	**2,303**	**2,350**

TRAINING SCHOOLS UNDER THE SMALL-SCALE INDUSTRIES DEPARTMENT

The Training Schools under the Small-Scale Industries Department are:

(a) Lacquerware Technology College

Location - Bagan, Naung Oo District, Mandalay Region
Established - 1924
Campus area - 13.98 acres
Offer - Diploma in Lacquerware Technology (Dip.L.T)
Trainee - 100 persons
Training courses - Diploma in Lacquerware Technology (2 year Course)
- Diploma in Lacquerware Technology (1 year Special Course)
- Advanced Lacquerware Training (2 year Course)

(b) Saunders' Weaving and Vocational Institute

Location - Amarapura, Mandalay
Established - 1914
Campus area - 6.67 acres
Offer - Diploma in Textiles
Trainee - 30 Persons
Training courses - Diploma in Textiles (1 year Course)
- Traditional Hundred-Shuttle Weaving (6-month course)
- Tapestry (3-month Course)
- Skilled Weaving (1 year Course)
- Hand Weaving (6-month Course)

(c) Thirteen Weaving and Vocational Training Schools

Location	-	Falam, Monywa, Meikhtila, Shwe Taung, Pakokku, Mudon, Sittwe, Taunggyi, Myitkyina, Loikaw, Pha-An, Mindat, Kyaukme
Offer	-	Certificate
Duration	-	One year
Trainee	-	20 persons
Training Courses	-	Skilled Weaving (1 year Course)
	-	Hand Weaving (6-month Course)

LABORATORY ANALYSIS

SSID set up two small laboratories in Yangon and Mandalay Regional Offices that can analyze food, pharmaceutical and cosmetic products for consumer safety. The two laboratories can analyze the following:

- Food products
- Oil & oil products
- Pharmaceutical products
- Cosmetics
- Water

MICROFINANCE PROJECT

"Pact Global Microfinance Fund (PGMF)" Microfinance Project:

Funding/Implementing agency	-	Pact Global Microfinance Fund (PGMF)
Focal point	-	Small-Scale Industries Department
MoU signing date	-	25.1.2013
Project period	-	2013 - 2018
Project contribution	-	US $ 55.005 Million
Project area	-	59 Townships

PGMF Microfinance Key Accomplishments

No	Description	2013-14	2014- 15	2015-16	2016- 17	2017-18
1.	Number of villages	2,023	3,024	9,898	11,146	11,812
2.	Number of active borrowers	151,872	226,021	620,168	716,935	766,724
3.	Amount of loan disbursed (Kyat Billion)	61.992	117.861	1,231.213	1,575.531	2,105.252
4.	Amount of loan for which principal is repaid (Kyat Billion)	48.214	92.171	1,092.092	1,395.324	1,868.790
5.	Total loan not yet repaid (Kyat Billion)	13.778	25.690	136.245	177.331	233.586
6.	Amount of saving (Kyat Billion)	2.556	6.999	46.522	64.449	85.216

"Entrepreneurs du Monde (EdM)" Microfinance Project:

Funding/Implementing agency	-	Entrepreneurs du Monde (EdM)
Focal point	-	Small-scale Industries Department
MoU signing date	-	29.1.2015
Project period	-	2015 - 2017
Project contribution	-	US $ 0.498 Million
Project area	-	Dala Township, Yangon Region

EdM Microfinance Key Accomplishments

No	Description	Up to 31.3.2018
1.	Number of villages	42
2.	Number of active borrowers	7,195
3.	Amount of loan disbursed (Kyat Billion)	5.313
4.	Amount of loan for which principal is repaid (Kyat Billion)	3.573
5.	Total loan not yet repaid (Kyat Billion)	1.740
6.	Amount of saving (Kyat Billion)	0.106

Conduct of Exhibitions, Trade-fairs and Seminars

Exhibitions, trade-fairs and seminars of small-scale industry products have been conducted for the development of small- scale industry enterprises, as follows:

(1) Product Exhibitions and Trade-fairs

1. May 2016, Yangon Region
2. Jun 2016, Mandalay Region
3. October 2017, Shan State
4. December 2017, Mandalay Region
5. February 2018, Ayeyarwady Region

(2) Lacquerware Exhibitions and Competitions

Jun 2016, Lacquerware Technology College

(3) Asian Lacquerware Exhibitions, Workshops and Training on Lacquerware Technology

September 2017, Lacquerware Technology College (Bagan)

By conducting small-scale industry product exhibitions and trade fairs, the following benefits can be gained:

1. The public will know more about small-scale industry products
2. Linkage with small-scale industry enterprises
3. Small-scale industry products will be able to penetrate not only local markets but also international markets
4. Standardization of products
5. The public can appreciate the value of Myanmar's Lacquerware
6. Improvement of the quality of the Lacquerware, and of access to international markets
7. Identification of unrecognized Lacquerware Technicians and increase in the number of technicians
8. Encourage other countries to appreciate the value of Myanmar's Lacquerware and Lacquerware Art.

The Way Forward

(a) Regular tasks – registration, conducting short-term vocational training, and laboratory analysis
(b) Conducting small-scale industry products exhibitions and trade-fairs in 2018
(c) Establishing the Food Science Technology Institute in Yangon region and Mandalay region and conducting regular food-processing training at weaving and vocational training schools
(d) Improving curriculum development for Saunder Weaving and Vocational Institute in cooperation with British Council
(e) Supporting curriculum development by printing text books for the Weaving and Vocational School and Vocational trainings
(f) Promoting food-processing Research & Development
(g) Operating a pilot plant to model good food-processing practices
(h) Upgrade the library to an Electronic Library (E-Library)

HIGHER AND VOCATIONAL EDUCATION IN AGRICULTURE SECTOR

HIGHER EDUCATION IN THE AGRICULTURAL SECTOR

YEZIN AGRICULTURAL UNIVERSITY (YAU)

The primary functions of YAU are teaching and training; conducting research; and providing farm advisory services to the public.

VISION

To educate and train future professional agriculturists who will provide leadership to institutions in the agricultural sector, and supply and disseminate science and technology that will secure national and regional food security and nutrition.

MISSION

To educate and train the national human resources to develop professional agriculturists who will provide leadership to institutions in the agricultural sector and, in addition, to supply science and technology that will contribute to national and regional growth and development of agriculture.

OUR MOTTO

"Developing the nation through agricultural science and education"

FUNCTIONS OF YAU

1. Teaching and Training
2. Research
3. Agricultural Extension

There is one graduate school offering postgraduate programs, the Advanced Center for Agricultural Research and Education - ACARE, with the assistance of the Indian Government.

YAU also has seven campuses which are mainly carrying out research for the following agro-ecological zones:

1. Mawlamyaing Campus
2. Hmawbi Campus
3. Hlegu Campus
4. Magway Campus

5. Phyuu Campus
6. Aungpan Campus and
7. Kyaukse Campus

CURRICULUM

Degree	Duration of Studies	No. of Study Programs
B.Agr.Sc	5	10
Postgrad Dip. Agr.Sc	1.5	7
M.Agr.Sc	3	7
Ph.D	5	7
M. Phil.	2	7

STUDENTS ADMISSION

- 400-500 annual admissions
- 1st Semester: November-March
- 2nd Semester: May-September

INTENATIONAL COLLABORATION

- Academic and research exchange activities : ACIAR,
- ACARE center and Rice Biopark : IARI, India
- Strengthening human development : JICA, Japan institution in Agriculture

POSSIBLE AREAS OF COLLABORATION

- Cultural Exchange
- Post-harvest Technology
- Rice-based Farming
- Seed Industry
- Climate Smart Agriculture
- Extension Methodology
- Curriculum Development
- Local Knowledge and Innovation
- Livelihoods and Food Security
- Faculty and Student Exchange

The Number of Graduates

SN	Programs	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
1.	B.Agr.Sc	384	389	-	416	461	498
2.	M.Agr.Sc	39	32	63	33	35	17
3.	Ph.D	2	3	3	5	3	2
4.	P.GD	-	5	3	5	2	1
5.	P.GD (Rice)	-	-	-	-	13	11

UNIVERSITY OF VETERINARY SCIENCE (UVS)

The University of Veterinary Science (UVS) is the only Veterinary Science University in Myanmar. It is under the management of the Ministry of Agriculture, Livestock and Irrigation, and is solely responsible for professional human resource development in the livestock industry. With this mission, UVS produces competent veterinarians and qualified animal science professionals, who will take a leading role in the National Veterinary Services, and in sustainable development of the Livestock Sector and Rural Development in Myanmar.

Historically, UVS developed out of the Veterinary College, a Faculty of Rangoon University, which was established at the Insein Campus in 1957 offering a four-year B.Sc. (Veterinary) program. In 1964, the College became the Institute of Animal Husbandry and Veterinary Science (IAHVS) under the Ministry of Education, offering a six-year Bachelor of Veterinary Science (B.V.Sc.) program. In 1981, the IAHVS was relocated to Yezin, Nay Pyi Taw. In October 1999, the institute's name was formally changed to the present name, University of Veterinary Science (UVS).

The academic degrees conferred by UVS are Bachelor of Veterinary Science (B.V.Sc.), Diploma in Livestock Production and Aquaculture (Dip. L.P.A.), Diploma in Livestock Industrial Studies (Dip. L.I.S.), Master of Philosophy (M. Phil.), Master of Veterinary Medicine (M.V.M.), Master of Veterinary Science (M.V.Sc.) and Doctor of Philosophy (Ph. D.).

NUMBER OF GRADUATES FROM THE UNIVERSITY OF VETERINARY SCIENCE

	Degree	Number of graduates
1	Bachelor of Veterinary Science (B.V.Sc.)	5,435

2	Diploma in Livestock Production and Aquaculture (Dip. L.P.A.)	449
3	Diploma in Livestock Industrial Studies (Dip. L.I.S.)	220
4	Master of Philosophy (M. Phil.)	21
5	Master of Veterinary Medicine (M.V.M.)	9
6	Master of Veterinary Science (M.V.Sc.)	280
7	Doctor of Philosophy (Ph. D.)	21

Starting from the academic year 2014-2015, two specializations were developed - Doctor of Veterinary Medicine degree (D.V.M., 6 Years course) and Bachelor of Animal Science degree (B.A.Sc., 4 Years course) - to produce better qualified graduates and postgraduates. Annual enrollment of students for D.V.M. and B.A.Sc. are about 100 and 150, respectively. There are two bachelor programmes, two post-graduate diploma programmes, 3 Master of Veterinary Medicine programmes, 14 Master of Veterinary Science programmes, and 13 Doctor of Philosophy programmes in UVS.

Currently, 1,305 undergraduate students and 54 post graduate students are studying at UVS. Seven professors, 7 Associate Professors, 26 Lecturers, 42 Assistant Lecturers, and 25 Demonstrators (Total 107 Academic Staff) are carrying out research, teaching and public education.

The veterinary curriculum of UVS was revised according to the "Guidelines of the World Organization for Animal Health (OIE) for Veterinary Education Core Curriculum" and "OIE recommendations on the competencies of graduating veterinarians ("Day 1 graduates")" and also by a stakeholder consultation workshop on 20th June 2014, to assure high-quality of National Veterinary Services.

The library of UVS was upgraded as an Electronic Library (E-Library) in the year 2015 by the support of Korea International Cooperation Agency (KOICA) and by an effort of senior World Friends KOICA-Volunteers (WFK-Volunteers) to get better access to literature, reference books, journals, text books and scientific papers for the students and academic staff.

A Mobile Veterinary Clinic was established in UVS in the year 2016 by the support of the Society for the Protection of Animals Abroad (SPANA) to enhance clinical skills of veterinary students through practical experience, and to provide animal health care free of charge in the villages within the reach of UVS.

UVS has conducted harmonization of its veterinary curriculum with veterinary universities from the ASEAN region to get a mutual recognition agreement (MRA) for the veterinary profession. In addition, memoranda of understanding (MOU) with international Universities were already signed. After that, student exchange and staff exchange are

being conducted for improved qualification of students and capacity enhancement of teaching staff.

Since the core values of UVS are "Education, Research, and Extension", the academic staff of UVS conducts applied and innovative research in animal science and veterinary medicine, for sustainable development of the livestock sector and for improvement of the national veterinary services in Myanmar. Academic staff are also actively involved in public education in livestock production, prevention and control of infectious animal diseases and zoonotic diseases. In addition, UVS organizes seminars, workshops and conferences by collaboration with international organizations and universities for advancement of knowledge and technology. Academic staff of UVS also participate in "The Improving Livelihoods of Small Scale Livestock Producers in the Central Dry Zone Project", supported by the Australian Centre for International Agricultural Research (ACIAR) and "Support for Animal Feeding Strategies for Improved Livestock Production in Myanmar Project" jointly supported by the Food and Agricultural Organization (FAO) of the United Nations and the International Atomic Energy Agency (IAEA).

CO-OPERATIVE UNIVERSITIES/ COLLEGES

Co-operative Universities and Colleges under the Ministry of Agriculture, Livestock and Irrigation have been nurturing youth to become educated co-operators and vocational technicians with a national and social spirit.

The Co-operative University (Thanlyin) was established as the Co-operative Training School in 1970. Then it was promoted as a Co-operative College in 1994, a Co-operative Degree College in 1996 and has been upgraded to become a Co-operative University in 2012.

The Co-operative University (Sagaing) was established as the Co-operative Training School in 1982. After that, it was promoted as a Co-operative College in 1996, and upgraded to become a Co-operative University in 2012.

Besides the Co-operative Universities, two co-operative colleges have already been established in Mandalay and Phaung Gyi and have been conducting co-operative studies. Annual enrollment of students for the colleges is 250 each.

Currently, degrees conferred by the Co-operative universities and colleges are B.B.Sc (Social Enterprises Management), B.B.Sc (Regional Management), B.B.Sc (Accounting & Finance Management), B.B.Sc (Marketing Management), B.B.Sc (Applied Statistics), Post Graduate Diploma, and Master Degrees.

VOCATIONAL TRAINING SCHOOLS IN AGRICULTURE SECTOR

In the crop sector, there are 14 vocational training schools, namely State Agricultural Institutes, throughout the country. Graduates from higher education schools are eligible to apply for these institutes. After 3 years of study, students will be conferred with a Diploma Certificate in Agriculture. Outstanding students from these institutes can join Yezin Agricultural University for a Bachelor Degree.

In the cooperative sector, the Government Lacquerware Training School was established in Bagan in 1924. It has been promoted as the Myanma Lacquerware Institute in 1995. In 2003, it was upgraded to the Lacquerware Technology College. It also conducts short training courses for lacquerware businesses. The students who passed the diploma course can set up as owners of small lacquerware businesses and can also join to Co-operative Universities to get degrees. Also, it has been established as a Lacquerware Centre among the ASEAN countries.

This college accepts annually around 100 students who graduated from Basic Education High Schools.

STATE AGRICULTURAL INSTITUTES (SAIs)

The Republic of the Union of Myanmar is an agro-based country. For the development of agriculture, middle level agricultural technicians are playing a very important role.

SAIs are vocational institutions that train and produce middle level agricultural technicians. The SAIs are institutions where students are produced to carry out the agricultural development activities of Myanmar.

The State Agricultural Institutes and State Agricultural High Schools were under the Ministry of Education before 1997. But they were shifted from the Ministry of Education to Ministry of Agriculture and Irrigation in January 1997. At the same time, all Agricultural High Schools were being transformed into specialized training institutions under some initiatives of the Ministry of Agriculture and Irrigation.

THE OBJECTIVES IN ESTABLISHING THE SAIS:

(a) To train and produce middle level agricultural technicians and skilled labour needed for the development of the agricultural sector.

(b) To establish model farms.

(c) To disseminate modern scientific agricultural technologies among farmers.

(d) To increase farmers' incomes and to help in community development.

NUMBER OF SAIS AND THEIR LOCATIONS:

There are 14 SAIs in Myanmar. The SAIs are situated in different areas. They are:

1.	Pyinmana	SAI	in NayPyiTaw
2.	Thaton	SAI	in Mon State
3.	Myaungmya	SAI	in Ayeyarwaddy Region
4.	Tharyarwaddy	SAI	in Bago Region
5.	Dawei	SAI	in Tanintharyi Region
6.	Shwebo	SAI	in Sagaing Region
7.	Patheingyi	SAI	in Mandalay Region
8.	Pwintphyu	SAI	in Magway Region
9.	Heho	SAI	in Shan State
10.	Hpa-an	SAI	in Kayin State
11.	Demoso	SAI	in Kayah State
12.	Myitkyinar	SAI	in Kachin State
13.	Lonpee	SAI	in Chin State
14.	Kyauktaw	SAI	in Rakhine State

Honemalin S.A.I will open in 2019-2020. Pyinmana SAI is the earliest institution of its kind. It was opened in 1954.

DURATION

Duration of the course is 3 years. Each course year is divided into 2 semesters, first and second semester, The academic year begins in November and ends in October in the next year. The first semester is from November 15th to March 31st and second semester is from 1st June to 15th October.

ENTRY REQUIREMENT

The students who apply for the SAI need to meet the following requirements:

1. A pass in the Basic High School Final Examination
2 Myanmar citizenship
3. Be under 22 years of age
4. Have satisfactory character record
5. Be of good health to carry out field work

STRENGTH OF STUDENTS AND STAFF

There are 120 students in each year, 50% of them are boys and the remaining 50% are girls. There are 130 members of staff, out of which 34 are teachers and the remaining are office and field staff members.

LODGING AND BOARDING

The students can lodge and board in the dormitories on the campuses or in nearby wards and villages. Most of the students are boarding students. The boarding fee is 20,000 kyat a month.

SUBJECTS TAUGHT

The students have to study the following subjects in accordance with the academic year.

No.	Subjects	Academic Year		
		First Year	Second Year	Third Year
1	Agronomy	✓	✓	✓
2	Horticulture	✓	✓	✓
3	Animal Husbandry	✓	✓	✓
4	Agricultural Chemistry	✓	✓	✓
5	Agricultural Botany	✓	✓	-
6	Plant Protection	-	✓	✓
7	Farm Mechanics	-	✓	✓
8	Agricultural Extension	-	-	✓
9	Farm Management and Accounting	-	-	✓
10	Mathematics	✓	-	-
11	Physics	✓	-	-
12	English	✓	✓	-

ACTIVITIES

The students have to learn the above mentioned subjects, theoretically and practically in the classroom and in the field. The curriculum is developed on the basis of 40% theory and 60% practice.

Vegetable and field crop growing projects are also assigned to enable them to acquire practical skills in crop production.

They have to participate in extra-curricular activities such as sports and games, arts and literature activities and student welfare activities.

CERTIFICATE OFFERED

At the successful completion of the course, the " Diploma in Agriculture'' certificate is awarded.

CONTINUATION OF EDUCATION

10% of the most outstanding graduates can take entry examination to join Yezin Agricultural University.

CAREER OPPORTUNITIES

Up to now, a total of 19,271 students have graduated from the S.A.Is. Most of the graduates work as middle level technicians in Agricultural Extension Services. Some of them are occupied in private enterprises and companies as field supervisors. Some of them serve as field assistants in S.A.Is. A few of them undertake farming businesses on their own land.

STUDENT EVALUATION

In evaluating student performance, continuous assessment is practiced throughout the course for the development of reliable and consistent work habits.

All the students are assessed continuously to decide whether they pass or fail in the course. The marks are allocated for lab work, field work, tutorials, informal tests, practical exams, mid-term exams and final exams. All the marks are taken into consideration in deciding on a student's pass or failure in the course.

CONCLUSION

SAIs train competent middle level agricultural technicians to become entrepreneurs, extension workers, etc. for the development of the agricultural sector in Myanmar.

LOCATION MAP OF YEZIN AGRICULTURAL UNIVERSITY AND STATE AGRICULTURAL INSTITUTE

ON-GOING AGRICULTURAL LOAN / GRANT PROJECTS IMPLEMENTED BY THE MINISTRY OF AGRICULTURE, LIVESTOCK AND IRRIGATION IN 2017-2018

Ministry of Agriculture, Livestock and Irrigation

On-Going LOAN / GRANT PROJECTS GRAND TOTAL

SN	Sector	Grant	Loan	Total
1.	Co-operative Sector	6	2	**8**
2.	Agricultural Sector	51	7	**58**
3.	Livestock Sector	61	5	**66**
	Grand Total	**108**	**14**	**122**

AGRICULTURAL GRANT PROJECTS IMPLEMENTED BY MINISTRY OF AGRICULTURE, LIVESTOCK AND IRRIGATION IN 2017-2018 (ON GOING)

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
1	Agriculture & Rural Development Training Center Program	US$2.448	DOA	OISCA	2015-2020	Magway
2	Saemaum Undong in Myanmar	US$ 22.00	DOA	KOICA	2014-2019	Nay Pyi Taw, Yezin, Yangon Bago, Shan Ayeyarwaddy,Mon, Taninthari, Sagaing, Mandalay
3	Establishment of Post Harvest Research Institute in Myanmar	US$ 4.50	DOA	KOICA	2014-2017	Yezin
4	Improve the Livelihood of the Rural Communities in Central Dry Zone and Delta Areas	US$ 3.99	DOA	ACTION AID	2015-2018	Mandalay, Magway, Ayeyarwaddy
5	Fertilizer Sector Implement	US$ 1.862	DOA	IFDC	2015-2018	Ayeyarwaddy Bago,Yangon,
6	Agriculture and Leaderships TrainingCenter Program	US$ 1.50	DOA	OISCA	2015-2036	Mandalay

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
7	Myanmar Canaan Farmer's Training Center Program	T.A	DOA	WHCFM	2013-2018	Mandalay
8	Project for ProfitableIrrigation Agriculture in Western Bago	T.A	DOA	JICA	2016-2021	Bago
9	Establishment of Dry Storage Center (DSC) and Rice Processing Complex (RPC) for increasing agricultural productivity in Myanmar	US$ 3.50	DOA	KRC	2017-2019	Nay Pyi Taw
10	Strengthening of Vocational Education and Training	US$ 2.483	DOA	NICHE	2017-2020	Nay Pyi Taw, Shan,Sagaing, Bago, Kayin
11	Land Resource Evaluation for Productive and Resilient landscapes in the Central Dry Zone of Myanmar	US$ 0.129	DOA	ACIAR	2016-2020	Mandalay
12	Integrated Seed Sector Development - ISSD	US$ 0.43	DOA	Natherlan	2017-2021	Mandalay, Sagaing, Bago, Nay Pyi Taw
13	Immediate Response Mechanism - IRM	US$ 0.25	DOA	World Bank	2016-2018	Sagaing, Bago, Ayeyarwaddy, Magway, Chin, Rakhin

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
14	Improvement on Accessibility of Rice Certified Seed	TA	DOA, DAR	JICA	2017-2023	Sagaing, Ayeyarwaddy
15	Program of integrated post disastrous resettlement food security and community development project	US$ 2.95	DOA	CDN	2017-2020	Bago, Kayin, Rakhin
16	Improved food security and livelihood situation of the people in the project areas	US$ 3.456	DOA	GRET	2017-2020	Sagaing, Ayeyarwaddy, Rakhin
17	Improving livelihoods in Myanmar and Vietnam through Vegetables Value Chains	US$ 2.543	DOA	ACIAR	2017-2020	Yangon, Shan, Nay Pyi Taw
18	Participatory Simulation Games towards Sustainable Agroecological Protection	US$ 0.15	DOA	CIRAD	2017-2018	Shan, Ayeyarwaddy
19	Farming Systems for Sustainablility Myanmar	US$ 0.50	DOA	Wageningen University & Research	2018-2021	Mandalay, Magway, Nay Pyi Taw, Shan, Kayin
20	Management of nutrients for improved profitability and sustainability of crop production in Central Myanmar	US$ 0.057	DOA	ACIAR	2016-2020	Nay Pyi Taw, Bago

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
21	Establishment of the Agricultural Marketing Center in Myanmar	US$ 7.53	DOA	KOICA	2018-2022	Nay Pyi Taw
22	Sustainable Agricultural Development and Food Quality Initiative Project-SAFI	US$ 5.84	DOA	GIZ	2017-2021	Yangon, Mandalay, Magway, Shan, Kayar, Chin, Nay Pyi, Taw
23	Rural Development and Vegetable Technology transfer in Lancang-Mekong Region 2018-2020	US$ 0.246	DOA	China	2018-2020	Yangon, Mandalay, Magway, Shan, Kayar, Chin, Nay Pyi, Taw
24	Processing Technology for Value Added Product Project	US$ 0.144	DOA	China	2018-2020	Mandalay,Shan, Sagaing, Magway, Ayeyarwaddy
25	Production Technology for Safe and Quality for Fruit and Vegetable Project	US$ 0.1504	DOA	China	2018-2020	Mandalay,Nay Pyi Taw, Shan,Sagaing, Magway, Bago
26	Establishment of Home Gardening for Poverty Alleviation	US$ 0.371	DOA	China	2018-2020	Nay Pyi Taw, 14 States and Regions
27	Improvement of Coffee Production and Coffee quality in Lancang-Mekong Region	US$ 0.182	DOA	China	2018-2020	Mandalay, Shan,Kayin

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
28	Capacity Development on Diagonostic and Surveillance System of Banana Fusarium Wilt Disease	US$ 0.043	DOA	FAO	2018-2019	Ayeyarwaddy Mandalay, Kachin
29	The Rehabilitation and Upgrading of the Existing Irrigation and Drainage System of Pump Irrigation	US$ 3.823	IWUM	AFD	2015-2019	Magway
30	Improving the Effctiveness of Pumped Irrigation Schemes in Dry Zone	US$ 5.00	IWUM	LIFT	2016-2020	Sagaing
31	Establishment of Integrated Agriculture and Irrigation development Master Plan in Ayeyarwady Delta Region, Myanmar Project	US$ 3.00	IWUM	KOICA	2018-2020	Ayeyarwaddy
32	Joint Research of Farm Machaneries	US$ 0.025	AMD	AGM S&E Co.,Ltd	2017-2019	Yangon,Bago, Mandalay, Sagaing
33	Establish National Agriculture Food Information System and Developing Human Resource in Myanmar NAIS	TA	DALMS	E.P.I.S (KOICA)	2017	Nay Pyi Taw,14 States & Regions

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
34	Information Strategy Plan for Establishing Land Information on for Myanmar	TA	DALMS	KDI	2017-2019	Nay Pyi Taw
35	Development of Water Saving Agriculture Technology in Central Dry Zone	TA	DAR, DOA	JICA	2014-2018	Magway
36	Development of high yielding quality rice varieties and post harvest technologies and improvement of crops production technologies	US$ 0.95	DAR	RDA (KOPIA)	2014-2019	Nay Pyi Taw Research Farms
37	Increasing Production of Legume-based Farming System inthe Central Dry Zone of Myanmar	A$ 0.752	DOA,DAR,	ACIAR	2014-2018	Mandalay,Sagaing, Magway, Nay Pyi Taw Bago,
38	Project on setting up of Rice-Bio Park	US$ 0.32	DAR	INDIA	2012-2016	Nay Pyi Taw
39	Pan-Asian Project	US$ 0.109	DAR	AFACI	2016-2019	Nay Pyi Taw
40	Creating Enabling Environments for Nutrition Sensitive Food and Agriculture to Address Malnutrition Project	US$ 0.495	DOA,DAR,	FAO	2018-2020	Nay Pyi Taw,14 States & Regions

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
41	Development of Rice Fish Systems (RFS) in the Ayeyarwady delta, Myanmar	US$ 0.042	DAR, FD	ACIAR	2017-2022	Ayeyarwaddy, Yangon, Bago
42	Development of agriculture risk management for climate change adaption in Myanmar	T.A	DAR	JIRCAS	2017-2021	Nay Pyi Taw
43	Establishing the International Mungbean Improvement Network	A$ 0.32	DAR	ACIAR	2017-2021	Nay Pyi Taw, Mandalay, Sagaing, Magway, Yangon, Bago
44	On-Farm Demonstration Program on Varieties Selection and Implementation of Improved Technology to Maximize Soybean Production"	US$ 0.116	DAR,	RDA-KOIPA	2017-2020	Shan, Kachin
45	The Project for the Strengthening Rice Breeding Systems Based on Genomic Technology and Information in Myanmar	US$ 4.09	DAR, YAU	JICA	2018-2022	Shan, Bago, Ayeyarwaddy, Nay Pyi Taw

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
46	Development of using protected cultivation on enchancing year round production of high-value vegetable in Myanmar	US$ 0.10	DAR,	KOPIA-RDA	2018-2020	Shan, Bago, Nay Pyi Taw
47	Asian AgricultureLtd	T.A	DAR,	Asian Agriculture Ltd	2017-2022	Nay Pyi Taw, Mandalay, Shan
48	Project on Establishment of Advanced Centre for Agricultural Research & Education-ACARE	US$ 6.72	YAU	INDIA	2012-2021	Nay Pyi Taw
49	Technical Cooperation project for Capacity Development of Yezin Agricultural Univesity	T.A	YAU	JICA	2015-2020	Nay Pyi Taw
50	Management of nutrients for improved profitability and sustainability of crop production in Central Myanmar	US$ 1.50	YAU	ACIAR	2016-2020	Sagaing
51	MOU on Agricultural Dvelopment	T.A	DOP	Landesa	2018-2021	Nay Pyi Taw,14 States & Regions

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
52	Myanmar: Financial Inclusion and Expansion through Co-operatives	US$ 3.00	Coop D	CCA	2017-2021	Mandalay, Magway
53	Cooperative Development Programme	US$ 0.961	Coop D	Agriterra	2018-2021	Magway, Sagaing, Shan, Mandalay
54	Microfinance Project	US$ 1.00	SSID	Entrepreneurs du Monde (EdM)	2018-2021	Yangon
55	Microfinance Service	US$ 21.70	SSID	Pact Global Microfinance Fund (PGMF)	2013-2018	Sagaing, Magway, Mandalay, Yangon, Ayeyarwaddy, Shan
56	The Project on Cooperation for Improving Socio Economic Status of Poor People in Myanmar	US$ 2.00	SSID	SF	2016-19	Ayeyarwaddy
57	The Project of Developing Micro Industries,Handicraft Industries and Regional Development in Myanmar	US$ 0.50	SSID	ACL	2016-18	Sagaing, Bago, Mandalay, Yangon, Ayeyarwaddy, Shan
58	Myanmar-New Zeland Dairy Excellence Project	Nes$ 5.60	LBVD	New Zeland	2014-2019	Nay Pyi Taw, Yangon, Mandalay, Sagaing, Shan

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
59	An integrated management-based approach for surveillance and control of Zoonoses in Emerging Livestock Systems (ZELS): Myanmar Pig Partnership	£ 0.372	LBVD	OUCRU	2015-2020	Yangon
60	Improving Farmer Livelihoods in the Dry Zone through improved Livestock Health, Productivity and Marketing	US$ 4.4	LBVD	FAO-LIFT Fund	2015-2018	Mandalay, Magway
61	Immediate Technical Assistance to Strengthen Emergency Preparedness for Highly Avian Influenza	US$ 1.2	LBVD	USAID	2016-2019	Yangon, Mandalay, Bago, Ayeyarwaddy Sagaing, Kayin
62	Improvement of Foot and Mouth Disease Control	Yen 1417	LBVD	JICA	2016-2019	Yangon
63	PREDICT/ Myanmar	TA	LBVD	USAID	2017-2019	Yangon, Kayin
64	OIE-LBVD Myanmar FMD Control Project	Nes$ 6.14	LBVD	New Zeland	2017-2020	Mandalay, Sagaing
65	Epidemiology of zoonotic viruses in forest communities in a key biodiversity area of rural Myanmar	US$ 0.027	LBVD	National Institutes of Health Grant	2017-2019	Bago

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
66	Improving quality of life and quality of care for animal affected by disasters in the township	US$ 0.02	LBVD	IFAW	2017-2019	Ayeyarwaddy
67	Plan Bee Project	US$ 0.7	LBVD	LIFD	2017-2019	Shan,Kayar
68	Small-scale Aquacul - ture Extension for Promotion of Livelihood of Rural Communities Project	US$ 4	DoF	JICA	2014-2019	Mandalay Sagaing Magway
69	Ayeyarwaddy Dolphin Research & Protected Area Management Plan	TA	DoF	WCS	2012-2022	Mandalay Sagaing
70	Collaborative Program to Support the Conservation of Marine an Freshwater Biodiversity in Myanmar	TA	DoF	FFI	2014-2019	Rakhine, Taninthari, Ayeyarwaddy, Kachin
71	Project for Development of Inland Fish Farming Technology	US$ 4.41	DoF	KOICA	2014-2019	Mandalay
72	Promoting sustainable growth of aquaculture in Myanmar to improve food security and income for communi - ties in the Ayeyarwa - ddy Deltaand Central Dry Zone	US$ 3.29	DoF	World Fish LIFT Fund	2015-2018	Ayeyarwaddy, Mandalay, Sagaing, Magway

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
73	Securing marine fisheries, livelihoods and biodiversity in Myanmar through co-management	US$ 0.21	DoF	WCS	2016-2019	Rakhine,
74	Myanmar Sustainable Aquaculture Programme (MYSAP)	EURO 22.5	DoF	GIZ	2016-2022	Ayeyarwaddy,Rakhine, Shan
75	DANIDA Project	US$ 10.0	DoF	Demark	2016-2020	Rakhine, Taninthari
76	Development of Sustainable and environmental friendly aquaculture techniques in coastal waters in Myanmar(JIRCAS)	Japan Yan 15	DoF	JIRCAS	2017-2021	Taninthari
77	Improvement of Data Collection on fisheries and Aquaculture Production : Pilot system for the Yangon Region(FAO-3601)	US$ 0.25	DoF	FAO	2017-2019	Yangon
78	Strengthening the adaptive capacity and resilience of fishries and aquaculture-dependent livelihoods in Myanmar FAO-020 (Fish Adapt)	US$ 6.0	DoF	FAO	2017-2021	Yangon, Ayeyarwaddy, Rakhine
79	Improving Fishery Management in Support of Better Governance of Myanmar's Inland and Delta Fisheries	AS$ 2.64	DoF	ACIAR	2017-2020	Ayeyarwaddy

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
80	Smithsonian Conservation Biology Institute	TA	DoF	Smithsonian Institute	2017-2018	Taninthari
81	Improvement of Tilapia seed production and grow-out culture management in Myanmar (FAO-3606)	US$ 0.204	DoF	FAO	2017-2019	Yangon
82	The Development of Rice-Fish System (RFS) in the Ayeyarwady Selta Myanmar (Rice-Fish)	AS$ 2.6	DoF	World Fish Center	2017-2021	Ayeyarwaddy, Bago
83	Development of Marine Cage Fish Farming (NDG)	TA	DoF	NDG	2018-2020	Taninthari
84	Supporting the Application of the Ecosystem Approach to Fisheries Management Considering Climate and Pollution Impacts (EAF- Nansen)	TA	DoF	FAO	2018-2021	Ayeyarwaddy, Rakhine, Taninthari
85	Supporting rural communities with access to basic services Progamme	US$ 9.54	DRD	UN-Habitat	2016-2018	Chin, Mandalay, Magway
86	Building Village- Level Demostration Program for Cooperation on Poverty Alleviation	33.33	DRD	IPRCC	2017-2020	Nay Pyi Taw

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
87	Rural Electrification Programme	Euro 9.0	DRD	KfW	2017-2020	Shan,
88	Promoting Rural Electrification	Euro 2.0	DRD	GIZ	2016-2018	Shan,
89	National CommunityDriven Development Project (NCDD)	US$ 80	DRD	World Bank	2012-2019	14 States and Regions,
90	Enhancing Rural Livelihoods and Incomes Project- ERLIP	US$ 12.00	DRD	ADB	2014-2019	Ayeyarwaddy, Taninthari, Shan
91	Emergency Support for Chin State Livelihood Restoration - ESCSLR	US$ 10.0	DRD	ADB	2016-2018	Chin
92	(MYA/002) Eastern Shan State Rural Development and Inclusion Project	US$ 11.623	DRD	Luxembourg	2018-2022	Shan
93	Provision of Equipment for Rural Water Supply Project in Central Dry Zone	JP¥ 584.616	DRD	JICA	2016-2021	Sagaing, Magway
94	Asia Farmer-to Farmer Program	US$ 1.021	DRD	Winrock Int'l	2015-2018	Sagaing,Bago, Magway, Mandalay, Yangon, Ayeyarwaddy,Shan
95	Improvement of Livelihood of Farmers by Joint Purchase and Joint Use of Farm Machinery	US$ 1.059	DRD	IDACA Myanmar	2015-2018	Mandalay, Yangon,
96	Partnership and Capacity Building Project	US$ 3.954	DRD	Cuso International	2015-2019	Yangon, Mon, Taninthari, Kayin

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
97	Humanitarian, Resilience and Development Programmes	US$ 20.0	DRD	Oxfam	2016-2019	Kachin, Kayar, Kayin, Mon, Rakhine, Shan, Ayeyarwaddy
98	Women's Improved Market Access for Growth and Empowerment in Rural Area	US$ 5.864895	DRD	Mennonite Economic Development Associate (MEDA)	2016 -2019	Shan , Kayin
99	To increase access to safe water, and improve sanitation and hygiene behavior and practices in Myanmar	US$ 2.32	DRD	Water Aid	2017 -2020	Magway, Mandalay, Rakhine
100	Sustainable Rural Development Project	US$ 1.112	DRD	Help Age International Myanmar	2017-2020	Magway, Mandalay,
101	Rural Livelihood Opportunities Development Project	US$ 3.363	DRD	World Vision Myanmar	2017-2020	Magway, Taninthari, Ayeyarwaddy, Kayin, Mon, Chin, Yangon
102	Water Supply, Sanitation and Hygiene-WASH	US$ 0.546	DRD	Samaritan's Purse	2017-2019	Ayeyarwaddy
103	Community Water Management Project	US$ 0.6	DRD	Lien AID Limited	2017-2019	Ayeyarwaddy
104	Development of Rural Communities in the Magway Region Project	US$ 2.5	DRD	Progetto Continenti Myanmar	2018-2021	Magway
105	Central Dry Zone Rural Development Project	US$ 2.0	DRD	Terre de Hommes Italy	2018-2021	Magway, Mandalay

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
106	Pwint Phyo Padaythar 1 Programme	US$ 8.0	DRD	HELVETAS	2018-2022	Mon, Taninthari, Kayin, Shan, Bago, Mandalay, Magway, Sagaing
107	Mobile VeteriLary Clinic	US$ 0.072	UVS	SPANA	2015-2018	Nay Pyi Taw, Mandalay
108	Improving the livelihoods of smallholder livestock farmers by the development of animal feeding strategies for enhancing food security, balancing ration and environment throgh research	US$ 12.01	UVS	IAEA	2016-2019	Mandalay

ON-GOING AGRICULTURAL LOAN PROJECTS IMPLEMENTED BY THE MINISTRY OF AGRICULTURE, LIVESTOCK AND IRRIGATION IN 2017-2018

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
1	Development of Irrigation Schemes in Myanmar	US$ 198.96	IWUMD	EXIM Bank of India	2014-2016	Sagaing, Mandalay, Nay Pyi Taw Magway,Bago, Mon,Kayin, Yangon
2	Irrigation Development in Western Bago	US$ 150	IWUMD	ODA	2014-2019	Bago
3	Forestering Agricultural Revitalization in Myanmar-FARM	US$ 18.726	IWUMD, AMD,DOA DALMS	IFAD	2014-2020	Nay Pyi Taw
4	Agriculture Development Support Project-ADSP	US$ 100	IWUMD, AMD, DOA, DAR, DALMS	WB	2015-2021	Sagaing, Mandalay, Bago, Nay Pyi Taw
5	Irrigated Agriculture Inclusive Development Project	US$ 102.5	IWUMD, AMD, DOA ,DAR, DALMS	ADB & AFD	2016-2023	Magway, Mandalay, Sagaing
6	Agriculture Income Improvement Project	Yan 30469	IWUMD, AMD, DOA ,DRD, DALMS	ODA	2018-2026	Sagaing, Mandalay
7	Eastern States Agri-business Project	US$ 56.8	IWUMD, AMD, DOA ,DAR, DALMS	IFAD	2018-2024	Shan, Kayin
8	Microfinance Cooperation for Rural Development and Poverty Alleviation in Myanmar (Phase-1)	US$ 100	Coop D	China EXIM Bank	2013-23	14 States and Regions, Nay Pyi Taw

SN	Name of Projects	Amount (Million)	Implementing Source	Funding Agency	Duration	Location
	(Phase-2)	US$ 300	Coop D	China EXIM Bank	2015-25	14 States and Regions, Nay Pyi Taw
9	Cooperation in transforming from the conventional farming with buying the farm machinery equipments in order to implement the rural development and poverty alleviation in Myanmar	US$ 85.0	Coop D	Daedong Industrial Co., Ltd	2015-22	14 States and Regions, Nay Pyi Taw
10	Regional Development Project for poverty reduction	US$ 20.34	DRD	Japan	2013-16	Shan, Ayeyar-waddy,Sagaing, Tanintharyi,Mon Kachin,Magway
11	Italian Contribution to the up Scaling up National Community Driven Development Project (NCDD)	Euro 20.00	DRD	Italy Development Cooperation	2015-18	Chin, Magway,
12	Driven Development Project-NCDD	US$ 400.00	DRD	World Bank	2015-21	14 States and Regions, Nay Pyi Taw
13	National Electrification Plan-NEP	US$ 90.00	DRD	World Bank	2016-21	Kachin, Kayin, Chin, Mon, Rakhine, Shan, Sagaing, Taninhari, Ayeyarwaddy
14	Emergency Recovery Credit –ERC)	US$ 70.00	DRD	World Bank	2016 -18	Ayeyarwaddy, Yangon, Magway, Sagaing, Bago,

MAIN FUNCTIONS OF DEPARTMENTS & UNIVERSITIES

MAIN FUNCTIONS OF DEPARTMENTS

DEPARTMENT OF PLANNING

(1) Consultation with departments under MOALI to formulate agricultural policies and regulations
(2) Communication and coordination with National and International organizations and funding agencies for initiation of Agricultural Development Projects
(3) Facilitation and negotiation with concerned ministries and departments for project implementation
(4) Linking private and public sectors for development of trade and investment in the agricultural sector
(5) Monitoring and evaluation of agricultural projects
(6) Coordination and cooperation with regional organizations such as ASEAN and international organizations
(7) Documentation and reporting of on-going project data
(8) Formulation and submission of short and long-term agricultural plans
(9) Reporting, compilation and dissemination of agricultural statistics
(10) Conduct socio-economic situation surveys of rural areas

COOPERATIVE DEPARTMENT

(1) Microfinance business
(2) Selling farm machinery, business-use machines and marine-use machines with long-term hire-purchase
(3) Upgrading the production, service and trade cooperative societies
(4) Successful implementation of the business of cooperative societies in accordance with the vision, mission and objectives of the Cooperative Department
(5) Regulating and guiding cooperative societies in accordance with the cooperative laws, rules, disciplines, procedures and instructions
(6) Organizing, restructuring, auditing and liquidating the cooperative societies
(7) Guiding, educating, and regulating the Board of Directors and employees of the cooperative societies

(8) Performing administration, capacity building, and management processes for employees from all levels of the cooperative societies

(9) Maintaining the documents, buildings, vehicles and equipment of all levels of the cooperative societies

(10) Seeking and obtaining loans from international sources, and onward lending to all levels of cooperative societies. After disbursing one cycle of loans to cooperative societies, auditing has to be carried out; biannual and annual auditing is carried out according to the cooperative society rules

(11) Occasionally, the department needs to carry out tasks directed by the Ministry and the Government

(12) Co-operative Universities (Thanlyin/ Sagaing)

- To train students to become educated, socially responsible youths with good attitude for national and regional development
- To nurture analytical-minded human resources with national and social conciousness for socio-economic development
- To upgrade teachers' and students' qualifications by drawing on the assistance of local and international academics and organizations for sustainable development of the Universities
- To lay down policy for the affairs of the Universities and for job opportunities for their graduates
- To provide educational knowledge related to the development of co-operative business
- To strive continuously in conducting research and the practical application of findings
- To make continuous efforts in designing curriculums and syllabuses to meet international standards

SMALL-SCALE INDUSTRIES DEPARTMENT

(1) To conduct vocational training effectively and extensively for the development of livelihoods

(2) To carry out registration and promotion of Small-scale Industries according to the Small-scale Industries Promotion Law

(3) To supervise the Lacquerware Technology College (Bagan), Saunders' Weaving and Vocational Institute (Amarapura), Weaving and Vocational Schools in State and Regional offices

(4) To provide financial, technical and market opportunities for the development of weaving enterprises including the Ten Myanmar Traditional Arts and Crafts

(5) To provide technical assistance to the cooperative societies and small-scale industries

(6) To carry out research and development activities for maintaining the quality of the products, and to assist small-scale industries and cooperative societies

(7) To supervise the implementation of the projects in cooperation with UN and international organizations

(8) To enhance small-scale industry to generate incomes, and for rural development and poverty reduction

(9) To analyze food, cosmetic and pharmaceutical products for quality control purposes

(10) To hold seminars, workshops, exhibitions and competitions for small-scale industries

DEPARTMENT OF AGRICULTURE

(1) Production of good quality seed varieties for main crops which are rice, seed corn, groundnut, sesame, sunflower, mustard, niger, pulses, sugarcane, cotton and sericulture, rubber, coffee ,culinary crops such as chilli, onion, garlic, potato, vegetables and fruits etc. for economic development of farmers and conducting trainings for farmers to produce good quality seed.

(2) Organize training on advanced agricultural technologies and cultural practices to facilitate application and innovation of these techniques by farmers

(3) Conduct research on scientific cultural practices to produce and develop good quality and high yielding seeds

(4) Produce the high-yielding varieties and good quality seeds of industrial crops such as sugarcane, cotton, jute, rubber, oil palm, cashewnut and coffee and provide to the farmers

(5) Conduct training, field days and demonstration of model farms for systematic application of GAP methods in production of the industrial crops

(6) Carry out continuous research activities to develop Good Agriculture Practices (GAP) compatible with the various regional ecological conditions, to produce adapted varieties and good quality seed

IRRIGATION AND WATER UTILIZATION MANAGEMENT DEPARTMENT

(1) To carry out construction of new reservoir projects, including hydro-electricity generation with multipurpose dams, after confirming the feasibility of the projects in accordance with the needs of local development without harming natural resources

(2) To perform operation and maintenance of the existing irrigation facilities and irrigation networks for effective and efficient utilization of agricultural water

(3) To undertake construction, rehabilitation, operation and maintenance of flood-protection dikes and polders

(4) To undertake construction and rehabilitation of small embankments and tanks to ensure the safety of drinking water and for the greening of areas according to local needs

(5) To provide technical assistance for operation and maintenance of village embankment and village irrigation works

(6) To conduct, along with other relevant departments, the land consolidation process, to improve water management practices

(7) To conduct the training of farmers in water user groups for enhancement of irrigation practice to ensure water-use efficiency

(8) To ensure supply of water by pump irrigation

(9) To supply more irrigation water from pump irrigation and ground water tube wells in the Central Dry Zone, especially in Sagaing Region, Magway Region and Mandalay Region

(10) To extend ground water exploration work to fulfill irrigation and domestic water needs, without negative impact on natural resources

(11) To convert diesel-driven pump irrigation projects to electric power-driven projects, depending on availability of electric power

(12) To educate farmers in the use of water-saving technologies, within pump irrigation and ground-water tube well projects

AGRICULTURAL MECHANIZATION DEPARTMENT

(1) Land reclamation, land consolidation and land development works

(2) Provision of farm mechanization services for land preparation, harvesting and threshing

(3) Distribution of appropriate farm machinery

(4) Research and development on utilization of agricultural machinery

(5) Implementation of up-land reclamation in hilly regions
(6) Dissemination of technical know-how on utilization of farm machinery to local farmers, and production technologies to private industries

DEPARMENT OF AGRICULTURAL LAND MANAGEMENT AND STATISTICS

(1) Update of land maps and registration records
(2) Conduct of land surveys and production of maps
(3) Collection, compilation and issue of timely and reliable crop statistics
(4) Collection and compilation of land use statistics
(5) Land administration, and settlement of agricultural land disputes
(6) Conduct of agricultural census

DEPARTMENT OF AGRICULTURAL RESEARCH

(1) Development of high yielding, improved varieties and hybrids with good quality and good local adaptation
(2) Generation of profitable cropping systems and production technologies
(3) Development of crop varieties and production technologies with resilience to climate change and global warming
(4) Development of agricultural technologies and biotechnology
(5) Dissemination of research findings through the Farmer Channel television network

YEZIN ACULTURAL UNIVERSITY

(1) The fostering of highly qualified agricultural technicians needed for the development of the agricultural sector
(2) Provision of adequate technical training in modern agricultural methods
(3) Provision of sound training of students who wish to engage in scientific farming as a means of livelihood, through co-operatives or private enterprises

LIVESTOCK BREEDING AND VETERINARY DEPARTMENT

(1) Improvement of livestock production and livestock products for domestic consumption, through improved animal health care
(2) Increase of draft cattle population in line with agricultural expansion
(3) Promotion of trade in livestock and livestock products
(4) Investigation of the implicated products and conduct research on various aspects for biologic production

DEPARTMENT OF FISHERIES

(1) Conservation and rehabilitation for sustainability of fishery resources
(2) Promotion of fishery research and surveys
(3) Collection and compilation of fishery statistics and information
(4) Development of extension services
(5) Supervision of fishery sector development

DEPARTMENT OF RURAL DEVELOPMENT

(1) Alignment with Sustainable Devlopment Goals (SDGs), to improve socio-economic life of the rural populace and to narrow the development gap between urban and rural areas
(2) Implementation of sustainable rural development activities in close cooperation with all stakeholders

UNIVERSITY OF VETERINARY SCIENCE

(1) Education of competent veterinarians for nationwide veterinary services for the production of livestocks, companion animals, zoo and wildlife animals
(2) Development of qualified animal science professionals, who will take the leading role in commercial livestock production and the aquaculture sector
(3) Conduct of applied and innovative research on animal science and veterinary medicine for sustainable development of the livestock sector
(4) Cooperation by signing Memoranda of Understanding (MOU) with International Universities and Organizations and conduct of student and staff exchange
(5) Conduct of extension and public education on livestock production, and prevention and control of infectious animal diseases and zoonotic diseases
(6) Organization of seminars, workshops and conferences in collaboration with international organizations and universities to advance knowledge and technology
(7) Revision of curriculum according to the guideline of the World Organization for Animal Health (OIE) and harmonization of the curriculum with those of the veterinary and animal science universities from ASEAN countries
(8) Participation of academic staff in local and international training for capacity enhancement

POTENTIAL INVESTMENT OPPORTUNITIES IN AGRICULTURAL SECTOR

POTENTIAL INVESTMENT OPPORTUNITIES IN THE AGRICULTURAL SECTOR

Since Myanmar is rich in natural resources and has diverse agro-ecological conditions, opportunities for doing business in agriculture are abundant along each and every segment of the supply chain for various agricultural products. Some examples of those opportunities are as follows:

(i) Input Industries

Seed Industries - Potential investors will be encouraged to invest in the hybrid seed and bio-technology industry, and in grain production and processing industries.

Fertilizer Industries - A significant opportunity is available to investors to establish chemical and organic fertilizer factories in order to produce high quality, low cost fertilizer, utilizing abundant raw materials; and also to develop service enterprises for high-tech manufacture of fertilizers.

Pesticide Industries - Manufacturing enterprises and associated technical services for the production of environmentally sound, agro-chemical and organic pesticides are investment prospects for the replacement of imported pesticides.

Agri-machinery Industries - Investment is encouraged in enterprises that can make available and distribute low cost small-scale agricultural machinery and large-scale machines for farmers. Rental services of this agricultural machinery to small-scale farmers have good investment potential.

Irrigation Technology and Services - Efficient utilization of water resources is essential for the success of agri-business. Investment in infrastructure such as dams and reservoirs as well as the exploitation of underground water resources are potential business opportunities. Service industries such as irrigation technology, water-harvesting and water-saving technologies are also welcome.

(ii) Production and Processing Industries

Crop Production Industries - Technology supporting services to grow quality produce both on- and off-season, and for production of marketable crops through contract farming are potential areas for investment. Large opportunities are there to produce food crops, oilseed crops, bio-fuel crops, fruits and vegetables, industrial

crops and perennial crops, by developing abundant virgin and cultivable waste lands of about 5 million hectares located widely over the country.

Processing Industries - Opportunities exist for post-harvest and value-added processing industries, including quality milling, storage and packaging technology.

Processing industries include the following agro-based industries:

- High quality rice-milling, by-product industries, and value-added rice manufacturing industries
- Post-harvest facilities and manufacturing industries for peas and beans, maize, oilseeds, wheat, etc.
- Technology and industries for fresh fruit and vegetable production and processing
- Manufacturing enterprises for industrial crops such as cotton, sugarcane, jute and kenaf, etc.
- Semi-finished, manufacturing and refining industries for perennial crops such as rubber, cashew nut, oil palm, coffee, tea, etc., and related by-product industries

Research and Development - R&D services on production, processing, value-addition and marketing, with forward and backward linkages, will be needed in all aspects of the commodity value chain.

(iii) Wholesale Market Industry

Technology and services for development of wholesale markets and commodity exchange centers are essential to reduce the transaction costs and create efficient commodity supply chains. The commodities may include perishable, seasonal and perennial crops, and hence investors interested in such services are welcome.

(iv) Industries related to Competitive Drivers of Supply Chain

Agricultural Cooperatives - Technical know-how and investment are being encouraged in the area of agricultural cooperatives established by the farmers, where the group members share the resources in production and marketing, with less transaction costs.

Credit and Insurance Industries - Since sufficient, low-interest loans are essential to provide farmers with finance for production, there are opportunities to invest in the establishment of institutions such as credit societies in line with the new

democratic government policy. Moreover, to enable farmers to protect their properties and produce, opportunities for insurance businesses in the form of life insurance, crop insurance, cattle insurance, farm machinery insurance and most importantly, climate insurance are necessary. Such industries will be welcome with the appearance of a legal framework in the near future.

Quality and Food Safety Institutions - Institutions dealing with the quality, standards and safety of both consumers and producers are important for supply chain efficiency. Such institutions with the capacity for international linkages are encouraged to invest in related sectors.

Consumer Institutions - Since access to markets and competitiveness of agricultural commodities are primarily determined by customers, the emergence of healthy consumer societies are encouraged by the government through public-private partnerships (PPP). Interested parties from the private sector as well as foreign investors are invited to provide the technical assistance and service.

LIVESTOCK SECTOR

There are opportunities to invest in the following businesses in the livestock sector:

- Milk and milk processing factories
- Animal production and animal products export
- Genetic breed upgrading
- Distribution and selling of animal (cattle) and semen and
- Disease prevention, treatment and animal husbandry

FISHERY SECTOR

Opportunities to invest in fish-farming (aquaculture) are as follows:

- Fish/ shrimp farming (fresh water/ marine)
- Seaweed culture
- Soft-shell crab culture
- Aqua-feed factories

FISHING

- Long-line fishing within the territorial waters of Myanmar

FISHERY INDUSTRIES

- Dockyard services
- Net and fishing-gear factories
- Food-testing laboratory services
- Food safety management systems (GMP/ HACCP/ ISO/GAqP/SSOP)
- Plastic container (box) production for fish/ shrimp transportation
- Canning factories

RURAL DEVELOPMENT SECTOR

- Evergreen Village Development Project: financial & technical assistance
- Rural Roads and Bridges : grant, aid, investment, partnership
- Rural Water Supply : grant, aid, investment, partnership
- Rural Electrification : grant, aid, investment, partnership
- Affordable and Low Cost Housing : investment, partnership

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MINISTRY OF AGRICULTURE, LIVESTOCK AND IRRIGATION

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https://www.yau.edu.mm

facebooks

https://www.facebook.com/malioffice

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ACRONYMS

ACARE	-	Advanced Center for Agricultural Research and Education
ACIAR	-	Australian Centre for International Agricultural Research
ACL	-	Asia Craft Links
ADB	-	Asian Development Bank
ADS	-	Agriculture Development Strategy
AMD	-	Agricultural Mechanization Department
AMR	-	Antibiotic Microbial Resistance
ARDC	-	Agriculture and Rural Development Corporation
ARDSCG	-	Agriculture and Rural Development Sector Coordination Group
ASEAN	-	Association of Southeast Asian Nations
AVI	-	Australian Volunteers International
B.Agr.Sc	-	Bachelor of Agricultural Science
B.V.Sc	-	Bachelor of Veterinary Science
Coop D	-	Cooperative Department
DALMS	-	Department of Lands Management and Statistics
DAR	-	Department of Agricultural Research
Dip L.T	-	Diploma in Lacquerware Technology
Dip. L.I.S	-	Diploma in Livestock Industrial Studies
Dip. L.P.A	-	Diploma in Livestock Production and Aquaculture
DLD	-	Department of Livestock Development
DOA	-	Department of Agriculture
DOF	-	Department of Fisheries
DOP	-	Department of Planning
DPO	-	Daily Farming Promoting Organization
DRD	-	Department of Rural Development
EdM	-	Entrepreneurs du Monde
EEZ	-	Exclusive Economic Zone
E-Library	-	Electronic Library
ERC	-	Emergency Recovery Credit
FAO	-	Food and Agricultural Organization
FMD	-	Foot-and-Mouth Disease
GAHP	-	Good Animal Husbandry Practices
GAP	-	Good Agricultural Practices
GDP	-	Gross Domestic Products
GNI	-	Gross National Income

GOV	-	Gross Output Value
ha	-	hectare
HH	-	House Hold
HP	-	Horse Power
HP	-	Horse Power
IAEA	-	International Atomic Energy Agency
IAHVS	-	Institute of Animal Husbandry and Veterinary Science
IARI	-	Indian Agricultural Research Institute
IFAD	-	International Fund for Agricultural Development
IWUMD	-	Irrigation and Water Utilization Management Department
JICA	-	Japan International Cooperation Agency
Km	-	Kilo meter
KOICA	-	Korea International Cooperation Agency
Ks Mil	-	Kyats Million
LBVD	-	Livestock Breeding and Veterinary Department
LIFT	-	Livelihoods and Food Security Trust Fund
LSC	-	Long Staple Cotton
M.Agr.Sc	-	Master of Agriculture Science
M.Phil	-	Master of Philosophy
M.V.M	-	Master of Veterinary Medicine
M.V.Sc	-	Master of Veterinary Science
MADB	-	Myanmar Agricultural Development Bank
Mil	-	Million
MITS	-	Myanmar Inspection and Testing Services
MK	-	Myanmar Kyats
MLFRD	-	Ministry of Livestock, Fishery and Rural Development
MNU	-	Mokpo National University
MOAI	-	Ministry of Agriculture and Irrigation
MoALI	-	Ministry of Agriculture, Livestock and Irrigation
MOCIC	-	Myanmar Overseas Commodity Inspection Co., Ltd
MoCoop	-	Ministry of Cooperative
MOU	-	Memorandum of Understanding
MRA	-	Mutual Recognition Agreement
MSY	-	Maximum Sustainable Yield
MT	-	Metric Ton
mt/ha	-	metric ton/ hectare

MWA	-	Metropolitan Waterworks Authority
NCDD	-	National Community Driven Development
NEP	-	National Electrification Plan
NES	-	National Export Strategy
NGOs	-	Non-Government Organizations
ODA	-	Official Development Assistance
OIE	-	World Organization for Animal Health
OMIC	-	Overseas Merchandise Inspection Corporation
PGMF	-	Pact Global Microfinance Fund
Ph. D	-	Doctor of Philosophy
Post grad Dip Agr. Sc	-	Post Graduated Diploma Agricultural Science
PRRS	-	Porcine Reproductive and Respiratory Syndrome
R & D	-	Research and Development
RDSF	-	Rural Development Strategic Framework
SAIs	-	State Agricultural Institutes
SPANA	-	Society for the Protection of Animals Abroad
Sq-km	-	Square Kilometer
SSID	-	Small-Scale Industries Department
UAE	-	United Arab Emarates
UN	-	United Nation
UNDP	-	United Nation Development Program
USAID	-	United State AID
USD	-	United State Dollar
UVS	-	University of Veterinary Science
WB	-	World Bank
YAU	-	Yezin Agricultural University
ZELS	-	Zoonoses in Emerging Livestock Systems

DEPARTMENT OF PLANNING

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