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FOREWORD

The Agriculture sector is a high priority for the Government of Myanmar. Agriculture contributes 30 percent of national GDP and about 68 percent of rural population relies on crop husbandry and livestock for their livelihoods and incomes.

The vision statement of the agriculture policy reads as follows: “by 2030, Myanmar achieves inclusive, competitive, food and nutrition secure, climate change resilient, and sustainable agricultural system contributing to the socio-economic well-being of farmers and rural people and further development of the national economy”. To pursue this vision the agriculture development strategy proposes a sequence of interventions that will pave the way to: commercial expansion of crops and livestock production, , increased incomes for farmers and better access to international markets, ultimately contributing to the country’s food security and economic development.

The agricultural development strategy responds to the need (i) for the consolidation and integration of various plans, strategies, roadmaps, and approaches currently developed by various stakeholders; (ii) for a systematic approach to operationalize agricultural policy implementation; (iii) to coordinate activities, projects, programs, and policies; and (iv) to build a dialogue with domestic and foreign investors and harmonize foreign aid to the sector.

It is my honor to commend this comprehensive strategy. In implementing the agriculture development strategy, an important role of our Ministry will be to ensure coordination with related Ministries over cross-cutting issues, to integrate the union plan with regional and state level planning, to ensure cooperation and synergies among departments and with farmers, development partners and private agribusiness entrepreneurs.

Inclusiveness, enhanced capacity, cooperation, transparency and commitment will be the decisive forces and a hallmark of success for the implementation of the agricultural development strategy.

The preparation of this strategy is in fact a yearlong effort comprising several rounds of consultations and revisions involving all departments of the Ministry, parliament members, farmers, civil society, private sector and development partners. Thanks to all for your valuable contributions. Public consultation workshops were held in 17 cities in all regions and states of the country and from these platforms, public voices, comments and suggestions were put forwarded for improving the strategy. Professional expert views and comments were conveyed from academia, peer reviewers and prominent international experts. This strategy is the result of an extensive participative process and a quality peer review. I would like to thank for their support the Agriculture and Rural Development Sector Coordination Group and stakeholders, in particular, the Asian Development Bank, The Food and Agriculture Organization and the Livelihoods and Food Security Trust Fund.

I am confident that the agriculture development strategy will successfully support Myanmar in reducing poverty particularly in rural areas where the development of non-farm activities based on agriculture will be fundamental for the growth of an overall robust economy, a more balanced rural economy, and employment generation.

Dr. Aung Thu
Union Minister
Ministry of Agriculture, Livestock and Irrigation

ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
ADR	Alternative Dispute Resolution
ADS	Agriculture Development Strategy
ADSISU	ADS Implementation Support Unit
AEC	ASEAN Economic Community
AGDP	Agriculture Gross Domestic Product
AI	Artificial Insemination
ANR	Agriculture and Natural Resources
APC	Agriculture Planning Commission
ASEAN	Association of Southeast Asian Nations
AWD	Alternative Wetting and Drying
BMI	Body Mass Index
CAHW	Community Animal Health Workers
CASP	Core Agriculture Support Program
CB	Cooperatives Bank
CBDRM	Community Based Disaster Risk Management
CBO	Community Based Organization
CDD	Community-driven Development
CDZ	Central Dry Zone
CGIAR	Consultative Group for International Agriculture Research
DP	Development Partner
E2F	Enterprise to Farmer
EU	European Union
F2F	Farmer to Farmer
FAO	Food and Agriculture Organisation of the United Nations
FDI	Foreign Direct Investment

FESR	Framework for Economic and Social Reforms
FFS	Farmer Field Schools
FIL	Foreign Investment Law
FMIS	Farmer Management Irrigation System
FOAU	Farmers Organization Affairs Unit
FOB	Free on Board
FSWG	Food Security Working Group
FT	Fair Trade
G2G	Government to Government
GAD	General Administration Department
GAFSP	Global Agriculture and Food Security Program
GAHP	Good Animal Husbandry Practices
GAqP	Good Aquaculture Practices
GDP	Gross Domestic Product
GIS	Geographic Information System
GMO	Genetically Modified Organism
GMP	Good Manufacturing Practice
GMS	Greater Mekong Subregion
GORUM	Government of the Republic of the Union of Myanmar
HACCP	Hazard Analysis Critical Control Points
HDI	Human Development Index
HFIAS	Household Food Insecurity Access Scale
IBT	Inter-basin Transfer
ICT	Information and Communication Technologies
IHLCS	Integrated Household Living Conditions Survey
IMT	Irrigation Management Transfer
INGO	International Non-government Organization
IP	Investment Plan
IPM	Integrated Pest Management
ISF	Irrigation Service Fee
ISO	International Organization for Standardization
ITC	International Trade Center
IWRM	Integrated Water Resources Management
JICA	Japan International Cooperation Agency

LAPA	Local Adaptation Plans of Action
LBVD	Livestock Breeding and Veterinary Department
LIFT	Livelihoods and Food Security Trust Fund (a multi-donor financing facility)
LN2	Liquid Nitrogen
LUC	Land Use Certificate
M&E	Monitoring and Evaluation
MAD	Minimum Acceptable Diet
MADB	Myanma Agriculture Development Bank
MCDV	Myanmar Comprehensive Development Vision
MEB	Myanma Economic Bank
MFI	Microfinance Institutions
MIL	Myanmar Investment Law
MIS	Management Information System
MNAPFNS	Myanmar National Action Plan for Food and Nutrition Security
MOALI	Ministry of Agriculture, Livestock, and Irrigation
MOC	Ministry of Commerce
MOCon	Ministry of Construction
MOPF	Ministry of Planning and Finance
MONREC	Ministry of Natural Resources and Environmental Conservation
MTEF	Mid-term Expenditure Framework
MWFD	Myanmar Water Framework Directive
NADSCC	National ADS Coordination Committee
NADSIC	National ADS Implementation Committee
NAPA	National Adaptation Programme of Action to Climate Change
NARC	National Agriculture Research Council
NARES	National Agriculture Research and Extension System
NCDP	National Comprehensive Development Plan
NES	National Export Strategy
NGO	Non-government Organization
NLUP	National Land Use Policy

NPC	National Planning Commission
NSW	National Single Window
NWP	National Water Policy
O&M	Operation and Maintenance
OA	Organic Agriculture
P2P	Person to Person
PER	Public Expenditure Review
PPP	Public Private Partnership
R&D	Research and Development
REE	Research, Extension, and Education
SAEZ	Special Agro-industrial Economic Zone
SAI	State Agriculture Institute
SDC	Swiss Development Corporation
SDG	Sustainable Development Goals
SMS	Subject Matter Specialist
SOP	Standard Operating Procedures
SRI	System of Rice Intensification
SWOT	Strengths, Weaknesses, Opportunities, Threats
ToT	Training of Trainers
UPOV	International Union for the Protection of New Varieties of Plants
USAID	United States Agency for International Development
USD	United States Dollar
VDP	Village Development Plan
VE	Village Embankment
VFV	Virgin, Fallow, and Vacant (land)
VFVLM	Virgin, Fallow, and Vacant Land Management
VGGT	Voluntary Guide on the Responsible Governance of Tenure
VI	Village Irrigation
WHO	World Health Organization of the United Nations
WUA	Water User Association

LIST OF ABBREVIATED NAMES OF MINISTRY OF AGRICULTURE, LIVESTOCK AND IRRIGATION AND CONCERNED DEPARTMENTS

MOALI	Ministry of Agriculture, Livestock and Irrigation
DOP	Department of Planning
DOA	Department of Agriculture
IWUMD	Irrigation and Water Utilization Management Department
DALMS	Department of Agricultural Land Management and Statistics
AMD	Agriculture Mechanization Department
YAU	Yezin Agricultural University
DAR	Department of Agricultural Research
LBVD	Livestock Breeding and Veterinary Department
DOF	Department of Fisheries
DRD	Department of Rural Development
UVS	University of Veterinary Science
DOC	Department of Cooperatives
SSID	Small Scale Industries Department
DABMI	Department of Agribusiness and Market Information

SECTION – I

MYANMAR AGRICULTURE DEVELOPMENT STRATEGY

1. INTRODUCTION

1. Over the last seven years (2011-2017) Myanmar has been engaged in a process of political and economic liberalization that is transforming the country's economy and society and will see the nation emerge as an important economic entity in Association of Southeast Asian Nations (ASEAN) and the wider regional and global economy.

2. After decades of isolation and with the lifting of sanctions, Myanmar is actively re-engaging with the global economy. Myanmar's rich natural resource base, abundant labor and strategic location, make the country a focus for foreign investment. Myanmar's gross domestic product expanded by over 8 percent per year during the period 2010/11 to 2016/17. Over the same period agricultural [1] Gross Domestic Product (GDP) has expanded at an average growth rate of 3.2%. In addition to annual crops (including oilseeds and vegetables), Myanmar also produces industrial crops including rubber, sugarcane, cotton, oil palm, coffee, tea; fisheries (e.g. shrimp), and livestock (e.g. cattle and poultry). It has abundant natural resources including fertile and diverse agro-ecological land areas (the largest land area in continental Southeast Asia), water, forests, and a coastline of over 2000 km. Irrigated area covers about 16.2% of total sown area.

3. Initial investment has primarily been in tourism, mining, gems, and infrastructure development, but there is a growing interest in the development of Myanmar's agricultural and agro-processing [2]sectors. Agriculture, livestock and fisheries account for nearly 30% of GDP and about 56% of employment and from about 25% of exports, earning over $2.9 billion in 2016/2017 through exports of beans and pulses, oilseeds, rice, shrimp, livestock, and rubber. While historically, rice has been the major agriculture export commodity, more recently, beans and pulses have, on average, generated higher export earnings.

4. Experiences in other South-East Asia transition economies such as Viet Nam and China suggest that agriculture and the rural sector can provide significant economic gains during the early stages of reform. While the potential for significant production and productivity gains in Myanmar agriculture, fisheries and forestry is large, the sector faces substantial challenges in their realization. These challenges include, inter alia, weak rural and border infrastructure; a set of complex, mostly unresolved land issues; low agricultural productivity and competitiveness of agri-food products; an underfunded and poorly organized agricultural research, extension and agriculture education system; weak coordination within the Ministry of Agriculture, Livestock, and Irrigation [3] (MOALI), and between MOALI and other stakeholders; and vulnerability to natural disasters (floods, droughts, cyclones, sea level rise) and climate change.

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1 The term "Agriculture" in this document usually refers to the subsectors of crops, livestock, and fisheries. In some expressions such as "Department of Agriculture" or "Good Agricultural Practices", it refers only to crops.

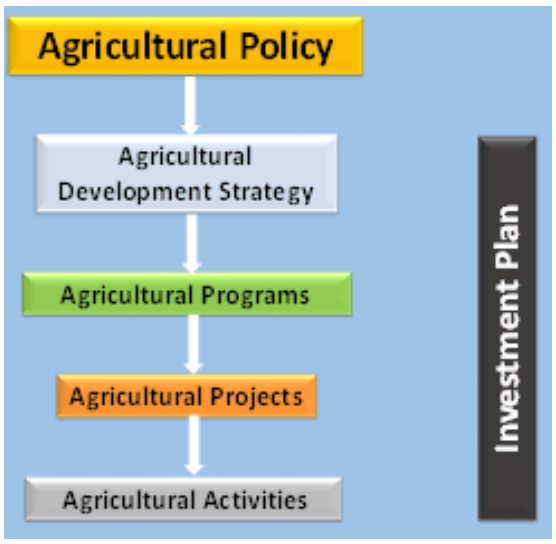
2 This includes investments in fertilizer manufacturing and seeds, both of which have posed longstanding constraints to crop production, and there is also increased investment in the production of animal feed. (Myanmar Economic Monitor, December 2016, The World Bank).

3 The result of the 2015 merging three Ministries: Agriculture and Irrigation; Livestock Fisheries and Rural Development; and Cooperatives.

5. In a national environment of rapidly emerging policies, plans and priorities, the MOALI urgently needs to: (i) harmonize and integrate the various sub-sector development plans and align its vision with regions / state and national objectives: (ii) define its role in sector development and restructure accordingly; (iii) align agriculture budget with the revised role, institutional framework and goals; and (iv) build capacity to monitor and evaluate results and inform management accordingly.

6. The Agriculture Development Strategy (ADS) and Investment Plan (IP) responds to the need: (i) for the consolidation and integration of various plans, strategies, roadmaps, and approaches currently developed by various stakeholders; (ii) for a systematic approach to operationalize agricultural policy implementation and link it to the IP; (iii) to coordinate activities, projects, programs, and policies; and (iv) to build a dialogue with domestic and foreign investors and harmonize foreign aid to the sector.

Figure 1. From Policy to Strategy



7. **The ADS is an integrated and shared strategic document based on consultations with and between the government, the private sector, civil society, and Development Partners (DP).** The strategy builds off the recently developed Agriculture Policy and aims at setting clear priorities in the short, medium, and long term. The IP defines the results to be achieved by different stakeholders and their time line.

8. Since August 2016, the MOALI with the support of DPs, Asian Development Bank (ADB), Food and Agriculture Organization of the United Nations (FAO), and Livelihoods and Food Security Trust Fund (LIFT) has led the preparation of the ADS and IP for the 5-year period 2018-19 to 2022-23.

9. Between September 2016 and December 2017, the ADS Preparation Team prepared five drafts of the ADS and IP. Each of which were revised based on comments received by various stakeholders. The ADS and IP were also discussed by the Agriculture and Rural Development Sector Working Group (A&RD SWG) [4] , parliamentary members and the government officials in six rounds of the meeting between September 2016 and June 2017. For further improvement, pre-consultations meetings were held in Bago, Mandalay and Pathein. The methodology and design of public consultation were discussed in 5 –day working sessions in MOALI with participants from the officers of all departments of MOALI from all regions and states in association with members of FSWG and CSOs. The adopted Public Consultation Workshops were held including Naypyitaw and 17 cities of all Regions and States from May to June 2017. Public voices and comments were expressed from 3763 participants consisting of 949 farmers, 726 CSO members, 99 parliamentary members, 1456 government officials, 332 agribusiness entrepreneurs, 113 local resource persons, 76 media persons, and 12 other workers. All the comments and findings were incorporated or taken into account in reformulating the ADS. The revised fifth version of ADS was reviewed by five peer viewers. With their comments, the final version was produced in English and Myanmar.

4 In October 2017, Agriculture and Rural Development Sector Working Group (A&RD SWG) changed into Agriculture and Rural Development Sector Coordination Group (A&RD SCG).


FARMER
CHANNEL
STUDIO

2. BACKGROUND

10. Myanmar has an ethnically diverse population of about 51.7 million in a land area of 676,578 square kilometers with three main agro-ecological zones: Delta, Central Dry Zone (CDZ) and the Hilly zone. The country is divided into 14 states and regions and Nay Pyi Taw Union Territory, with 135 different officially recognized ethnic groups.[5] In the Delta zone, in the south, with a population of about 22 million, farmers are primarily engaged in rice production, particularly during the monsoon. The CDZ, with a population of about 19 million, lies in a monsoonal shadow receiving 600 mm rainfall annually. Farmers are primarily located along the main river valleys, dependent on both rainfed and irrigated agriculture producing rice, oilseeds, bens and pulses, the latter fed by both surface storage and artisanal water supply. In the Hilly zone, with a population of about 6.5 million and dominated by Shan state, farmers cultivate a wide range of rain-fed tree crops and horticulture products along with rice, maize and pulses. Livestock production is found across all three zones, while aquaculture primarily occurs in the delta and coastal areas.

11. Approximately 72% of the population lives in rural areas where 85% of poverty is concentrated, and 24% of rural households are considered vulnerable. According to the Integrated Household Living Conditions Survey (IHLCS), the poverty rate in Myanmar in 2011 was approximately 25.6%, with approximately 66.9% of total employed forming the working poor at purchasing power parity $2/day. In Myanmar 56% of employment is generated by the agriculture sector, and 54.2% of those engaged in agriculture, hunting and forestry fall below the general poverty line. With a per capita income of United States Dollars (USD [6]) 1,205, Myanmar is ranked 165th out of 180 numbers of listed countries in the world [7].

12. Myanmar's human development index (HDI) value for 2015 was 0.556— which put the country in the medium human development category—positioning it at 145 out of 188[8] countries and territories. This score is below the average of 0.631 for countries in the medium human development group and below the average of 0.720 for countries in East Asia and the Pacific. The Demographic and Health Survey 2015-2016 indicate anemia affecting 76.4% of 6-11 months and 74.8% of 12-23 months old children, and 46.6% of women of reproductive age. Of children under 5 years of age, 29.2% are stunted, 7% are wasted, and 18.9% are underweight. Only 16.0% of children 6-23 months are fed the minimum acceptable diet (MAD). MAD looks at both frequency of feeding to children and number of food groups children eat.

13. The agricultural sector is estimated to contribute nearly 30% of GDP, while industry accounts for about 25% and services about 45% of GDP. As in other countries in the region, a significant proportion of industry and trade is also related directly or indirectly to the agriculture and natural resource (ANR) sector.

14. The agriculture sector also accounts for

5 125,870 square kilometers (18.6% of total land area) is devoted to agriculture.

6 USD and $ will be used interchangeably in this report.

7 On a nominal basis (International Monetary Fund).

8 List of country by human development index, (report 21 March 2017)

about 25% of total exports by value. Beans and pulses are currently the largest agriculture export, returning $1,152 million in 2015/16, with rice, livestock and fisheries, the other main agricultural export items, each generating between $400-500 million.

15. The production of paddy rice, estimated at 28.2 million metric tons (2016/17) continues to dominate Myanmar's agricultural production, being 45.7% of harvested area and 53.4% of production volume of major crops produced in Myanmar. While the national self-sufficiency rate is estimated at around 168%, Mandalay and Magway regions and Chin State report deficits, with self-sufficiency rates of 66%, 98%, and 69% respectively.

16. Other key crops include beans and pulses, oilseeds and rubber. Given its diverse agro-climatic zones, the country also produces, sugar, maize, a wide range of fruit and vegetables (some of which are exported particularly to China), palm oil, coffee and tea.

17. By volume, fish is second to rice in its contribution to the Myanmar diet and may be the most important source of protein for the people of Myanmar. In addition, the sector contributes over $300 million per year to Myanmar's positive foreign trade balance. It is also a significant source of employment in coastal areas, employing some 2.6 million persons and providing employment throughout the year.

18. Livestock and fisheries contribute about 26% of total agricultural GDP. The livestock sector, which includes about 16.6 million cattle, 3.6 million buffalo, 16.5 million pigs, 8.8 million sheeps and goats, 319 million fowl and 29 million ducks, is growing and with rapidly growing income per capita, particularly in urban area, can be expected to increase in importance to meet growing domestic demand. With the recent inter-government agreement to export up to 1.0 million cattle per year to China, it will also have considerable impact on meat supply for the Greater Mekong Sub-region (GMS).

19. Myanmar's agriculture is characterized by low productivity, inequality and high volatility. Despite its potential, the agriculture sector has suffered decades of insufficient investment in basic infrastructure such as rural roads, as well as from weak research, extension and finance support services. Most public investment in agriculture has focused on irrigation infrastructure, particularly the construction of dams, reservoirs, and main canal systems to provide surface irrigation for rice production, however, water supply remains uncertain for many farmers. While there has been production growth in some subsectors, farm gate prices have generally been low (either due to policy or structural reasons) and highly volatile (due to poor connectivity and instability of foreign demand). Combined with inequitable land distribution and highly seasonal agriculture labor demand, this has resulted in stagnant or declining rural incomes, a growth in landlessness, and a high degree of rural indebtedness, with consequent widespread rural poverty.

20. Food security is a problem in remote upland areas (ADB, 2012) but some sources have also reported this as an issue in the more prosperous areas of the Delta since Cyclone Nargis (Steinberg 2010). Pressure on living standards has increased levels of indebtedness and helped to fuel large-scale migration to neighboring countries in search of employment (Dapice et al., 2010).

21. Against this background, the following table provides a simplified strength, weaknesses, opportunities, and threats (SWOT) analysis of the Myanmar ANR sector.

Strengths	Strengths
• Rich endowment of natural resources (water, soil, forest, coastline) • A variety of agro-ecological areas suitable to agriculture, livestock, fisheries, and forestry • Relatively high land/labor ratio • Surplus in a few commodities (rice, pulses, fruit, maize, shrimp, cattle)	• Rich endowment of natural resources (water, soil, forest, coastline) • A variety of agro-ecological areas suitable to agriculture, livestock, fisheries, and forestry • Relatively high land/labor ratio • MOALI departments still need to be fully integrated and the budget realigned to address policy priorities

Strengths	Weaknesses
• A growing domestic market • Improved regional integration and connectivity particularly with GMS and ASEAN • Strategic location for exports to China, India, and ASEAN. • High water availability but undeveloped irrigable area	• Limited access of farmers to timely and quality inputs, including seeds, fertilizers, pesticides, post-harvest infrastructures and animal health drugs and services • Limited access of smallholder farmers to financial services • Limited diversification away from rice • Limited access of female and male smallholder farmers to secure land right, aggravated by an underfunded and inefficient land registration, classification and titling processes • Limited quality and safety of agricultural products • Weak transport and communication infrastructure • Gender inequality and insufficient women's rights in agriculture • Low capacity of institutions to carry out key governance functions including planning, policy formulation and analysis, monitoring and evaluation, safeguards • Inefficient use of water resources and irrigation systems • Weak statistical systems • Low value added produced by agroindustry
Opportunities	**Threats**
• Growing demand for safe, convenient, and processed food in urban Myanmar • Growing export demand for several products where Myanmar has comparative advantage • Growing interest of domestic and international investors given the increasing regional integration with GMS and ASEAN and increasing connectivity in information and communication technologies (ICT) and economic corridors • High potential for competitive export of rice, pulses, fruit, vegetables, shrimp, cattle, maize, cassava, rubber, etc.	• On-going land grabbing aggravating inequality and precipitating social and economic unrest • Unsustainable natural resources use leading environmental degradation and loss of biodiversity • Rising frequency and severity of natural disasters • Climate change impact on agriculture productivity and arable area • Reliance on few commodity market outlets increases price volatility • Insufficient human resource development (HRD) reducing absorptive capacity and economic reform implementation • Slowing down of reform process and increasing social economic unrest • Little preparedness to face competition from more competitive ASEAN neighbors in the presence of ASEAN Economic Community (AEC)

"The previous three separate ministries are emerged into one unified Ministry of Agriculture, Livestock and Irrigation (MOALI). In other words, its role has evolved from a crop agriculture focus, to one of diversification towards high value products, including livestock and fisheries, and the development of the rural non-farm sector".

"Focus on male and female smallholders might not only bring benefits in terms of poverty reduction and reducing inequality, but also in terms of economic efficiency and growth. Development strategy cannot ignore male and female smallholder farmers and, especially, female smallholder household members who perform most tasks in crop agriculture".

"Solving the country wise land grubbing issues is major priority of MOALI. Putting in place good land governance will reflect good image of the ministry which in turn will deliver good image of the whole government".

3. KEY ISSUES

3.1 The Context of Agricultural Transformation and Implications for the ADS

22. For MOALI, the key role of agriculture is to ensure food and nutrition security, climate resilience and reduced household vulnerability, ensure food safety, increase agriculture land and labor productivity and contribute to rural development and environment protection. MOALI's role has evolved from a crop agriculture focus, to one of diversification towards high value products, including livestock and fisheries, and the development of the rural non-farm sector. These are key elements of the process of agricultural transformation and bear on the government's "modernization" objective that also aims to reduce the gender wage gap and increase gender equality.

23. The ADS is a strategy for the operationalization of the agricultural policy to guide the Myanmar agricultural sector over the next 5 years, during which agribusiness growth is expected to outpace that of agriculture. Strong linkages between agriculture and other economic sectors will be critical to the reduction of poverty particularly in rural areas where the development of non-farm activities based on agriculture will be fundamental for the growth of an overall robust economy, a more balanced rural economy, and employment generation.

24. In this context, it is worth emphasizing that the ADS looks at the agricultural sector in its entirety, and encompasses not only the production sectors (crops, livestock, fisheries), but also the processing sector, trade and other services (storage, transportation and logistics, finance, marketing, research and extension) and factors that will enhance the emergence of financially sustainable farmer organizations.

25. The strategy is formulated considering the conceptual framework of agricultural transformation of Myanmar from agriculture as primary industry to one that derives most of its income from services and industry. This process has profound implications for the ways the Myanmar population will shape their food production and distribution systems, the development of rural areas including the rural non-farm sector, labor and land productivity, trade balance, employment and outmigration of the youth, the role of women in agriculture, and management of natural resources in the context of increasingly more severe climate change events. The ADS will ensure that the process of agricultural transformation is accelerated and molded according to the aspirations and constraints of Myanmar society.

26. In this process of transformation, several things take place at the same time (Timmer 2007). The share of agriculture in GDP and labor decline, but at the same time agricultural productivity and agricultural GDP increase. So, despite contributing less as a share of total GDP, agricultural GDP is growing.

27. The relevant lessons derived from the experience of several countries going through the process of agricultural transformation can be summarized as follows (Goletti 2011):

(i) Accelerate public and private investment in science and technology. Specifically, investment in the knowledge triangle of research, education, and extension (REE) has large impacts on increasing agricultural productivity, especially if innovation is accessible locally from pluralistic sources.

(ii) Ensure broad-based and inclusive agricultural growth. Investment in programs that moderate economic, social and geographic inequalities result in more stable and higher growth.

(iii) Associating smallholder farmers and integrating their associations into competitive value chains. Smallholder farmers are the backbone of Myanmar agriculture; linking associated smallholder farmers to agri-food enterprises within organized value chain will enhance their capacity to meet the more demanding requirements of growing urban population in Myanmar and abroad.

(iv) Develop rural infrastructure and promote rural agro-enterprises and local business environments that energize the economic texture of rural Myanmar.

28. Against this evolving strategy and policy environment, the consultations held during the preparation of the ADS have highlighted the following key priority policy issues and options that need to be considered if Myanmar is to lay the foundation for rapid, sustainable and inclusive agricultural and rural development.

3.2 Integrated Value Chain Development

3.2.1 Smallholder Promotion

29. With 80% of farm holders having less than 10 acres, the ADS cannot ignore male and female smallholder farmers and, especially, female smallholder household members who perform most tasks in crop agriculture. Regional experience indicates that emphasis on male and female smallholders might not only bring benefits in terms of poverty reduction and reducing inequality, but also in terms of economic efficiency and growth.

30. In the case of rice intensification, for example, Asian success stories, whether for domestic consumption or export, have come from smallholder agriculture, rather than large-scale plantations. Some of the most dynamic rice economies in the past 20 years (Vietnam, Cambodia, and China earlier) were all based on the development of the smallholder rice sector. Studies since the early years of the Green Revolution in the mid-1960s have consistently shown the lack of any significant economies of scale in wetland rice cultivation. Indeed, many studies have shown an inverse relationship between farm size and productivity.

31. While rice exports from Myanmar have fallen dramatically since the early 1960s (when it was the largest exporter in the world), this reflected the negative impact of the then Government's procurement policy and control of the export trade. In contrast to the decline in the rice sector, the rapid growth in production and export of pulses, following domestic and export trade liberalization in 1990, is largely a smallholder success story that highlights the critical need to get prices and incentives, and thus policy, right. Pulses are now the country's largest agricultural export item, with exports valued at about $1.1 billion in 2015/16. What deserves emphasis here is that while an approach based on smallholder agriculture is vital on equity grounds as a way of ensuring inclusive growth, it may also be justified on efficiency grounds.

32. In other subsectors, the scope and potential for smallholder agriculture also needs to be properly considered. Oilseed production (primarily groundnut, sesame and sunflower), which in terms of cultivated area is almost as important as pulses, is also dominated by smallholders. Even in the case of other crops, such as rubber, which has been one of the more dynamic sectors over the last 10 years, generating annual exports of over $300 million, a smallholder approach is certainly possible as was shown in the past in Malaysia and more recently in Vietnam — although success in this area would also depend on the development of a well-functioning financial system able to provide medium term loans to smallholder farmers as well as the provision of appropriate support services such as access to improved clone and related technology. In other subsectors, such as sugar and even oil palm smallholder farmers can be involved throughout grower schemes and contract farming, although the nutrition impacts of consumption of sugar and palm oil should be considered [9].

9 Overweight and obesity are rapidly increasing in Myanmar: a World Health Organization (WHO) survey in 2014 showed 14.1% of men and 30.8% of women to be overweight or obese

33. Regional experience from both South East and South Asia show that smallholder livestock, aquaculture and horticulture production can also be effectively linked to value chains. Growing demand for high quality animal protein will also encourage the growth of feed crops such as maize and soybean, and animal feed processing. Fisheries are already an important export sector and given the country's long coastline offer considerable potential, while there is also substantial scope for aquaculture. Other cash crops such as tea, coffee and cocoa, also offer potential, particularly in some of the country's upland areas where rural poverty is at its highest. In fact, the strong urban demand for many of these commodities in rapidly growing economies enables smallholder households engaged in their production to take on the nature of small local businesses, supplying local markets and trading systems.

34. Wherever smallholder production is efficient and competitive, and thus financially and economically viable, the urgent need to tackle rural poverty and raise rural incomes makes the promotion of smallholder agriculture a high priority.

3.2.2 Agribusiness and Value Chain Development

35. While Government of the Republic of the Union of Myanmar (GORUM) and the other agriculture sector stakeholders stress the importance of smallholders being at the core of Myanmar's agricultural (and rural development) strategy, this does not exclude agribusiness.

36. Agribusiness' most critical role is in the development and improvement of the supply chain. On the output side, this not only includes traditional areas such as storage, processing and marketing but also value-addition in terms of packaging, branding, logistics services, and niche market development. On the input side, it includes the supply of production inputs, particularly fertilizers and agro-chemicals, seeds, feed, irrigation equipment, power tillers, tractors, threshers, combine harvesters, and increased access to pluralistic sources of extension and finance.

37. Clearly, where smallholder agriculture is at the core of the production strategy, small farmers must be effectively linked to the supply chain. In addition to physical connectivity by road, river, or mobile phone and internet, it is also important that smallholders have a voice in the supply chain and benefit from the value addition that occurs. Inclusive agribusiness also implies a strengthened capacity of smallholder farmers to negotiate and honor more favorable contracts.

38. A key factor in ensuring an 'inclusive' value chain development is a governance structure within the value chain that assures a fair distribution of benefits between all parties. Strong farmer organizations, which can also be investors in supply chain companies, are one way of ensuring that benefits are shared through the supply chain. At the same time, an appropriate regulatory framework is needed to help balance the power and interests of larger companies and small farmers, as well as to assure compliance with social and environmental safeguards of agribusiness investment. To take best advantage of value chain integration smallholder farmers would best associate to increase their supply chain linkages, technical efficiency and bargaining power. Given the moderate social capital in many Myanmar villages, improved smallholder association will require a suite of policy and investment support, including: (i) well governed, human capital empowered, non-politicized farmer organizations partnered to viable value chains; (ii) a reduction in the costs to doing business locally; (iii) long-term public commitment with short term interventions, while avoiding dependency syndrome; (iv) robust local government support; and (v) strong localized technology and innovation backstopping.

3.3 Agricultural Diversification

3.3.1 Issues in Rice Intensification

39. Given the importance of rice as a staple food and the historical importance of rice exports, a rapid expansion in rice exports is a Government priority. There is, moreover, considerable domestic

(WHO 2014). SDG 2 aims to end all forms of malnutrition (under and over nutrition). The disease burden in Myanmar is changing with an increase in non-communicable diseases like heart disease now in the top 5. Research (Ye Sun et al. 2015) showed that 'palm oil represents a significant source of saturated fat intake in many emerging economies where the incidence of cardiovascular disease is increasing rapidly. These results thus support a reduction in the use of palm oil by replacing it with vegetable oils low in saturated and trans-fat.'

and foreign private sector interest in making this a reality, particularly through the modernization of the plant genetics, seed certification, paddy processing and marketing, and logistics systems. At national level, an increase in rice exports would help diversify an agricultural export base that is currently heavily dependent on bean and pulse exports. Liberalization of the export trade has already resulted in a sharp increase in exports.

40. While undoubtedly there is a significant potential to boost domestic productivity, and improve quality through more uniform varietal use and investment in modern processing and marketing systems, the world rice market is currently extremely competitive. Thailand remains a leading player in terms of the export of high quality rice, while Vietnam and India are now major exporters, and along with Pakistan can export (medium) quality rice at low prices, often on government to government (G2G) contracts. New market entrants are Brazil and Cambodia.

41. To be competitive, Myanmar needs to convince the market that it will have a continuous exportable rice surplus meeting the order size and is committed to improving its quality and price competitiveness to compete on an FOB basis with prices offered by Vietnam and Thailand. This will require significant investment to strengthen the smallholder production base, including improved seed, more uniform varieties, particularly by location, quality and timely delivery of inputs, access to credit, and efficient use of fertilizers, other agro-chemicals and water. At the same time, it will require major investment in rice processing and post-harvest technology, packaging and branding. Such investment needs to be both demand-driven and led by the private sector to minimize the risk of over-investment and to ensure that an appropriate choice of technology in rice processing is made.

42. Although, from the farmers' perspective, paddy has the advantage of a dependable market, returns for paddy cultivation, particularly for the monsoon crop, tend to be low. Similarly, given the small size of paddy farms, the boost to farm incomes through rice intensification is often limited, resulting in other farm and non-farm activities competing with paddy. Thus, while in some areas, such as the Ayerwaddy Delta, paddy may well remain as the mainstay of the farming system, elsewhere other cash crops such as pulses, oilseeds, fruits and vegetables, livestock, and fisheries will all be part of the farmers' decision-making process. Thus, rather than an excessive focus on rice, there is a need to think in terms of rice-based farming systems that will encompass a range of non-paddy options depending on location. Rice fortification might provide opportunities to add-value to rice and contribute to improved nutrition through access to typically lacking vitamins and minerals including iron, vitamin A, and several B vitamins.

43. There have been only limited improvements in drainage and land development. Consequently, and despite strong farmer demand, paddy fields in most of the delta areas are difficult to convert to upland crops cultivation in summer thus limiting diversification opportunities and leaving farmers in a rice-centric trap. Change from a rice centric policy to a food basket system will require significant investment in water management, particularly in low lying areas and the delta. In upper Myanmar irrigated tracts with better water control systems, farmers are switching to other profitable crops e.g. horticulture products.

3.3.2 The Scope for Diversification and Growth of the Non-Farm Sector

44. Improvements in post-harvest systems, marketing and processing within all subsectors are necessary to take agriculture forward. Value addition processing linked to cash crop production (e.g. fruit, vegetables, sugarcane, rubber, cassava, oilseeds and nuts) will also contribute to non-farm sector growth. Equally, rising agricultural and rural incomes help to promote growth in areas such as construction, retailing and services, further strengthening the non-farm sector. Opportunities in the non-farm sector will also become increasingly important in the farm household decision making. Indeed, evidence from countries like Malaysia and Thailand, those are already well advanced in their rural transformations, indicates that at some point a process of 'de-agrarianization' sets in, with the non-farm sector becoming more important than the agricultural sector as a source of income. The non-farm sector tends to be particularly attractive to the younger generation, who may also migrate to urban centers rather than remaining on the land (Vokes, 2013).

45. In Myanmar's case, outmigration from

agriculture and rural areas has occurred because of the negative impact of earlier government policies as well as the negative impact of the sharp appreciation in the Kyat from 2006, which has seriously undermined the returns to most agriculture. There are estimated to be well over 4 million Myanmar people working in neighboring countries, especially in Thailand. While many may well return as new opportunities emerge in Myanmar, experience from elsewhere in the region suggests that once people have left agriculture it is difficult to attract them back. Such outmigration clearly has implications for rural labor supply and thus mechanization. It also leads to the ageing and feminization of agriculture. Myanmar is already experiencing a steady rise in the average age of farmers, despite it being at a relatively early stage in its rural transformation.

46. A strong agricultural economy based on smallholder farmers' development will entail a growth of the rural non-farm economy. This can be accelerated through public investment in rural roads and electrification, and public-private investment in telecommunication and market infrastructure (market places, warehouses, collection centers and packing houses). Subject to a supportive policy and investment environment and improved social capital, a constellation of SMEs well integrated with their farm-based and with larger agribusiness concerns within the supply chain could stimulate the growth of an inclusive rural economy.

47. In poor rural areas, most off-farm employment is in services, reflecting the typically low entry barriers for services and few economies of scale (which processing typically does have). In contrast to products that would require sufficient through put and plant scale to be competitive, there are several agriculture-related services that include both value added processing and other services including:

- Upstream: groundwater tubewell drilling and maintenance services;
- Upstream: equipment operation, rental, and provision of services;
- Upstream: mobile labor teams for land preparation and chemical application, with proper safety gears and equipments;
- Upstream: farmer-to-farmer (F2F) and enterprise-to-farmer (E2F) private advisory services;
- Upper-mid-stream: drying, sorting, cleaning services for paddy and pulses at district level;
- Lower-mid-stream: sorting and handling of vegetables, milk and fish collection, etc.
- Mid-stream: transport services.

3.4 Institutional Development

3.4.1 Land

48. Secure and unchallenged land rights are a prerequisite for increased investment in agriculture, whether by smallholders or larger-scale commercial enterprises. Land ownership is vested in the State since 1953. Farmers had the right to use the land under leasehold and tenant arrangements but were legally not able to buy or sell land. Neither could land be used as collateral. While this system did give farmers a degree of security of tenure, it was always subject to arbitrary interference from the landlord and subject to confiscation. In practice, land transfers have occurred, driven largely by the pressure on living standards and rising indebtedness resulting in stress sales. In March 2012, two new land laws were passed by parliament, namely the Farmland Law and the Vacant, Fallow and Virgin Land Management Law (VFVLM Law)[10].

49. The Farmland Law builds on the constitutional principle of the "Right to Ownership" and provides a tool for farmers to register their land, albeit as a land use right, over which a Land Use Certificate (LUC) can be issued. Although the state continues as the allodial title holder, certified farmland can be mortgaged, sold and transferred. While consistent with other reforms that are moving Myanmar towards a market based system, there is growing concern that the Farmland Law does not provide sufficient security of tenure for smallholders. First, the law only applies over "farmland" which is narrowly defined and does not include all agricultural production systems such as agro-forestry or shifting and rotating agriculture. In addition the farmland law does not cover other important agrarian production systems that are

10 These two land laws are currently subjected to the reviewing process for amendment by the Parliament.

important for food security and especially nutrition like fishponds, grazing lands and home gardens in rural settlements. Second, the issuance and holding of a LUC over farmland is conditional to crop choices; unauthorized changes may result in land confiscation, landlessness and loss of livelihoods. The law includes administrative mechanisms to request crop and land use changes, but these are cumbersome, and the authorization of such requests is strongly centralized, especially for lands classified as paddy fields. While the dynamics of a land market support the effective use of land, it can also facilitate stress sales because of indebtedness. The other legal building block of land management, the VFVLM Law, is an instrument to allocate temporary land use rights over land classified as being "Vacant", "Fallow" or "Virgin". Unclear definitions and perceptions of these land classifications as well as out-dated mapping of such lands result in the alienation of land from customary rights holders who do not qualify to secure their land under the Farmland Law. In addition, elder or legislation such as the Land Acquisition Act (1894) enables that land can be legally confiscated in the 'national interest' and seized without modern day due process or compensation. There have been many reports in recent years of 'land grabbing, either as legal acquisition or unlawful confiscation often for larger-scale projects by agribusiness companies.

50. The challenge of 'land grabbing' or land confiscation is not new and is not always an illegal practice. In fact, old legislation (the 1894 Land Acquisition Act; the 1991 Law on the Management of Cultivable land, Fallow land and Waste land) and new legislation (the 2012 VFVLM law) have encouraged land confiscation through legal means for public and private purpose. Applying these laws without due process may be considered as unlawful land confiscation. While both legal and unlawful practice occurs, the liberalization of the economy and the encouragement of some public (hydropower installations) and private (agricultural and mining concessions[11]) investments are certainly exacerbating land confiscation. In fact, most of the land confiscation claims documented by the Parliamentary Land Confiscation Inquiry Commission relate to the pre-2012 period. Practices of land confiscation contribute, beyond doubt, to the many land disputes that have arisen over the last few years, setting up smallholders against land allocation beneficiaries. In addition, large scale land allocations for private investment in the agricultural sector have not, in many cases, yet resulted in tangible development of these areas. As little as 20-25% of land allocated under the VFVLM Law are actually being used according to contractual lease contract agreements. It will be difficult in such an environment of dispute and claims to plan for agricultural growth, especially for the smallholder sector. It is also acknowledged that the poor handling of land issues such as confiscation may impact more profoundly on Myanmar society and the national reconciliation and peace building process than just on the agricultural growth process. Sustainable economic growth cannot be achieved under circumstances of protracted conflict. Dealing with land challenges therefore must be considered in a larger context than just as a production factor for agricultural production; it is an integral part of the peace process, as well acknowledged by the 21st Century Panglong process.

51. In a response to the growing concerns on a broad set of land issues that are negatively impacting on the social fabric and the development processes of Myanmar, the Government, in January 2016, endorsed a comprehensive National Land Use Policy (NLUP). The NLUP policy development process, using an unprecedented multi-stakeholder consultative process managed by both the public sector and civil society, stands out as a milestone in Myanmar´s history[12] . The NLUP is a "living policy" adjustable over time as more information becomes available, that adopts a broad set of international good practice aligned with the Voluntary Guidelines on the Responsible Governance of Tenure (VGGT), of which Myanmar is a signatory.

52. The NLUP covers a broad range of issues including: (i) creating an institutional and legal

11 During the ADS state and regional consultations, Kachin state participants highlighted that due to gold and jade mining, the water flows become irregular and that makes crop cultivation more difficult.

12 The process included public consultations in every State and Region of the country, a series of expert roundtables, a national workshop, and submission of 909 written comments over a period of fourteen months that were carefully considered and incorporated into the final document.

framework that comprises a National Land Use Council, the development of new legislation and the harmonization of existing legislation; (ii) land use planning; (iii) strengthening land administration services; and (iv) land dispute resolution. It considers the drafting of an Umbrella National Land Law that would preferably convert into law the basic principles and guidance captured in the NLUP. The Umbrella Land Law would specifically identify the need for additional subject matter law development for each of the issues that will need to be covered. One such specific new law would be a Land Rights Law that unequivocally identifies the nature of rights over land and property that will be recognized, as well as mechanisms to acquire and transfer these rights. This law would thus address issues of land acquisition for public purpose and private investment, as well as tenure security issues for smallholders. Current ongoing ad hoc law amendments such as these of the Farmland law, the VFVLM law and the Land Acquisition law will need to fit into this future framework. It is also essential that a future Land Rights law addresses the issues of customary land rights, occurring mainly but not exclusively in ethnic minority upland states. The recognition, documentation and registration of customary land rights, often of a communal nature and sometimes established under shifting cultivation and agro-forestry systems, is not only necessary to protect the land rights of smallholders but also for success in national reconciliation efforts.

53. While appropriate legislation that gives farmers secure rights of use, transfer, inheritance, exchange and collateralization is essential, effective **implementation of the law(s)** is equally important. This requires an appropriate institutional structure and capacity at both the national and especially local level to deal with a range of land administrations tasks and service delivery, including land surveys, updating existing cadastral data and generating new data in areas not yet covered by cadastral surveys, land titling, data management, and land dispute resolution. It is also required that all stakeholders including land rights holders and land administrators comply with the law. Poor enforcement of good law is not conducive for the development of the agricultural sector. A law setting the legal framework for land use planning is still absent and will need to be drafted. Such a law should define land-use planning tools to be used (i.e. different types of plans at different levels, including Local Adaptation Plans of Action (LAPAs), institutional responsibilities, needs and rights for public participation, information sharing, and other basic principles.

54. Several donors including United States Agency for International Development (USAID), Swiss Development Corporation (SDC), the European Union (EU), Department for International Development (DFID), LIFT and their implementing partners have already been supporting development and implementation of the National Land Use Policy through various pilot activities and a set of strategic interventions. These pilots generally consist of conducting ongoing work on law harmonization in relation to tenure security and land resource administration in the country, conducting a national land inventory, developing participatory land use planning processes, modernizing the land registration system, securing land resource tenure rights at the village or community level, developing local dispute resolution mechanisms, and development of a government-managed open access spatial database (One Map Myanmar). These NLUP implementation pilot programmatic activities are all closely interrelated to one another, designed to be scalable over time, and all pilot activities might feed into and support the development of the One Map Myanmar concept.

3.4.2 Rural Finance

55. The main institution providing finance to the rural sector had been the Myanma Agricultural Development Bank (MADB). MADB is not a commercial bank; it is a financial institution that provides subsidized credit to farmers. The bulk of MADB lending consists of seasonal loans to paddy farmers that meet about 50% of production costs. A large number of the farming and rural population rely on microfinance institutions (MFI) and the informal sector - traders, shopkeepers and moneylenders for their credit needs usually at very high rates of interest.

56. The Myanmar Economic Bank (MEB) and the Cooperative Bank (CB) provide loans to small businesses and traders, who in turn might lend to farmers. While the businesses and traders benefit from relatively affordable credit from MEB or CB,

their lending rates to farmers are much higher. While part of the interest rate differential can be explained by the acute shortage of capital in the rural economy, the lack of collateral and high risk of default, and the high administrative costs, the high lending rates to farmers are a disincentive to investment. Equally, such high rates are a serious disincentive to productive investment and make it difficult or impossible for low income rural inhabitants to break out of their poverty.

57. A rapid expansion in rural credit, both short-term seasonal credit, as well as more medium-to-long–term credit will be needed if agriculture is to grow rapidly. While the MADB has an extensive branch network that covers over 60% of the county's townships (GIZ 2016), this type of public institutional banking is fraught with risk and its expansion is not a recommended rural financial services strategy. Enabling other banks, including private banks, to expand into the rural sector will be necessary to meet the rising credit need. While financial sector reforms, including the removal of interest rate caps, would accelerate this process by making such lending more profitable, private banks also have the opportunity to use digital financial services to reduce the cost and risks of serving a clientele that consists of many relatively small farmers. At the same time, private banks can help the sector more generally by increasing credit supply to agribusiness companies and suppliers. Recent positive experience with a donor-financed "loan loss reserve" to support hire purchase procurement of agricultural machinery provides one avenue for improved financial services for agriculture. Others could include, inter alia: (i) the establishment of a national loan guarantee fund: (ii) a donor-funded facility that refinances a percentage of private bank lending to agriculture at a discounted rate; (ii) a donor taking an equity position in a private bank in return for the development of cash-flow-based financing with reduced equity requirements; or (iv) the use of a "compensating balance" to secure digital financing of smallholder farmer seasonal input costs. The private banking sector should also be assisted to develop commercially viable products for agricultural value chain financing. The government has transferred MADB from MOALI to MOPF (Ministry of Planning and Finance) in its former place. The MOPF has been designing financial services system of MADB to better meet the demand of agricultural and rural sector. The role of strengthening MOALI is supporting such reform measures. Beside the technology transfer function, MOALI should play the role of strengthening farmer cash flow management and repayment capacity in order to help them pull out of the debt trap.

58. Microfinance has a particularly important role to play in meeting the needs of poorer, more vulnerable groups, including women, and in supporting non-farm economic activities. Since the late 1990s, there have been several successful externally funded microcredit/microfinance projects in Myanmar, based on the *Grameen* model. There are also several government and non-government organizations involved in microcredit. Developing sustainable microfinance models, however, can be a difficult and controversial area, as demonstrated most recently in India and China. Microfinance Institution (MFI) interest rates needed to ensure sustainability are often high, and, while rarely a problem for cash-strapped borrowers for whom access to finance is more important than its cost, such rates can be seen as politically unacceptable and there is no single blue-print for MFI development. Basic conditions for effective MFI development include a sound MFI law, including National bank oversight of MFI management, effective commercial relations between private banks and MFIs and long-term donor and government commitment to support the emergence of a private MFI sector. Other promising financial innovations include mobile transfer, payment and banking, no-frills saving accounts, credit plus approaches, and person to person (P2P) lending provided through a P2P platform, with advances in technology helping to reduce the transaction costs (see ADB 2012).

59. Although still an evolving area in the development field, the introduction of crop and livestock insurance could be one element of Myanmar's rural finance sector. As the cyclones in 2008 and 2010 and floods and landslides in 2015 have shown, disaster risk is high, while the country is also vulnerable to increased risks from climate change. Myanmar has the second highest risk assessment (after Honduras) on the 2017 Global Climate Risk Index. This climate risk, and its likely increased frequency as a result of climate change, raises the cost and complexity of crop and livestock insurance, which can only be viable for the insure if accompanied by a substantial subsidy, typically

in the range of 60% to 70% of total cost. Nepal, for example is progressively introducing such a subsidy (60%), however, at this juncture, many of the offered private sector insurance products are very conservative in their loss cover. In India, the recent attempt to introduce a national agricultural insurance scheme has stumbled badly. Myanmar should approach any proposed agricultural insurance scheme with caution, carefully assessing the financial and economic benefit of such an approach.

3.4.3 Research and Extension

60. Myanmar's system of research and extension has been commodity and productivity (not profitability) focused, with little coordination between the large numbers of different institutions involved (UNDP 2004). Crop research is carried out in different departments (e.g. Department for Agricultural Research (DAR) and Department of Agriculture (DOA)), whereas very little institutionalized research takes places in livestock and fisheries. Moreover there are duplication of research projects between DOA, DAR and YAU. There is no national level research plan, priorities and corresponding budget allocation plans. In the case of extension, there is little use of participatory methods or focus on farmer's needs, while the coordination between research and extension is very weak. Agricultural research and extension, furthermore, are grossly underfunded, with their existing budget representing about 1% of the overall MOALI budget and less than 0.1% of Agricultural GDP.

61. The research and extension system has been excessively focused on maximizing crop yields, to the relative neglect of other issues of critical importance to farmers, such as cost of production, profitability, pests and diseases, water management, overall farm income, and suitability to agro-ecological zones. The uptake of improved technologies, therefore, has been limited. A major reorientation of both research and extension to a farming systems approach will be required. This includes the clear definition of public and private sector roles in agricultural research and extension delivery in a modern agricultural economy.

62. On the research side, Myanmar can draw on the existing knowledge base within the Consultative Group for International Agriculture Research (CGIAR) system and focus on adaptive research. It must reorganize its research governance under a national structure, remove research duplication where it exists, create new research capacity where necessary, and build research center linkages to ensure a farming systems approach to research planning. Given the dire research budget, the governance body should explore opportunities for public-private partnership in research financing, including with international agribusinesses, and the possibility of research centers retaining resulting income for additional research and equipment and staff incentives. Viet Nam successfully introduced this model almost two decades ago.

63. With extension, Government should redefine its role from that of delivering extension services, which it has not be able to do effectively in the past, to becoming the overall facilitator of a system of pluralistic, farmer-responsive agricultural extension services. This would include developing clear roles and opportunities for expanding and institutionalising F2F and E2F advisory services. Extension implementation should be devolved to regional and Township level with Union extension staff providing capacity building, coordination and monitoring services to locally managed extension centers. The exact nature of regional/township extension structures and delivery systems should be a matter for local administrations under the framework of pluralistic, farmer-responsive service delivery. The introduction of a voucher system for farmers to purchase needed services from their preferred service provided should be explored.

3.4.4 Farmer Organizations and Cooperative Societies

64. In an agrarian structure characterized by smallholders, farmer organizations and cooperative societies can play an important role in facilitating farmer access to affordable inputs and support services, including extension and credit and in strengthening the bargaining power of farmers in both input and output markets and in ensuring the effective integration of smallholders into value chains. Government promoted Farmers Associations played a key role in the agrarian transformations in Taiwan and in Korea. Elsewhere attempts to develop top down associations or cooperatives have generally been far less successful. In Myanmar, the Cooperative Societies

Law does not meet international norms concerning cooperative autonomy, governance or regulation, which has contributed to the generally low public trust in cooperatives, furthermore, rural credit cooperatives can only lend to landowners, limiting their relevance to non-farm rural households, while women's participation in rural cooperatives is very low. Hence, a 'bottom-up approach' encouraging the growth of more informal grassroots community based organizations, user-groups, self-help groups and associations, is likely to offer the best route to the development of more viable and sustainable farmers organizations pending the integration of international cooperative principles into the law of cooperative societies of Myanmar. NGO support in building capacity of such organizations is likely to be important. Since Cyclone Nargis there has been a rapid growth of non-government organizations (NGOs) in Myanmar. This is also an area where international NGOs (INGOs) can play an effective role.

3.4.5 Policy Analysis, Planning, and Monitoring and Evaluation

65. Myanmar has embarked on an ambitious reform process that is both challenging and complex, particularly in the case of the agriculture sector and the rural economy. Policy and planning needs to shift from a commodity/sub-sector focus to a farming systems/rural household focus and from a system that sets arbitrary targets to one that sets realistic output goals that take into account both market demand and potential productivity gains and constraints faced by producers. If development is to be driven by the private sector, whether small- or larger-scale, an enabling environment, including reducing the cost of doing business and the proper price incentives needs to be created. Policy in the rice sector is particularly challenging given the importance of rice as the basic staple food and wage good and the need to balance the interests of producers and consumers, while also considering the opportunities in the export market.

66. The planning process also needs to be more decentralized and participatory, allowing farmers to pursue local comparative advantages and the special needs of remote and upland areas.

67. The LIFT-assisted Village Development Planning (VDP) process, implemented by DRD, provides a sound basis for this process. VDPs could be supported by the inclusion of Local Adaptation Plans of Action (LAPA)[13] to identify local options for adaptation, for integration into local development plans. The lack of reliable data and statistics is a major constraint to effective policy analysis, strategy development, and planning that requires urgent attention. It is also a basic requirement for effective monitoring of policy and planning outcomes to enable policy adjustment. Systematic monitoring and evaluation of policy is largely absent: the organizational structure of MOALI include very few policy or monitoring and evaluation (M&E) units dedicated to the regular preparation and dissemination of professionally and independently prepared M&E reports.

68. The reorientation and strengthening of the policy and planning system for agriculture and the rural sector is clearly a priority area where extensive capacity development and resource allocation is needed. MOALI has already established a M&E Division with two units of Agricultural Policy Unit and M&E Unit under the Department of Planning (DOP); however, this unit requires strengthening and considerable capacity building.

3.5 Infrastructure Development

69. While there has been some investment in road and irrigation infrastructure, Myanmar's rural infrastructure overall is poor. The investment needs are huge, but in addition to government and both multilateral and bilateral DPs investment, the private sector can play an active role, notably in mobile phone, energy and port investments and through public private partnerships. Communities can also play a role through community driven development (CDD) infrastructure programs. While absorptive capacity will be an issue, a significant improvement can be expected within a 5-year period.

70. From an agricultural sector perspective, priority areas include connectivity in all forms, roads, including village to farm and farm to market roads, bridges, mobile phones and internet. Given Myanmar's abundant water resources, irrigation

13 Both Nepal and Pakistan are successfully applying LAPAs in their local development planning processes and allocating block grants for LAPA implementation.

expansion will be important to reducing the production risks in an increasingly variable climate environment[14] while rebuilding the country's comparative advantage in rice and expanding opportunity for a wide range of other commodities. At the same time, the legal and regulatory framework on water management and use needs improvement (ADB, 2012). Expanded rural electrification will be necessary for the development of both the farm and non-farm sectors. In the case of small-scale rural infrastructure development, a pro-poor CDD approach will help generate employment and incomes, and encourage a sense of ownership.

71. The efficient operation and maintenance (O&M) of infrastructure should be a priority, requiring the allocation of adequate fiscal resources and the involvement of the private sector, including local communities. O&M of publicly-funded infrastructure such as irrigation schemes, rural roads, and bridges is mostly implemented by the public sector, but, due to insufficient financial and human resources, its effectiveness remains limited. Involvement of farmer groups and communities, and institutional mechanisms that make their involvement effective is necessary for effective rural infrastructure O&M.

3.6 Imbalance between Budget and Policy

72. The distribution of the capital budget among different departments and units of MOALI is shown in Table 1 and Figure 2 and Figure 3. Three departments absorb 95% of the capital budget: Department of Rural Development (49%), Irrigation and Water Utilization Management Department (35%), and Agricultural Mechanization Department (11%). The combined activities related to research, extension, education, planning, land records and statistics, fisheries, and livestock receive only 5% of the capital budget.

73. Given this unbalance, it is difficult to ensure that the key policy goals of the government related to the land issues, promoting farmer organization, improving productivity and diversifying towards higher value added, can be successfully implemented. The ADS will redress this unbalance by providing a direction for future budget preparation.

14 Myanmar's ranks 2 among the countries most affected by climate risk over the period 1995 to 2013 (Kreft et al., 2015).

Table 1 Initial Capital Budget of MOALI Year 2016 - 2017 (MMK in Billion)

No	Department/ Organization	Construction	Machineries and Equipment	Other	Total	Shares
1	Minister's Office	0.023	0.265	0.008	0.295	0.0%
2	DOP (Department of Planning)	0.000	0.257	0.000	0.257	0.0%
3	DOA (Department of Agriculture)	5.113	6.767	13.416	25.296	3.5%
4	IWUMD (Irrigation and Water Utilization Management Department)	225.252	9.193	18.175	252.621	34.9%
5	DALMS (Department of Agricultural Land Management and Statistics)	0.119	0.336	0.026	0.480	0.1%
6	AMD (Agriculture Mechanization Department)	0.917	76.800	3.808	81.526	11.3%
7	YAU (Yezin Agricultural University)	1.314	0.210	1.382	2.906	0.4%
8	DAR (Department of Agricultural Research)	2.924	1.548	0.153	4.625	0.6%
9	LBVD (Livestock Breeding and Veterinary Department)	1.232	0.279	0.026	1.537	0.2%
10	DOF (Department of Fisheries)	1.226	0.229	0.133	1.587	0.2%
11	DRD (Department of Rural Development)	283.277	2.623	64.082	349.982	48.4%
12	UVS (University of Veterinary Science)	0.760	0.183	0.000	0.943	0.1%
13	Department of Cooperatives	0.071	0.138	0.345	0.554	0.1%
14	Small Scale Industries Department	0.038	0.173	0.008	0.220	0.0%
15	MADB (Myanma Agriculture Development Bank)	0.000	0.024	0.000	0.024	0.0%
	Total	522.265	99.024	101.561	722.851	100.0%

Source: MOALI

Figure 2 Capital Budget MOALI 2016-17 (Billion Kyat)

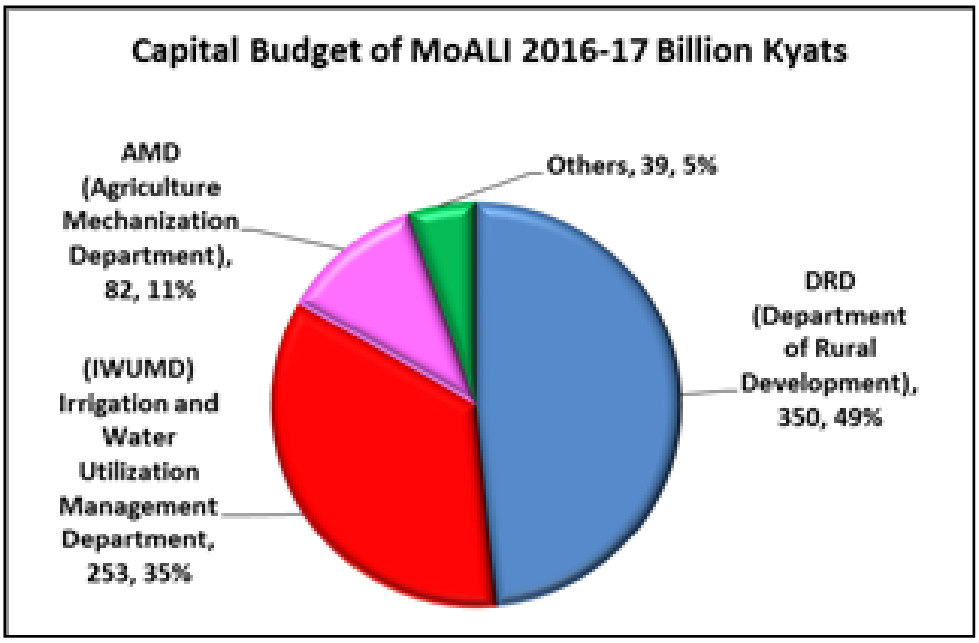
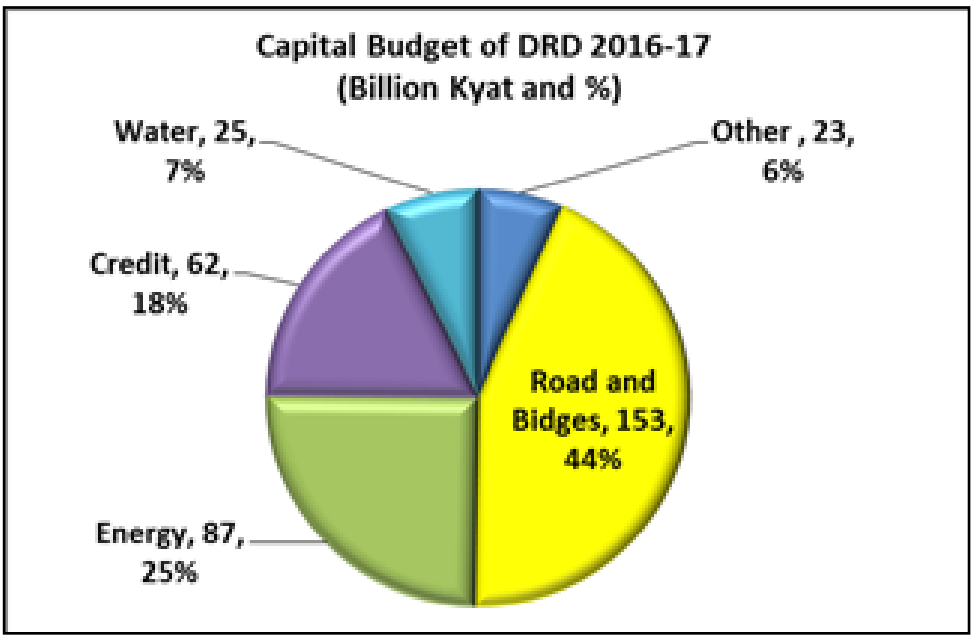


Figure 3 Capital Budget of Department of Rural Development 2016-2017 (Billion Kyat)



Source: Based on data from DOP of MOALI.

74. After the merging of three former Ministries (agriculture and irrigation; livestock, fisheries, and rural development; and cooperatives), the new Ministry (MOALI) clearly covers not only the domain proper of agricultural sector including crops, livestock, and fisheries, but some key rural development areas including rural infrastructure (rural energy, potable water), credit, and cooperatives. MOALI is thus responsible for both the systemic nature of the agricultural sector (including crops, livestock, and fisheries) and the linkages between farm and non-farm activities that are enhanced by improving connectivity (eg rural roads and electricity) and can lead to the emergence of a vibrant rural economy. This is important, not only for increasing farmer's income, but also to ensure employment and income diversification for marginal farmers and the landless.

75. Overall more than 80% of MOALI capital expenditures are for hardware for agriculture and rural development, including rural roads, rural energy, irrigation systems, potable water, buildings, equipment, machinery, and facilities. Although mostly needed, there are two issues of concern addressed in the ADS. The first relates to the need for integrating 'hardware" development with 'software' development, including social mobilization, participatory planning, farmer organizations, and food and nutrition security, which could also assure closer collaboration between departments, resulting in improved investment efficiency and impact [15]. The second is to assure effective asset management. The effectiveness of MOALI's infrastructure investment could be strengthened by: (i) conducting ex-ante and ex-post evaluation of investments; (ii) M&E of the infrastructure performance in providing the expected services; and (iii) involving beneficiaries and stakeholders in the design, O&M, and M&E of infrastructure investment.

15 Closer integration between DRD, DOA, and IWUMD, for example, might enhance the impact of irrigation schemes through: (i) better connection to market via rural roads; (ii) improved linkages between smallholder farmers and enterprises through organization of farmer groups or establishment of contract farming relations to produce goods in high demand by final markets; (iii) improved the efficiency of water use through extension activities on both crop husbandry and water management; and (iv) helping diversifying towards higher value produces through the design of irrigation systems and institutions for O&M that are not rice-centric.

4. POLICIES AND STRATEGIES

4.1 Agriculture-related policies and strategies

76. Agricultural policy and planning in Myanmar is formulated within a context of policies, plans, and regulations that include the National Economic Policy, the Framework for Economic and Social Reforms (FESR), Myanmar Comprehensive Development Vision (MCDV), the National Comprehensive Development Plan (NCDP), the Foreign Investment Law, and the National Export Strategy (NES). Each of these documents, although addressing general issues and not being specific to agriculture, contains several important implications for agricultural development.

77. The 2016 National Economic Policy "aims to establish an economic framework that supports national reconciliation, based on the just balancing of sustainable natural resource mobilization and allocation across the States and Regions." It contains 12 policies addressing: (i) financial resource expansion; (ii) efficient public and private enterprises; (iii) human capital development; (iv) rapid development of key economic infrastructures; (v) job creation; (vi) balanced sectorial growth while improving food security; (vii) economic rights; (viii) financial stability; (ix) environmental sustainability; (x) fair and efficient taxation; (xi) intellectual property rights protection; and (xii) an adaptable business environment. Activities proposed under the ADS are strongly consistent with these policy objectives.

78. The Framework for Economic and Social Reforms (FESR), prepared in 2012, targets reforms and strategies to improve food security, agricultural growth, welfare and incomes of farmers, farm laborers, and their dependent families. It aims to improve productivity through increased extension services and government loans, removing barriers in supply chains, and moving toward demand-driven market support mechanisms. For example, it proposes to improve productivity targets in the rice sector through "improved seed quality, better agronomic practices, optimized inputs, and integrated pest management".

79. The National Comprehensive Development Plan (NCDP), prepared in 2011, which was preceded by Myanmar Comprehensive Development Vision (MCDV) prepared with Japanese technical assistance, comprises a series of five-year plans covering 2011-2031. The long-term vision related to agriculture and rural development seeks to "increase incomes and living standards of rural people who depend on the agriculture sector in Myanmar more than those of neighboring countries and keeping abreast of developed countries." To achieve the vision by 2030, the following outcomes are sought to: (i) achieve maximum market share in the domestic and world markets for specialty foods and other agro-based value-added products; (ii) improve food security of rural people; and (iii) achieve green growth harmonizing with the natural environment

80. In the short run, the sector objectives include: (i) accelerate the productivity of the agriculture sector; (ii) Increase the productivity of rural agro-based Small and Medium Enterprises; (iii) attract inflow of Foreign Direct Investment (FDI) in the agriculture sector for advanced technology, investment, market and employment opportunities; (iv) improve domestic and export market access, as well as market information infrastructure; (v) develop activities of pure and applied research in the agriculture sector; and (vi) Reduce transaction costs along the value chain as much as possible

81. The National Export Strategy (NES), approved by the Ministry of Commerce in 2015, is a five-year roadmap of the needs and priorities for Myanmar's sustainable development through trade in the following priority sectors: beans, pulses and oilseeds; fisheries; forestry products; textiles and garments; rice; rubber; and tourism. The NES recommends targeted investments for each export sector and addresses constraints in the business environment through cross-sector functions including: access to finance; trade information and promotion; trade facilitation and logistics; and quality management. The NES also aims to enhance innovation capabilities by businesses and trade support institutions.

82. The Myanmar Investment Law (MIL), approved in October 2016, aims to promote foreign investment. The MIL, which integrates the 2012 Foreign Investment Law and the 2013 Citizens' Investment Law, includes a new range of tax breaks on investment. According to the MIL, foreign direct investors shall be treated no less favorable than it accords to Myanmar citizens and investors. The ADS will align agribusiness investment with the safeguards for small holders under the MIL.

83. The 2014 National Water Policy (NWP) of Myanmar is the first to integrate water policy for the watersheds, rivers, lakes and reservoirs, groundwater aquifers and coastal and marine waters. In Myanmar no single institution is responsible for the management of water resources. The NWP will provide the framework for a system of laws and institutions and a plan of action including the Myanmar Water Framework Directive (MWFD), which will provide an umbrella statement of general principles governing the exercise of legislative and executive powers.

84. Other agricultural related strategies and plans have been formulated in recent years include the: (i) Five Year Plan 2016-17 to 2020-21: (ii) Myanmar National Action Plan for Food and Nutrition Security (MNAPFNS); (iii) Myanmar Climate Smart Agricultural Strategy; (iv) Myanmar Rice Sector Development Strategy; (v) White Paper from Rice Bowl to Food Basket; (vi) White Paper Vegetables; (vii) Food Value Chain Road Map; and (viii) Agricultural Sector Policies and Thrusts for Second Five Year Short Term Plan of MOALI (October 2016). A review of these documents indicates three main conclusions:

- **They share similar general views.** They have a similar vision of the agricultural sector with an emphasis on the sector contributing to food security, farmer income, and exports. They prioritize smallholder farmers and resolving land issues, emphasize market linkages and value chains and propose a more diversified agriculture (including livestock and fisheries), moving away from a rice-centric approach. The documents hold a common view on the need of modernizing the system, accelerating mechanization, and achieving recognition in global markets through export growth. All express promote private sector collaboration and cross-sector collaboration;
- **On specific issues they have different approaches** towards such as agriculture's role in addressing the needs of marginal and landless farmers, in particular (i) whether increased agriculture productivity will increase labor demand or enterprise growth will drain the rural workforce — South East Asia experience suggests that there is no single answer to this quandary; (ii) whether inclusive growth and pro-poor agricultural development can be best achieved through the distribution of land, inputs such as fertilizer, seeds, and credit at subsidized prices, or the establishment of safety nets; (iii) whether the promotion of industrial crops implies an industrial policy that ensure that downstream industry is protected from foreign competition; and (iv) the most appropriate mechanisms for improving agriculture access to short- and longer-term finance.
- **They miss essential parts** for the preparation of an Agricultural Development Strategy and Investment Plan. In some cases, the Investment Plan is missing; in other cases, they do not include the monitoring and evaluation framework including targets and indicators, or a risk management section.

85. The formulation of the ADS and Investment Plan builds on this body of work and tries to address the gaps and integrate the contributions into a consolidated document. It includes the

following parts: (a) Principles; (b) Vision; (c) List of Outcomes and Outputs; (d) Investment Plan; (e) Monitoring and Evaluation Framework; (f) Risk and Mitigation; and (g) Implementation Arrangements. The formulation is undertaken with the guidance of the MOALI and the participation of stakeholders including the private sector, civil society, and DPs.

4.2 Agricultural Policy

86. MOALI has prepared an Agricultural Policy (2016) to guide implementation of the Second Five-Year Plan. The policy includes the following objectives:

- to improve food security and safety and balance diet intake during the period of the second five-year plan;
- to ensure farmers fully enjoy their rights and benefit from the emerging economic growth;
- that small scale farmers, livestock keepers and fisher folks, gathered into groups or cooperatives (in which women's participation is mandated), modernize and improve the performance of the entire sector based on transferred knowledge;
- that smallholder farmer's socio-economic status improves though a target program of investment in rural road construction, rural infrastructures development, land use management and small-scale production industry development;
- to secure needed technology and financial assistance from local and external sources for further improvement of crop, livestock and fish production as well as cooperative development;
- to enhance production of high quality grain, meat and fish products for external markets;
- to develop an efficient agro-based industry, including small scale industries, and associated vocational education;
- to increase access to local and external investment for the agriculture sector; and
- to actively ensure full participation of all stakeholders involved in poverty alleviation, agriculture sector development, and sustainable rural development programs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5. DEVELOPMENT PARTNERS' ONGOING AND PIPELINE PROGRAMS

5.1 Investment in Core Agriculture, Livestock and Fisheries

87. Table 2 summarizes Development Partners (DPs) funded projects during the 2010-2105 planning period under four categories together with anticipated donor funded projects during the 2016-2022 planning period, covering all MOALI Department mandates excepting [16] the DRD and the Department of Cooperatives (DOC).

88. Excepting rural development and cooperatives, it is anticipated that overall DP investment in the agricultural sector will increase by 280% from US$ 131.352 million in 2010-2015 to $ 499.609 million in 2016-2022. Between 2010 and 2015, infrastructure development dominated investments in the sector, accounting for $ 63.463 million or 48.3% of all investment. Within infrastructure, irrigation rehabilitation and maintenance amounted to $ 60.212 million or 45.7% of total infrastructure investment in the sector. Capacity development of institutions amounted to almost 30% of total investment, while the remainder was taken up by policy, re gulatory and governance and production enhancement investments in almost equal share. Infrastructure's dominance is expected to continue at slightly increased levels during 2016-2022, rising to $ 269.091 million or 53.9% of total investment. Of this increase, $ 248.934 million will be devoted to irrigation rehabilitation and maintenance.

89. During 2016-2022, investment in the remaining three categories is also expected to rise dramatically; however, their absolute levels will be well below that in the irrigation sector. Respectively, during 2016-2022, investment in production enhancement is anticipated to rise by 313% from $ 18.630 million to $ 77.050 million; investment in capacity development of education, extension and farm organizations is anticipated to rise by 202% to $ 89.401 million; and investments in policy, regulations and governance is anticipated rise by 230% to $ 64.064 million.

90. With regard to the geographical location of development partner's programmes in agriculture, livestock and fisheries sub-sectors, an analysis by the World Bank shows that, of 103 projects examined, the nation-wide distribution included:– 21.1%; Mandalay Region – 13.0%; Sagaing Region – 12.4%; Magway Region – 10.7%; Ayeyarwady Region – 8.9%; Rakhine State – 7.1%; Shan State – 7.1%; Bago Region – 5.9%; Chin State – 5.9%; Yangon Region – 4.1%; Nay Pyi Taw – 3.6%; with the remaining 5 States/Regions each hosting less than 1% of development projects. This analysis shows a clear concentration of DP investment in the Central Dry Zone, with Mandalay, Sagaing and Magway collectively hosting 36% of DP projects.

16 During most of this period, DRD did not yet exist and DOC was not under MOALI.

Table 2 Recent Donor financing (2010-2015) and Anticipated Donor Investment (2016-2022)

Investment Category and Programme	2010-15 ($m)	2016-22 ($m)	% - 2016-2022 Only
1) Infrastructure			
New irrigation	960,504	15,086,805	5.60%
Rehabilization/upgrade of existing irrigation	60,212,790	248,933,737	92.50%
Agro processing	1,031,577	1,132,163	0.40%
Other investments	1,258,152	3,939,217	1.50%
SUB-TOTAL	63,463,023	269,091,922	100.00%
Sub-total as percentage of Grand Total	48.30%	53.90%	--
2) Production enhancement	2010-15	2016-22	
Seeds	2,555,131	8,120,384	10.50%
Soil nutrient management/fertilizers	2,888,546	7,879,871	10.20%
Plant protection	-	1,004,608	1.30%
Agricultural mechanization	4,222,917	9,919,671	12.90%
Investment Category and Programme	2010-15 ($m)	2016-22 ($m)	% - 2016-2022 Only
Access and use of new agricultural practices	5,533,323	10,785,912	14.00%
Water management practices	2,446,734	5,132,985	6.70%
Other Climate Smart Agriculture Practices	113,469	20,249,969	26.30%
Other programs	870,204	13,957,042	18.10%
SUB-TOTAL	18,630,324	77,050,443	100.00%
Sub-total as percentage of Grand Total	14.40%	15.40%	--
3) Capacity development of education, extension and farm organizations	2010-15	2016-22	
Ag Extension	8,492,952	25,749,982	28.80%
Veterinary services	499,088	12,928,521	14.50%
Fisheries/aquaculture extension	3,397,459	16,545,984	18.50%
University curriculum development	725,000	3,355,913	3.70%
Agricultural producer cooperatives	1,553,170	2,644,690	3.00%
Water user groups	701,552	9,581,144	10.70%
Sector associations/trade associations/interest groups	1,509,059	1,478,437	1.60%
Other programs	12,727,810	17,117,261	19.20%
SUB-TOTAL	29,606,091	89,401,930	100.00%
Sub-total as percentage of Grand Total	22.50%	17.90%	--
4) Policy, Regulations, and Governance	2010-15	2016-22	
Land access and management	8,414,595	2,675,299	4.20%
Water management	740,561	661,947	1.00%
Fishery resource management	746,382	51,074,074	79.70%
Sanitary and phytosanitary issues	705,207	948,957	1.50%
Food safety and traceability	705,207	948,957	1.50%
Gender related	648,860	646,370	1.00%
Agricultural policy, value chains, ag inputs, and others	7,691,872	7,108,674	11.1
SUB-TOTAL	19,652,684	64,064,278	100.50%
Sub-total as percentage of Grand Total	15.00%	12.80%	--
GRAND-TOTAL	131,352,122	499,608,573	

Source: World Bank, Donor Coordination Unit

5.2 Investment in Rural Development

91. Rural development and agricultural production or farming (i.e. crop, livestock and fisheries husbandry) are complementary activities. Rural development can secure infrastructure, services, markets, income and environmental factors that are critical to the enhancement of agricultural production. Similarly, agricultural development contributes to rural development in terms of supporting employment and ancillary businesses and environmental services. In peripheral regions, farming may be the most important factor supporting economic and social infrastructure. Rural development and farming thus re-enforce and exploit each other, both in terms of improving on-farm activities and supporting ancillary services, to secure sustainable development in rural areas where most farming takes place. Given this complementarity, it is not surprising that rural development falls under the purview of MOALI.

92. The Government of the Republic of Union of Myanmar (GORUM), with the support of DPs, has committed considerable resources to rural development. It has not been possible to analyze the Rural Development Programme by the previous agriculture sector timeframe; nevertheless, the DRD has a comprehensive compilation of rural development projects in Myanmar. The earliest starting date among the compiled projects is 2014, while the latest end-date is 2022. The total budget for DRD rural development projects is US$ 783.907 million. This figure exceeds the total budget of all the agriculture projects by some US$ 284 million. The largest two items in the portfolio are: US$ 400 million project (mainly infrastructure) from the World Bank and a US$ 90 million off-grid electrification project from the World Bank. The remaining projects range from US$ 25 million for water supply to 23 townships phase 1, from Japan International Cooperation Agency (JICA) to US$ 0.120 million rural research project from the Social Policy & Poverty Research Group, an NGO.

5.3 Investment in Cooperatives

93. The cooperatives sector has two on-going projects: a US$ 400 million nation-wide loan from China EXIM Bank for micro-finance for rural development and poverty reduction; and a US$ 100 million nation-wide loan for hire purchase for mechanization. It is estimated that only about 80% of operations of the DOC are devoted to farming operations including hire purchase. Security for credit delivery to individual cooperative members is often through joint and several liability agreements. There has been little lending for group investment activities.

6. PRINCIPLES AND APPROACHES OF THE ADS

6.1 Principles

94. The principles that underlie the formulation of the ADS, all of which require increased women's participation to be effectively applied, include:

(i) **Clear definition of roles of private and public sector.** Government provides the policies, institutions and public infrastructure and services needed to enable farmers and the private sector to invest, become more productive, and meet consumer demand.

(ii) **Smallholder farmers' rights and voice.** Smallholder farmers' rights to land, food, information, and voice in planning, decision making, and implementation should be recognized formally by law and embedded in the emergence of strong farmers' organizations. The new agricultural policy promotes smallholder farmers' participation in agricultural development. To do this effectively, smallholder farmers need to organize themselves and send their representatives to interact with government institutions at different level (from village tract level to Union level). The ADS must encapsulate concrete measures to ensure smallholder farmers' rights and voice.

(iii) **Smallholder farmers and SME are growth drivers.** Focus will be on small farmers and SMEs as the core drivers of growth, equipped with inputs, technologies, and market information to make informed decisions about what is best for them to produce, process, and trade.

(iv) **Food and Nutrition Security.** Agricultural development contributes to food and nutrition security through different channels including increasing farm and rural household income; nutrition behavioral change communication, initiatives such as home economics and backyard gardening, and agricultural diversification; the comprehensive inclusion of women in development programs (including the application of a minimum quota for women's participation where necessary), social mobilization, and group formation.

(v) **Inclusion.** Poverty, social and geographic exclusion, women's inequality and massive youth outmigration have multiple and complex links with agricultural development. The benefits of agricultural development should be shared by different groups, including farmers, land owners, farm workers, and enterprises. An effective and inclusive agricultural strategy will directly benefit male and female small commercial farmers and could substantially raise the productivity of male and female marginal farmers, and provide employment for male and female landless.

(vi) **Transparency, participation, and accountability.** These principles should govern the process of policy development, communication, stakeholder outreach, and the monitoring of implementation of those policies at all levels of government.

(vii) **Environmental and social sustainability.** Agriculture and food production has environmental impacts, and agriculture is significantly affected by environmental impacts from other sectors. Collective decisions must be made to balance needs for growth and income generation across the economy relative to short and long-term

environmental and social impacts. Increase in productivity through adoption of new practices and technologies must ensure sustainable use of natural resources, primarily land, soil, water, and forestry. Integrated Water Resources Management (IWRM) should be applied for sustainable development. A range of new agro-ecological approaches are currently piloted in Myanmar including System of Rice Intensification (SRI), green water management, nitrogen use efficiency, conservation agriculture, agroforestry, and organic agriculture. The ADS will promote the adoption of sustainable good agriculture practices that enhance farmers' income.

6.2 Approaches

95. The following approaches will underline the design and implementation of the ADS:

(i) **Linkages across agricultural subsectors and between the agricultural sector and the agri-food sector.** Agricultural and food sector modernization should encompass not only crop agriculture, livestock, and irrigation, but also fisheries and forestry/agro-forestry. MOALI also needs to consider not only production-level issues, but also broader issues of output markets and supply chains, including trade and business enabling environments, including the sequencing of investments in these areas. Success in one area requires balanced attention to the other two.

(ii) **Coordination for improved policy-making and implementation.** Given the enlarged scope of MOALI, including not only crops, but also livestock and fisheries, rural development and cooperatives, coordination has acquired an increasing importance. Coordination needs to be pursued at different levels: among departments within the Ministry; between Union and States/Regions; between MOALI and other Ministries; between MOALI and private sector, farmers, and DPs. Coordination is difficult because it requires sharing information and finding solutions together in the absence of a clear line of authority. Building off existing government systems, the ADS should make effective coordination observable and results-oriented.

(iii) **Integrated and effective MOALI Structure.** The consolidation of three ministries into one provides a unique opportunity to re-think the full organizational structure of the newly integrated ministry. To be fully in line with the new Vision will require new departments or divisions, human resources, tools, and practices, and shifts in budgets to reflect new priorities.

(iv) **Monitoring the effectiveness of policy implementation enhances accountability.** Given the new government's commitment to transparency and accountability, the Ministry of Agriculture, Livestock, and Irrigation should develop indicators to quantify the impacts of investments and policy reforms on agri-food sector segments, on interest groups (landless, smallholder producers, rural non-farm enterprises, downstream supply chain actors, rural consumers, food consumers), by state and region, and throughout the supply chain. This will ensure that policies are implemented effectively to achieve desired outcomes; if they are not, adjustments can be made to avoid waste and possible unintended consequences.

(v) **Regional planning.** As communities, regions and states become more actively involved in planning and implementing public expenditures, the coordination between local plans and national plans become more important. Myanmar is just embarking along the road that might pursue different forms of decentralization that the political process will need to define over the next years. The ADS formulation should consider the possibility of innovations in public investment planning where communities, regions and states will play new and more important roles.

7. THE ADS VISION, STRATEGIC FRAMEWORK AND IMPACTS

7.1 The Vision

96. The Agricultural Policy vision underpins the ADS formulation:

An inclusive, competitive, food and nutrition secure and sustainable agricultural system contributing to the socio-economic well-being of ftarmers and rural people and further development of the national economy.

7.2 The ADS Strategic Framework

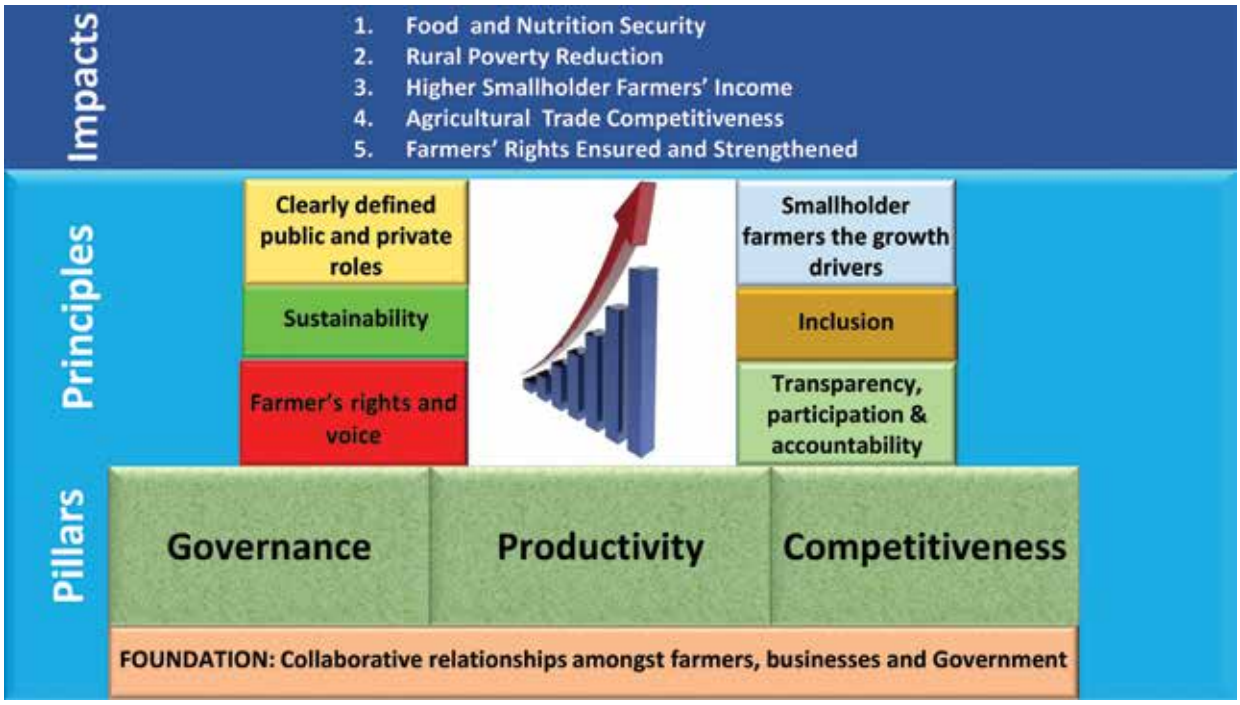
97. Accelerated agricultural growth represents the best way out of poverty for the millions in Myanmar still living below the poverty line. Agricultural-based growth is 2 to 3 times more effective at reducing poverty than similar level of growth originating from other economic sectors [17]. Experience from Asian economies has demonstrated that one of the most successful ways to stimulate growth in agriculture is by creating an enabling investment climate for agricultural entrepreneurs and by creating increased access to the critical knowledge and inputs needed to achieve higher levels of productivity. For growth to be sustainable it needs to be rooted in structural changes and improvements that do not evaporate with fluctuations in global prices, disappear after a bad monsoon or depend on concessional external funding.

98. 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 a solid foundation of collaborative relationships among government, farmers, and enterprises.

99. The acceleration of transparent, inclusive, sustainable, multi-sector, and connectivity-based growth, with clear definition of public and privates sector roles, is expected to result in increased food and nutrition security, rural poverty reduction, higher smallholder farmers' and rural household income, agricultural trade competitiveness, and strengthened farmer's rights. Figure 4 provides an illustration of the strategic framework of the ADS.

17 Agriculture for Development. 2008 World Development Report, The World Bank, 2008.

Figure 4 Strategic Framework of the Agricultural Development Strategy



100. The ADS Framework consists of a logical sequence of impacts, objectives, outcomes, outputs, and activities. Together this sequence is expected to contribute to the achievement of the agriculture policy Vision.

7.3 Impacts of the ADS

101. The overall impacts of the ADS consist of the five dimensions of: (i) increased food and nutrition security; (ii) poverty reduction; (iii) competitiveness; (iv) higher and more equitable income of rural households; and (v) strengthened farmers' rights. Indicators of impacts are reported in Table 3. Several baseline data surveys need to be carried out before the implementation of the ADS.

Table 3 Indicators of ADS Impact

Impacts	Indicators	Baseline	Target
Food and Nutrition Security	• Stunting (height for age) among under-5 children • reduced HFIAS[18] score (disaggregated by gender)	• 29.2% • TBD	• 24% • TBD
Rural Poverty Reduction	• Landless rural household Income (gender disaggregated) • Rural poverty share	• X1 • X2 • 20%	• Increase 40% • Increase 45% • 15%
Higher Smallholder Farmers' Income	• Smallholder farmers' income (gender disaggregated) • Labor productivity (ag GDP/ ag labor)	• X3 (male) • X4 (female) • $1,600/labor	• Improve by 50% • Improve by 60% • Increase by 50%
Agricultural Trade Competitiveness	• Annual investment in agri-food sector • Value and growth of agricultural exports • Value added in agriculture	• $530 mil • $2000 mil • 50% of Ag GDP	• Increase 40% • Increase 40% • 80% of Ag GDP
Higher Smallholder Farmers' Income	• Smallholder male farmers' income • Smallholder female farmers' income	• X7 (male) • X8 (female)	• Improve by 50% • Improve by 60%
Farmers' rights Ensured and Strengthened	• Comprehensive land policy safeguarding male and female smallholder farmers' rights to land • Farmers' Representation in the key MOALI Consultative Bodies (gender disaggregated)	• Not available • Not available▪	• Bill passed • Permanent farmer representation in MOALI consultative bodies;

18 Household Food Insecurity Access Scale (HFIAS), (http://www.fao.org/fileadmin/user_upload/eufao-fsi4dm/doc-training/hfias.pdf)

"Promotion of farmers' organization by MOALI will play a key role in agricultural transformation process. In an agrarian structure predominantly with smallholders, farmer organization and cooperative societies could facilitate farmers' access to credit, affordable inputs and support service, strengthening bargaining power of farmers' inputs and output markets and ensure integration of smallholders into value chains".

"Myanmar agriculture had changed from subsistence farming into commercial agriculture. It needs to step up to agriculture business development. Agribusiness' most critical role is in the improvement of the supply chain. On the output side, this not only includes storage, milling and marketing but also value-addition in terms of processing, packaging, branding, logistics services, and niche market development. On the input side, it includes the supply of farm inputs, particularly fertilizers and agro-chemicals, seeds, feed, irrigation equipment, power tillers, tractors, threshers, combine harvesters, and increased access to pluralistic sources of extension and finance".
"Agricultural development strategy is seeking the inclusive value chain development built on a governance structure ensuring a fair distribution of benefits in the value chain between all parties inclusive of small holders".

"As part of the Agricultural Innovation Policy, closer links between the research, extension, and education services within MOALI will be stimulated through conductive structures and continuous coordination and effective feedback mechanisms system. The establishment of a National Agricultural Research and Extension System (NARES) is strongly recommended to promote agricultural Innovation. Under NARES several specific activities to promote collaboration between research and extension will be conducted including: joint demonstrations, joint training, joint research, and joint preparation of commodity manuals. In addition, annual research-extension liaison meetings will be institutionalized and used to discuss, harmonize and synergize previous, on-going and future research and extension approaches, plans, activities and results".

8. ADS OBJECTIVES,OUTCOMES AND OUTPUTS

8.1 ADS Objectives

102. **The ADS has three objectives corresponding to the three strategic pillars of governance, productivity, and competitiveness:**

- **Objective 1 – Enhanced governance and capacity of institutions responsible for agricultural development**
- **Objective 2 – Increased productivity and farmers' income.**
- **Objective 3 – Enhanced market linkages and competitiveness.**

103. Selected targets for each objective of the strategy are presented in Table 4

Table 4 Targets for the Strategic Components of the ADS

Objective	Indicator	Current Situation	Target 5 years
Enhanced Governance and Capacity of Institutions Responsible for Agricultural Development	Agricultural Growth	2% average annual growth	4% average annual growth
Increased Productivity and Farmers' Income	Land productivity (ag GDP/harvested area)	$1,200/ha	Increase by 50%
	Labor productivity (ag GDP/ag labor)	$1,600/labor	Increase by 50%
Enhanced Market Linkages and Competitiveness	Agribusiness GDP	xx% of GDP	2xx% of Agricultural GDP
	Agrifood exports	$ 2,400 million	$ 3,865 million

8.2 Outcomes

104. The ADS objectives related to the Pillars of governance, productivity and competitiveness will be achieved through the pursuit of the outcomes detailed below. These outcomes vary in terms of complexity and resources and time needed to implement. The outcomes include a mix of policy, institutional, and investment measures that are detailed in the list of outputs activities, tasks, and investment plans. Specific targets and indicators are provided in the Monitoring and Evaluation Framework.

105. In most cases, the achievement of the objectives, outcomes and outputs is under the control of MOALI. In some cases, close coordination with other agencies is necessary. In all cases, the participation of key stakeholders (primarily farmers and private sector) will be crucial to the success of the ADS

Table 5 ADS Pillars, Objectives and Outcomes

PILLARS		
Governance	**Productivity**	**Competitiveness**
Governance and capacity of institutions responsible for agricultural development enhanced	**Productivity and farmers' Income increased**	**Market linkages and competitiveness improved**
OUTCOMES		
1.1 Planning. Effective integrated planning based on participatory processes both at the union and at the state/region level.	**2.1. Agricultural research - Improved research system for crop, livestock, and fisheries and improved research-extension coordination systems with participation of farmers and private sectors.**	**3.1. Business Environment - Improved business environment, information and investment along the agri-food supply chain.**
1.2 Policy Capacity. Improved capacity for policy formulation and analysis	**2.2. Agricultural extension – Transformed public-private agricultural extension system delivering improved products (crop, livestock, fisheries) and technology for adoption and adaptation, better linked to agriculture research.**	**3.2. Intellectual Property Rights. Protected intellectual property rights for the agricultural and food sector.**
1.3 M&E. Timely and Effective Monitoring and Evaluation processes that inform a web-based Management Information System (MIS).	**2.3. Education and Training - Develop (or revive) effective education and training to build "human capital" in the agricultural and food sector responding to the evolving needs of farmers and the private sector in rural areas.**	**3.3. Quality. Reliable quality system developed that helps farmers and food processors get higher prices for higher quality goods, incentivizing quality upgrading developed.**
1.4 Statistics. Sound statistical systems for evidence based decisions.	**2.4. Irrigation and water management - More responsive and reliable irrigation and drainage services and more efficient and sustainable water management systems.**	**3.4. Rural Development Planning - Enhanced framework for gender-equitable and participatory planning and implementation of rural development programmes institutionalized.**
1.5 Associations. Strong farmer and industry associations and federations. Triangular action of government, farmers and entrepreneurs, millers for agribusiness development	**2.5. Crop inputs - Increased use of improved farm production inputs and technologies by crop growers**	**3.5. Rural Infrastructure. Rural infrastructure improves smallholder agriculture efficiency and profitability.**

PILLARS		
Governance	**Productivity**	**Competitiveness**
Governance and capacity of institutions responsible for agricultural development enhanced	**Productivity and farmers' Income increased**	**Market linkages and competitiveness improved**
OUTCOMES		
1.6 Land. Strengthened farmers' land rights and enhanced capacity of institutions involved in agricultural land.	**2.6. Mechanization - Increased application of appropriate mechanisation in the agricultural value chain**	**3.6. Value Chains. Increased competitiveness and stakeholder participation in agricultural value chains engaged with prioritized commodities.**
1.7 Coordination. MOALI capacity for ADS coordination and implementation enhanced and guided by democratically appointed, gender equitable civil society representation.	**2.7. Livestock and fish - Increased use of improved livestock and fish breeding, health and husbandry service and technologies by livestock and fish producers.**	**3.7. Food Safety. Enhanced food quality and safety.**
1.8 Food and nutrition security. Improved food and nutrition security of most .	**2.8. Sustainable Practices - Sustainable Farming, Good Agricultural Practices (GAP), Good Animal Husbandry Practices (GAHP), Good Aquaculture Practices (GFP), and Organic Agriculture (OA) practices are established and adopted.**	**3.8. Financial Services. Improved access to a range of financial services for farmers and agribusiness enterprises.**
1.9 Restructuring. MOALI restructured to better integrate existing units and become more responsive to farmers enterprises, and civil society.	**2.9. Resilience - Resilience of Farmers to Climate Change and Disasters improved.**	**3.9. Trade and Exports. Trade facilitated agri-food and agricultural products export growth**

8.3 Pillar 1 on Governance

106. **Governance in the ADS refers to [19] "the capacity of government to design, formulate and implement policies and discharge functions." In the absence of such capacity the ADS will not be implemented successfully. Key elements of governance include [20] accountability, participation, predictability, and transparency [21].**

107. The ADS recognizes the complexity of the agricultural sector and the associated requirement for better coordination between different agencies, different levels (union and states/regions), and different stakeholders (farmers, private sector, civil society, and DPs). These functions include; (i) effective and integrated planning both at the central level (Union) and at the local level (states/regions, districts, townships, and village tracts); (ii) policy analysis, formulation, and review; (iii) monitoring and evaluation informing a web-based management information system (MIS); and (iv) a sound statistics and data gathering system for evidence-based decisions. In addition, the inclusion dimension of the ADS (gender, marginal and landless farmers, geographically disadvantaged) must be addressed through mechanisms that ensure participation and accountability in the planning, implementation, and monitoring of the strategy. Capacity building of human resources both within the government and selected organizations in civil society (e.g.

19 World Bank 1992, "Governance and Development", the World Bank

20 ADB 1995, "Governance: Sound Development Management", Asian Development Bank, October 1995.

21 This will necessitate considerable public service reform including only recruiting under specific terms of reference, a performance–based promotion process, improved co-ordination across departments and division with department, more transparent budget allocation and knowledge-based decision-making processes.

farmer and private agri-business organizations) will contribute to the overall strengthening of ADS governance.

108. One of the most important tests for governance and success of the ADS will be addressing land issues effectively. This requires several measures including: (i) the creation of an inter-sector national Land Use Council or equivalent; [22] (ii) the formulation of an Umbrella land law and comprehensive but specific land legislation and regulations based on the recently approved National Land Use Policy; (iii) require both heads of the household to be named on the land title (iv) updating cadastral data in already surveyed areas; generating new land rights data in areas that are not yet covered by kwin maps and where land is not yet surveyed, especially in ethnic states; remote and border area; (v) modernizing data management systems; (vi) issuance of new land use certificates for updated and new parcel data information; (vii) reclassification of land and land uses; (viii) resolution of land disputes including cases of land confiscation; and (ix) land restitution and redistribution. These numerous and complex tasks can be carried out only through strengthening capacity of the institutions responsible for land administration.

109. Land issues under the ADS are not only of a technical nature, but are fundamentally about socioeconomic relationships. Without the participation of the key stakeholders (farmers, enterprises, civil society) in the formulation of policies and plans, decision making and implementation, the energy and resources of stakeholders will remain unutilized at best or become apathetic or hostile at worst.

110. In addition to addressing land issues, ensuring food and nutrition security is one of the fundamental governance task of the ADS. The ADS recognizes the right to food. Without credible programs to alleviate the food and nutrition security conditions of the most disadvantaged groups, there could be little credibility in the ADS and its contribution to food and nutrition security. The Vision of the ADS clearly states food and nutrition security of Myanmar population, which is further confirmed by Sustainable Development Goal (SDG) 1 and SDG 2 commitments. This is a long-term goal towards which all the components of the ADS contribute. In the short term, the test of success of the ADS is the capacity of the government to meet the urgent needs of the most disadvantaged groups. To respond to this governance test, a program on food and nutrition security has been included in the ADS under the governance component. Pillar 1 outcomes and associated outputs are detailed below.

8.3.1 Outcome 1.1 on Planning

111. For MOALI to function effectively, the key tasks of planning, policy review and formulation, and monitoring and evaluation must be performed effectively and professionally. Currently, few resources are allocated to these critical functions of the Ministry. Visible establishment of capacity in these areas must occur within the first two years of ADS implementation, necessitating early institutional reorganization and human resources development, particularly in social sciences.

112. The first set of tasks is to ensure integration of existing plans of different departments through shared templates and methodologies. The ministry will need to establish a server or a cloud space where to share information about planning, so that different departmental plans become integrated and duplications are avoided. A methodology for participatory planning methodologies must be prepared and adopted by all the relevant departments.

113. The next set of tasks is related to the integration of state/region plans with union plans. Currently, this integration is weak and, when it occurs, it is within the National Planning Commission. State/region staff of various departments should be in the best position to harmonize region/state plans with union plans. That would require again sharing space on a server to facilitate collaboration and rapid comparison and integration between region/state plans and union plans.

114. While aligning and unifying plans is important, they have limited usefulness unless their implementation is monitored regularly. An important part of the plans preparation is the establishment of targets and indicators that the Monitoring and

22 The Government of Myanmar has issued the notification for the formation of the National Land Use Council on January 17, 2018.

Evaluation Units can track and report periodically.

115. Although planning is a fundamental activity of the government, effective planning requires the participation of the key stakeholders. In the agricultural sector, farmers and agro-enterprises are the key stakeholders. Currently, there is no institutional mechanism to ensure that the viewpoints of farmers and agro-enterprises are accounted for during plan formulation. The National Planning Commission tries to coordinate the plans of different ministries. An Agricultural Planning Commission (APC) might be considered in the future as an institutional mechanism to ensure key stakeholders engagement in agriculture sector planning at Union and region/state levels. The APC would be a body comprising representatives of Government (MOALI, other relevant Union Ministries (e.g. MONREC), and Agricultural Ministers of all Regions and States), farmers organizations and private sector organizations who meet regularly (semester) to review and assess plans and policies needed to ensure effective implementation of the ADS.

116. Currently, plans of MOALI are available only to a limited number of government officials and experts. In the interest of transparency and participation, during the implementation period of the ADS, plans will be make available to everybody through internet. A physical copy of the plans will also be available in every Village Tract.

117. MOALI will also move towards e-government system to improve access to information and collaboration and coordination among agencies

Table 6: Outcome 1.1: Outputs on Planning

Pillar 1 on Governance – Outcome 1.1	Outputs
Effective integrated planning based on participatory processes both at the union and at the state/region level.	**1.1.1. Ensure integration of long-term plans with annual work-plans and budgets.** **1.1.2. Introduce participatory planning methodologies during preparation of plans.** **1.1.3. Ensure integration of state/region and union plans.** **1.1.4. Monitor plan implementation regularly.** **1.1.5. Evaluate and make recommendations on establishment and functioning of ADS Coordination mechanisms including Agricultural Planning Commission.** **1.1.6. Implement e-Governance system and make ministry and region/states plans available on the internet.**

8.3.2 Outcome 1.2 on Policy

118. MOALI has already established an Agriculture Policy Unit within the Department of Planning (DOP). This unit needs further strengthening and will be promoted to a division of DOP. The objective of the division is to support the formulation of new policies, review ongoing policies, and assess their implementation. The policy division will also assure consistency of ongoing and new policies with existing policies, laws, and regulations. The establishment of the policy division will require capacity building of the staff in policy analysis and formulation. The division will require considerable technical assistance during its initial years. The division will also be responsible for commissioning policy studies on MOALI and key stakeholder priorities and independent policy reviews, which will be an important input into MOALI decision processes.

Table 7: Outcome 1.2: Outputs on Policy

Pillar 1 on Governance – Outcome 1.2	Outputs
Improved capacity for policy formulation and analysis.	**1.2.1. Establish policy division to review existing policies and prepare new policies.** **1.2.2. Commission policy studies.** **1.2.3. Conduct regular independent policy reviews.** **1.2.4. Assure the consistency with previous policies, laws, and regulations.**

8.3.3 Outcome 1.3 on Monitoring and Evaluation

119. Currently, MOALI has established a unit under DOP for the Monitoring and Evaluation (M&E) of its performance or agriculture sector outcomes. Similar units need to be established under different Department. It is essential that M&E units are established and staffed with dedicated human resources both in the Department of Planning and other Departments at both union and state/region levels. M&E development should be accompanied by the development of a web-based MIS to inform management decision making.

120. The monitoring and evaluation of ADS requires a monitoring and evaluation framework consisting of indicators, baselines, means of verification, and reporting. M&E survey missions including government and key stakeholders should be organized periodically, particularly in the review of major programs and projects implemented under the ADS.

121. As in the case of planning, transparency and access to information is needed in M&E. The Department of Planning will be responsible for producing periodic and annual M&E reports that will be made available online and for the systematic updating of the MIS. Timely and Effective Monitoring and Evaluation processes that via a web-based Management Information System (MIS).

Table 8: Outcome 1.3: Outputs on M&E

Pillar 1 on Governance – Outcome 1.3	Outputs
Timely and Effective Monitoring and Evaluation processes that inform a web-based Management Information System (MIS).	**1.3.1. Strengthen the capacity of Monitoring and Evaluation units at the union and at state/region level.** **1.3.2. Establish an appropriate methodology and system to carry out systematic ADS monitoring and evaluation.** **1.3.3. Conduct joint M&E missions including Government, Farmers, Private Sector, and development partners.** **1.3.4. DOP prepares overall ADS M&E reports and makes them available online.**

8.3.4 Outcome 1.4 on Statistics

122. A sound statistics system is necessary for informed decision making. Current statistics on agriculture are primarily limited to production, with little emphasis on several key variables such as assets, farmer landholding and tenure right, cost of production, prices, margins at different stages of value chains, postharvest losses, cultural practices, animal husbandry practices, water use, and farmer organizations. An improved statistics system at MOALI requires not only the collection of more data, but also improved systems of collection using modern and more efficient technologies (e.g. remote sensing) which are largely based on information and communication technology (ICT). A new Census of Agriculture should be conducted and include livestock and fisheries as well as crops, and detailed information about land use and tenure. The statistics division at MOALI should also be responsible for organizing periodic surveys to assess specific situations relevant to the formulation of new policies. Sound statistical systems for evidence based decisions.

Table 9: Outcome 1.4: Outputs on Statistics

Pillar 1 on Governance – Outcome 1.3	Outputs
Sound statistical systems for evidence based decisions.	**1.4.1. Conduct Agricultural, Livestock, and Fisheries Census.** **1.4.2. Improve current system of collection of agricultural statistics with the use of ICT and remote sensing.** **1.4.3. Conduct selected annual surveys on key issues identified by the Policy Division.**

8.3.5 Outcome 1.5 on Associations and Groups

123. Effective implementation of the ADS requires strong partnership with farmer and agri-food industry representatives. Government, farmers, and private sector need to collaborate in the formulation of sector and sub-sector policies, plans, industry legislation, and in monitoring and evaluation.

124. Currently there is an asymmetry between smallholder farmers and private sector. While private sector organizations are relatively well developed, and have a voice, including through the Union Myanmar Federation of Chambers of Commerce and Industry (UMFCCI) and other associations/federations (e.g. National Rubber Board, Sugar Council, Cotton Authority), farmers' organizations are still at a nascent stage and lack a structure from the local to the national level. This structure should emerge organically from the bottom up, rather than imposed from the top. To this end, the ADS will support the formation of farmer organization through capacity building.

125. A new Unit of Farmer Organizations Affairs (FOAU) should be temporarily created under the Department of Cooperatives to support capacity building and registration of farmer organizations. The registration of these farmer organizations might enable closer coordination with other units within MOALI (example division of Extension or Department of Rural Development). The FOAU would also be facilitating responsible for establishing regular meetings of government with farmer organizations and industry organizations. After the Department of Agribusiness and Marketing could have been established, these tasks could be handed over to the new department. In the case of prioritized value chains meetings among value chain stakeholders will be related to the specificities of the value chains. In other cases, cross-cutting issues will be discussed both at the union level and at the region/state level.

126. The ADS will promote farmer organizations emphasizing their comparative advantage in facilitating marketing of individual farmers and opportunities for primary processing of agricultural products.

Table 10: Outcome 1.5: Outputs on Associations and Groups

Pillar 1 on Governance – Outcome 1.5	Outputs
Strong farmer and industry associations and federations.	**1.5.1. Promote the formation of farmer associations and their federations to empower farmers in marketing and resource use as well as engagement on government policy and regulatory issues.** **1.5.2. Provide capacity building for effective management of farmer organizations.** **1.5.3. Conduct annual meetings of MOALI with farmer organizations at the state/region and union level.** **1.5.4. Conduct annual meetings of MOALI with industry associations.** **1.5.5. Establishment of a unit under Department of Cooperatives or relevant department for the registration of farmer organizations that are not cooperatives.**

8.3.6 Outcome 1.6 on Land Rights

127. The main objective of this set of activities is to ensure that land issues are adequately addressed in the medium term (5 years). During the past five years, there has been a ferment of legislative, policy, civil society and private sector activities related to land issues, including agricultural land. Securing land rights, classifying land, issuing land use certificates, dealing with a massive caseload of land confiscations, land restitution, land allocation to the landless and land re-distribution are complex matter anywhere. Poor land governance and rule of law over the past 5 decades have exacerbated the issues at stake. The Government only started recently with decisive efforts at redressing the impact of this legacy. Given the complexity of the issues, this will be an effort to last several years. Quick and sustainable solutions to all challenges cannot be achieved within the ADS time frame

but, it is possible to show a clear direction and a willingness of solving the problems. Specific results need to be achieved within a reasonable time frame to reassure smallholder farmers, the private sector, and civil society that progress is made; a new social contract on land governance between the Government and the Myanmar people is an indispensable part of the new Myanmar and of this ADS.

128. To achieve the outcome of strengthened farmers' land rights and enhanced capacity of institutions involved in agricultural land management, several activities need to be implemented including:

I. Actively participate in a National Land Use Council or equivalent to take forward the land reform process as an inter-sector institution under neutral chairmanship. The inter-sector character of this institution is required to prevent and mitigate possible sector specific competition and decision making over the land base.

II. Participate in developing an Umbrella land law and specific land legislation using an inclusive, multi-stakeholder public consultation process, based on the guiding principles of the National Land Use Policy. This institutional development and comprehensive law reform will provide the best assurance that the land rights reform process will be stable and socially acceptable.

III. Remove restrictions that condition securing tenure through land titling over land held by smallholders. This is achieved by:

a. increasing the coverage of the land use categories over which tenure can be secured by extending the narrow concept of farmlands under the Farmland law to lands that are used for any agricultural activity including aquaculture, livestock grazing, shifting cultivation particularly community land right , agro-forestry, rotating agriculture, and industrial crops,

b. simplifying the land use classification system for rural land to only four broad categories, for example: agricultural, forest, VFVL and other lands); Recently the parliament is addressing the issue of free choices of crop enterprises on agricultural land relaxing of cumbersome and centralized land use change process.

c. creating an environment of free crop choice for farmers so that they can respond to market dynamics and different shocks; this is achieved by making land titling independent of the conditional growing of specific crops, especially those land classified as paddy lands. This will have implications for the MADB allocation of seasonal loans. If farmers are free to use their land for any agricultural activity, then seasonal loans could be used for any crop (other than paddy) or livestock and fishery activity.

IV. Securing the holding and use of agricultural land of smallholders once these have been titled. This is achieved by a series of measures to be included in the revised national land law, including:

a. Easing the strict land use conditions of titled land holdings such as meeting certain quota for rice production, continuous use of land with prohibition of fallowing, limited time to put new land under production for smallholders as compared to commercial land holdings;

b. Simplifying and decentralizing procedures for changing land use in case some restrictions will remain in place;

c. Reconsidering excessive measures in case of non-compliance of restrictive prescriptions of land use which may result in the loss of land and criminal prosecution;

V. Prioritize the enforcement of the Vacant, Fallow, and Virgin Land Management Law (VFVLM). This will require a set of specific activities as follows:

a. Inventory of issued VFV land focusing on agricultural concessions exceeding a certain acreage (larger than 50 acres for instance);

b. Audit on the current use of this VFV land using a combination of remote sensing techniques and field checking;

c. Decision making on VFV land that does not comply with the contractual agreement for land use development; this may result in (i) the return of undeveloped agricultural land to their legitimate, mainly customary rights holders, (ii) allocation of land to small holders and effectively landless farmers; and (iii) the

creation of social land concessions. This will require clear legal provisions and strong political will.

d. Large scale land allotment to the agribusiness company should be determined based on the accompanied enterprise of agro-processing factories and inclusion of land allotment to groups of small holder in the neighborhood. Scaling up the land allotment to the ABCs could be determined based on the scale sensitive of the crop cultivated and the performances of the ABCs.

VI. Update existing cadastral information of landholdings that are already certified. Extend tenure security through land use titling to those areas that were not yet covered for one or the other reason (no base maps available, lands currently not eligible for land titling. Develop a cadastral information management system based on modern technology and progressively convert the paper based cadastral system into a digitized format. Train land administrators in the use of new technologies and principles (such as the use of the general boundary principle).

VII. Development of a clear legal and institutional framework describing how different mechanisms to address land conflicts can be used and possibly be integrated under one comprehensive system. The NLUP identifies the following such mechanisms: (i) Alternative Dispute Resolution (ADR) at the local level with involvement of farmers associations; (ii) special courts; (iii) independent arbitration; (iv) regular courts; and (v) administrative adjudication. Clear procedures for each of these dispute resolution mechanisms will need to be developed.

VIII. Land administration mechanism for safeguarding land tenure security (for share cropper, tenants and land-based contract farmer, etc.) need to be established.

IX. Recognize, document, register and protect customary tenure rights. This is crucial to secure the livelihoods of individuals, households and communities in many areas of the country, particularly non-paddy upland hilly areas, where people have established diversified agro-forestry systems that are managed under local norms and customs. These lands are currently e highly vulnerable to legal land confiscation, especially under the VFVLM law and the Land Acquisition law. The recognition of these customary rights is not only essential to develop the livelihoods of a significant part of Myanmar´s rural population but also essential as part of a much broader national reconciliation and peace building process. Customary land rights cover a wide range of rights including collective community rights, group rights, family holding and individual parcels.

X. Strengthen the capacity of land administration services and their support institutions to update and generate cadastral information, register land holding titles, document customary land rights, maintain land management systems, produce new “kwin” maps, resolve land conflicts, address land confiscation issues, inventory and audit VFV land, implement land allocation and restitution programmes, among others. Several of these services are delivered under a sometimes-unclear partnership of both Department of Agriculture Land Management and Statistics (DALMS) and General Administration Department (GAD), and are complemented by the functioning of several special committees and commissions. Ministry of Natural Resources and Environment Conservation (MONREC) (hosting the survey department) are supporting institutions. It will also be required to look at the institutional set up of land administration services. Altogether, the development of a roadmap is required for DALMS and possibly other land institutions that captures a long term vision for decentralized land administration service delivery, including institutional reform, technology development, capacity strengthening.

XI. Document and register land rights of smallholders, families and communities, by land use certification or otherwise (especially for community land rights) which, under current legislation, does not qualify for such registration. These new categories of land mainly include:

a. land that is used for livestock and aquaculture production and small-scale agri-processing;

b. land that is made eligible for land titling by enlarging the eligibility criteria from “farmland” to “agricultural land”; this includes lands held under agro-forestry/grazing/shifting cultivation systems which are managed under customary norms and regulations; as

per above;

c. VFV land that is restituted/allocated to smallholders and landless households. Under the current Farmland law, this VFV land will need to be converted first into "farmland" and approved as such before a LUC can be issued.

XII. Ensure that the public has easy access to information that is important for decision making on land management, compliance with rules and regulations set in specific land legislation, choosing avenues for dispute resolution, lodging claims in case there is a need to do so, and lodging appeals to decisions which may be contested. This will require awareness raising campaigns and establishing partnerships between public and civil society institutions to deliver these.

XIII. Improve service delivery of land administration to the public, including to women and the poorest. This involves the establishment of:

a. service delivery system of proximity (township village tract and possibly village) that is accessible for all without excessive opportunity costs;

b. user-friendly and unconditional service that is responsive to specific demands of the public;

c. transparent service that makes publicly available specific information on land acquisitions, land transfers and transactions, outcomes of consultation processes, decision making on land restitution and land allocation; decision making on VFV land;

d. Formalization of unofficial practices for land leases, land rent, land tenancy, share cropping, depositing land as share into large scale block farming, land consolidation among farmers or farmer to farmer transaction.

XIV. While waiting for a new institutional and legal framework to address many of the issues above, adopt interim measures to expediently respond to urgent needs. This should include:

a. amendments of the Farmland Law/ Instructions to introduce greater flexibility in land use; for example, allowing paddy farms under 10 acres greater flexibility to use land for aquaculture or other crops;

b. interim measures to secure customary land rights, including collective community rights;

c. Develop an Agro-Ecological Zoning for the country based on the principles of Global Agro-Ecological Zones developed over the last 30 years under a partnership of the International Institute for Applied Systems Analysis/FAO. It considers specific crop and production/farming systems suitability analysis (a combination of crops and other land use such as livestock, fresh water fish ponds, shrimps farming, orchard including mango, industrial crops). Such an analysis is based on available climatic data (rainfall, radiation, temperature, CO2 levels), soils data (the Myanmar national soil map and various district soil maps), specific individual crop requirements, assessment of other production systems (livestock, fish farming), different input levels (mechanization, fertilizer use, irrigation, drainage,). The development of an AEZ system must, in first instance, rely on existing data which will determine the detail of the outcomes of such an exercise. The outcomes of an AEZ will strongly support the strategic and location specific planning and targeting of many crop and farming systems interventions included in the current ADS. Depending on the detail, it may also facilitate more targeted recommendations for rainy season and off-season crop choice, required input packages to close the yield gap, complementary irrigation needs for securing monsoon crops, irrigation requirements for off season crop production, and overall fertilizer packages. Such information is helpful to support the planning agricultural extension services and private input providers.

Table 11: Outcome 1.6: Outputs on Land Rights

Pillar 1 on Governance – Outcome 1.6	Outputs
Strengthened farmers' land rights and enhanced capacity of institutions involved in agricultural land.	**1.6.1. Participate in a National Land Use Council or equivalent to take forward the land reform process.** **1.6.2. Participate in developing an Umbrella land law and specific land legislation using an inclusive, multi-stakeholder public consultation process based on the guiding principles of the National Land Use Policy.** **1.6.3. Remove restrictions that condition securing tenure through land titling over land held by smallholders.** **1.6.4. Securing the holding and use of agricultural land of smallholders once these have been titled.** **1.6.5. Prioritize enforcement of the Vacant, Fallow, and Virgin Land Law.** **1.6.6. Update existing cadastral information of landholdings that were already certified.** **1.6.7. Develop a clear legal and institutional framework to spell out different mechanisms to address land conflicts.** **1.6.8. Recognize Protect and Register Customary Tenure rights.** **1.6.9. Strengthen the capacity of land administration services.** **1.6.10. Document and register land rights of smallholders, families, and communities, by Land use certification or otherwise (especially for community land right) which under current legislation did not qualify for such registration.** **1.6.11. Ensure that the public has easy access to information.** **1.6.12. Improve service delivery of land administration to the public, including to women and the poorest.** **1.6.13. While waiting for a new institutional and legal framework to address many of the issue above, adopt interim measures to expediently respond to urgent needs.** **1.6.14. Develop an Agro-ecological zoning for the country based on the principle of Global Agro-ecological Zones.** **1.6.15. Clarify land use rights by livestock farmers, fishermen, and crop farmers and establish clear rules for the use and management of grazing land.** **1.6.16. Clarify the issue of land use and land use certificate for farmers and enterprises willing to use farmland for fish cultivation or livestock activities.**

8.3.7 Outcome 1.7 on Coordination and Participation

129. ADS implementation requires coordination at different levels: within MOALI, between MOALI and other government agencies, between union and states/regions, and between MOALI and key stakeholders. MOALI will establish a unit under DOP that is responsible for coordination among different departments of MOALI to improve implementation of the ADS. The unit for ADS coordination will require Technical Assistance during the initial years of implementation of the ADS.

130. MOALI must also ensure an ongoing dialogue with civil society This can be accomplished through several initiatives such as keeping an updated website on ADS implementation both in Myanmar and English language, the establishment of information desks located at the DOP both at Union and at State/Region level, and periodic presentation of M&E reports on the ADS to civil society. MOALI will also closely coordinate with the Agriculture and Rural Development Sector Coordination Group to ensure that its targeted program maximize the impact of other interventions carried out by multi-agencies and NGOs involved on food and nutrition security.

Table 12 : Outcome 1.7: Outputs on Coordination and Participation

Pillar 1 on Governance – Outcome 1.7	Outputs
MOALI capacity for ADS coordination and implementation enhanced and guided by democratically appointed, gender equitable civil society representation.	**1.7.1. Establish coordination unit for implementation of the ADS under the Department of Planning** **1.7.2. Provide TA to the coordination unit** **1.7.3. Make provisions for cooperation with international partners including:** **o Minister level meetings with ASEAN countries and development partners;** **o Cooperation, coordination, negotiation with international loan/grant/grant assistance projects of MOALI;** **o Outfit and travel for international training and meeting.** **1.7.4. Establish and maintain an ADS website both in Myanmar language and English.** **1.7.5. Establish an ADS Information Desk under the Department of Planning both at Union and at State/Region level.** **1.7.6. Periodic Uploading online of ADS Monitoring and Evaluation Reports**

8.3.8 Outcome 1.8 on Food and Nutrition Security

131. Despite government's focus on food and nutrition security, many households and individuals, particularly in rural Myanmar, remain food and nutrition insecure. They include the poor, the vulnerable, the landless, and other marginalized groups. While all ADS measures contribute directly or indirectly to food and nutrition security, particularly through productivity enhancement measures and improved access to finance and non-farm employment, the assurance of the right to food necessitates its inclusion in Pillar 1 on Governance.

132. This outcome, in coordination with other multi-sector initiatives on nutrition and poverty alleviation, will identify measures (e.g. food for work programs, food or input vouchers, income support, etc.) and the target groups (e.g. women headed households, landless, ethnic people in remote areas) for which food and nutrition security measures could be applied. MOALI will coordinate closely with the Agriculture and Rural Development Sector Coordination Group (A&RD SCG) to ensure that its targeted program maximizes the impact of other food and nutrition security interventions carried out by multi-agencies, building off the experience gained in this area by NGOs, civil society organizations and other country projects.

Table 13: Outcome 1.8: Outputs on Food and Nutrition Security

Pillar 1 on Governance – Outcome 1.8	Outputs
Improved food and nutrition security of most disadvantaged groups.	**1.8.1. Design targeted food and nutrition security program.** **1.8.2. Implement targeted food and nutrition security program.** **1.8.3. Coordinate with ongoing food and nutrition security and multi-sector initiatives on nutrition and poverty alleviation**

8.3.9 Outcome 1.9 on MOALI Restructuring

133. The ADS will accelerate the process of Myanmar's agricultural sector modernization. For MOALI to become an institution that is responsive to farmers, enterprises, and civil society and supportive of the ADS process several current functions will need to be better integrated and new functions established.

134. **At the macro level, organizations such Yezin Agricultural University (YAU) might require an autonomy status in the long run, making them independent of MOALI [23]. MOALI must establish**

23 Recently Ministry of Education has sanctioned the expansion of YAU with four new academic departments including the Department of Social Sciences (presently YAU entitled it as a

new institutions for policy, M&E (independent division attached at DOP or the Ministry's Office) and farmer organization and may also have to create institutions to improve coordination of research, extension and land use. In the case of the DOA, a department that has emerged from the merging of two former departments, a range of institutional issues require addressing including duplication of efforts, distribution of workloads, decentralization, balance between commodity issues and cross-cutting issues, and transparency. This will include transferring responsibilities to the planned Department of Agribusiness and Market Information (DABMI).

135. More generally, good governance of MOALI will require delegation and decentralization of responsibilities to ensure that all departments can function effectively.

Department of Agricultural Extension), Department of Agricultural Biotechnology, Department of Food Sciences and Technology, Department of Applied Microbiology and the upgrade of existing departments including Animal Sciences, Agriculture Engineering, and Arts & Sciences Departments to professorial chairs to all academic departments. The Ministry of Education takes the responsibility of organizational set up of YAU and UVS while the MOALI takes the responsibility of administration and funding support.

Table 14: Outcome 1.9: Outputs on MOALI Restructuring

Pillar 1 on Governance – Outcome 1.9	Outputs
MOALI restructured to better integrate existing units and become more responsive to farmers, enterprises, and civil society.	**1.9.1. Evaluate alternative options for MOALI restructuring, including moving YAU outside of the Ministry control to be autonomy status, in long run consolidating three Permanent Secretaries into one position, creating undersecretaries.** **1.9.2. Establish unit for Policy, unit for Monitoring and Evaluations, and unit for ADS Coordination under DOP.** **1.9.3. Establish Monitoring and Evaluation units under each Department of MOALI as integral part of planning division.** **1.9.4. Coordinate with other restructuring options suggested under Pillar 2 (e.g. National Agriculture Research Council (NARC) and establishment of Myanmar Academy of Agriculture, Livestock and Fisheries services to carry out NARC policy affairs and National Agriculture Research and Extension System (NARES)) and under Pillar 3 (e.g. Department of Agribusiness and Market Information).** **1.9.5. Implement the selected restructuring options.** **1.9.6. Evaluate policy for incentives to government staff working in remote areas.**

8.4 Pillar 2 on Productivity

136. Improved productivity of land and labor is at the cornerstone of the ADS. Agricultural productivity requires the adoption of appropriate technologies and know-how to increase the efficiency and sustainability of agricultural production, consistent with market demand. The measures to raise agricultural productivity include those related to (i) effective agricultural research and extension; (ii) efficient use of agricultural inputs; (iii) efficient and sustainable practices and use of natural resources (land, water, soils, and forests); and (iv) increased resilience to climate change and disasters.

137. In the ADS, the government sector will be one among other actors including the private enterprise sector, the cooperative sector, NGOs and leading farmers that are involved in the generation and dissemination of technology. The government sector, however, has a key role in coordinating the efforts of other actors, facilitating implementation of policies and plans, monitoring performance, and enforcing regulations. As part of this process, researchers and extension staff must change their top-down approach and ensure their work is responsive to the needs of farmers and market demand.

138. The ADS recognizes that already several actors (e.g. NGOs, private sector) are involved in agricultural extension and that, over time, their

presence will become more important. Rather than advocating an increase of human resources in the public extension service, the ADS promotes capacity building of existing government human resources and the transformation of their role from delivery agents of extension services to overall facilitators of agricultural extension service providers. This role change will be accompanied by a greater emphasis on the delivery of services at the village level by publicly and privately financed service providers.

139. Productivity enhancements will also rely on timely availability of quality inputs. The ADS recognizes that, in the long term, productivity and competitiveness of the agricultural sector depend on access to and adoption of improved technology and the effective management of natural resources and other inputs to achieve total factor productivity increase.

140. The timely availability of quality inputs requires the combination of quality assurance systems, enforcement agencies, and incentives for the private sector to supply and distribute inputs. That in turn relies on good extension work and farm demonstrations of good practices using quality inputs. The provision of agricultural inputs and mechanization services should be largely carried out by the private sector, with the public sector providing the regulations, the enforcement, and the public goods needed for the input market to work efficiently.

141. Water and soil management need to be considerably improved. Substantial investments have already occurred in Myanmar on irrigation systems; however, given the state of disrepair of these investments, their impact and effectiveness are reduced. Maintenance and operations of irrigation systems appears to be limited depending upon the availability of the budget allotment. While the design and construction of irrigation system for the main canals and the distributary canals and minor canals, have been contributed by the source of government budget, responsibility of O&M in water course where farmers operate should be shouldered by the farmers. This is pointed out the important role of farmer's water users group. ADS support empowerment of water user group. Rationalization of the irrigation system requires the combination of several technical and institutional measures, including improved and participatory design, monitoring and evaluation of performance, research and measurement on water use efficiency, evaluation of alternative irrigation systems (surface, groundwater, drip, sprinkler), alternative water use management system (Alternate Wetting and Drying - AWD), System of Rice Intensification (SRI)), and close integration with agronomic practices and the opportunity of diversifying away from rice.

142. There has been considerable recent investment by small farmers in their own tube wells and pumps. This increase is also spontaneous, not based on government programs or micro lending. It is facilitated by the rapid growth of small tube well digging enterprises. Given the opportunity of groundwater and artisan wells to reach out to a larger number of farmers other than surface schemes, at a lower cost to the treasury, it seems warranted to start a major program to promote groundwater irrigation to improve access to irrigation water, subject to its sustainable use.

143. With about 84% of agricultural land is not irrigated. Attention and research is needed on the development and introduction of rainfed agricultural farm systems and soil and water management technologies and the Myanmar agriculture knowledge system need to be familiar with alternative water management practices and trained in providing advice and guidance to water user groups.

8.4.1 Outcome 2.1 on Research

144. The agricultural research system in Myanmar is underfunded and organizationally fragmented. Crop research takes place within both DAR and DOA; coordination between the two departments must be improved, particularly with respect to management of agricultural research stations and work plans. Research on livestock and fisheries does not have a specific institutional house, being currently conducted in a sporadic manner under the Livestock Breeding and Veterinary Department and the Department of Fisheries. Critical capacity gaps are prevailing in all disciplines as noted by some consultant. About 80% of Ph.D and M.Sc. level researchers are concentrated at DAR, Yezin. Yezin DAR has initiated designing the National Agricultural Research Systems (NARS) in Myanmar and has been submitting the plan to the Ministry for further action for formation of steering

committee or research council. The establishment of a National Agricultural Research Council (NARC) mandated with coordination and overall guidance to research on crops, livestock, and fisheries will remedy the existing fragmentation of research efforts and facilitate its expansion into new fields including postharvest issues and farming systems and socioeconomic research, including value chain studies. Each department and research organization will establish research priorities that will be integrated in an overall Research Master Plan consistent with the need of farmers, market demand, agro-ecological opportunities, and the Vision of the Agricultural Sector. The NARC would commission a review of the system of agricultural research stations currently managed by various organizations with a view to their integration and rationalize the expansion of their capacity and ensuring coverage of all of Myanmar's major agro-ecological zones.

145. In addition to basic and applied research, the ADS will support Action Research [24] to facilitate participation of the private sector, farming community-based organizations (CBOs) and individual farmers in research activities with a view to better integrating research and extension activities.

146. Currently, most agricultural research is based on natural sciences, in addition to which, there is a need to pursue research on socioeconomic aspects of agricultural development. The ADS will seek the establishment of an Institute for Policy Studies in Agricultural Development. At the same time, the ADS will reinstate the Academy of Agricultural Sciences to strengthen and integrate academic, research, and policy making capabilities in the agricultural and food sector. The ADS would mitigate the aforementioned "fragmentation" problem by having socio-economic scientists (especially in agricultural economics, agribusiness and rural sociology/anthropology) working alongside biological scientists in the research stations, establishing socio-economic research programmes directly complementing the more biological/physical research. Socio-economic and farming systems research would particularly consider gender roles to optimize suitable technology packages.

147. In step with the establishment of the NARC and other reforms, an agricultural research human resources development plan will be prepared and implemented to ensure adequate human resources to support innovation systems in agriculture. In this process, attention will be paid to the social sciences. In addition to capacity building a system for performance appraisal of researchers and research organizations will be established.

148. Linkages with CGIAR and international research centers will also be promoted through joint research projects and exchange of human resources.

149. The ADS will also consider the establishment of a National Agricultural Research and Extension System (NARES) to promote closer links with the research system. Under NARES several specific activities to promote collaboration between research and extension will be conducted including: joint demonstrations, joint training, joint research, and joint preparation of commodity manuals. In addition, annual research-extension liaison meetings will be institutionalized and used to discuss, harmonize and synergize previous, on-going and future research and extension approaches, plans, activities and results.

24 Action Research is a disciplined process of inquiry conducted by and for those taking the action. The primary reason for engaging in action research is to assist the "actor" in improving and/or refining his or her actions. This research will provide the opportunity for PPP.

Table 15: Outcome 2.1: Outputs on Research

Pillar 2 on Productivity – Outcome 2.1	Outputs
Improved research system for crop, livestock, and fisheries and improved research-extension coordination systems with participation of farmers and private sectors.	2.1.1. Establish National Agricultural Research Council (NARC) to coordinate and provide overall guidance to research on crops, livestock, and fisheries and establishment of Myanmar Academy of Agriculture, Livestock and Fisheries services to carry out NARC policy affairs. 2.1.2. Develop Research Master Plan to establish research priorities and research programs to be undertaken by different organizations involved in agricultural research with the objective of the adoption of appropriate technologies and know-how to increase efficiency and sustainability of agricultural production consistently with market demand and food and nutrition security. 2.1.3. Establish Institute for Policy Studies in Agricultural Development. 2.1.4. Reinstate the Academy of Agricultural Sciences to strengthen and integrate academic, research, and policy making capabilities in the agricultural and food sector. 2.1.5. Undertake basic and applied biological, chemical and physical research - with emphasis on new and/or improved varieties of crops, animals, fisheries and other products suitable to various geo-ecological areas of Myanmar. 2.1.6. Undertake socio-economic research, cost of production and marketing studies. by geographical areas, crops, production techniques, and farming systems. 2.1.7. Undertake research on postharvest technology to improve productivity and competitiveness. 2.1.8. Establish a system for collating, publishing and sharing and disseminating data and results of research activities including collaboration with private sector 2.1.9. Establish an Action Research Fund to facilitate participation of private sector, farmer's community-based organizations (CBOs) and individual farmers in research activities and integrate research and extension activities. 2.1.10. Build institutional, human, infrastructure (including ICT) and financial capacity of agricultural research services, namely based on the Agriculture Research Plan, including: 2.1.11. Strengthen and update capacity of existing research facilities and expand their number to cover all regions/states and agro ecological areas for both crops, livestock and fisheries; 2.1.12. Provide sufficient resources to increase the number of researchers and technical staff through short, medium, and long-term training both in Myanmar and abroad: o Agriculture/Crops Research Service; o Livestock Research Service (new); o Fisheries and Aquaculture Research Service (new). 2.1.13. Establish a performance assessment system for agricultural research; 2.1.14. Establish a new international agricultural research partnership programme through CGIAR, with a special role for ISNAR (International Service for National Agricultural Research).

Pillar 2 on Productivity – Outcome 2.1	Outputs
	In collaboration with Outcome 2.1 on Extension: **2.1.15. Conduct in-depth study of agricultural, livestock, and fisheries extension and research systems with view to improve coordination.** **2.1.16. Establish the National Agricultural Research and Extension System (NARES) to facilitate coordination between research and extension.** **2.1.17. Implement Annual Research - Extension Liaison Meetings for sharing of experience and information and decisions on approaches to crop, livestock, and fisheries development.** **2.1.18. Establish/rehabilitate farmers' training and adaptive research centers to jointly demonstrate research results and extension recommendations on modernized farming.** **2.1.19. Researchers and extension workers jointly package, promote and disseminate knowledge on improved production technologies for adoption by farmers, including preparation of Commodity Manuals.**

8.4.2 Outcome 2.2 on Extension

150. While the key issues in research are underfunding and fragmentation, in extension the main issues are underfunding and approaches. Weak research-extension linkages bedevil both programmes. Most past extension work has been to increase paddy productivity. Extension in other commodities (non-paddy crops or animal) was limited. With the privatization of the state enterprises involved in industrial crops such as rubber, sugarcane, and cotton, the extension effort for those commodities has been partially transferred to the private sector. In general, Myanmar extension workers are not well equipped with the type of extension work needed for the challenges of Myanmar agriculture including: (i) a more diversified public-private system; (ii) higher value added; (iii) collaboration with private enterprise and NGOs; (iv) responsiveness to the needs of famers and market demand; and (v) closer links with research. A change process is required in different dimensions: from supply driven to demand driven; from top down to bottom up; from commodity oriented to farmer focused; from problem stating to problem solving.

151. Promotion of private extension service providers will be piloted through the use of vouchers providing farmers with the options of using the providers of their choice. Private extension service providers will also be part of farming contract agreement between farmers and agro-food enterprises.

152. The ADS will promote the formulation of an Extension Policy that aims at transforming the current approaches in the direction of participatory approaches, promotion of farmer organizations, use of lead farmers, and diversification of the production system, considering agroecological suitability, market demand, and farmer needs and constraints (those of women farmers in particular), including water constraints in an agricultural system which is primarily rainfed.

153. The ADS will also promote knowledge system and their integration with ICT to facilitate the task of extension workers in accessing relevant knowledge and making it available to farmers.

Table 16: Outcome 2.2: Outputs on Extension

Pillar 2 on Productivity – Outcome 2.2	Outputs
Transformed public-private agricultural extension system delivering improved products (crop, livestock, fisheries) and technology for adoption and adaptation, better linked to agriculture research.	2.2.1. Review extension system and formulate national extension policy and strategy, encompassing the functional mandate of MOALI (crops, livestock, fisheries, cooperatives, and rural and community development), and paying attention to the priorities of the Agricultural Policy and ADS Vision, including food security and nutrition, socio-economic well-being of farmers and development of the national economy. 2.2.2. Develop, document and regularly up-date extension procedures, regulations based on the national extension policy and strategy to function as overall operational guidelines for role of farmer education and technology transfer to achieve continuous improvement in agricultural productivity of farmers consistently with market demand and farmers' needs. 2.2.3. Identify priorities for extension work and make extension plans at each village or village/tract level (to be aggregated to township, district, state, and union level) while ensuring that farmers and farmers' organizations and other stakeholders are involved in the formulation of annual work plan for extension activities at all levels. 2.2.4. Provide training (long-term and in-service, with competency testing) and mobility and connectivity amenities to build and strengthen capacity of agricultural, livestock, and fisheries extension services institutions and staff. 2.2.5. Provide sufficient resources to carry out extension activities at the village level consistently with the identified priorities and available resources, giving special consideration to the production of diversified, nutritious and profitable range of food crop, livestock and fisheries products. 2.2.6. Strengthen capacity of field extension staff in participatory methods, social mobilization of farmer organizations, Farmer Field Schools (FFS), and Farmer marketing Schools (FMS), including specialised training to field personnel to be sensitized to Gender Equality and Social Inclusion and nutrition. 2.2.7. Increase the number and capacity of subject matter specialists (SMS) in those areas of greater interest to farmers – through recruitment and deployment of more SMS and training and development of all SMS in their areas and in providing special support to extension work. 2.2.8. Strengthen farmer organizations (groups, associations, cooperatives, federations) to become facilitators for change (funding allocated under pillar 1 – Output 1.5): 2.2.9. Ensure farmers and farmers' organizations are involved in the formulation of annual work plan for extension activities at the local level (village, village/tract, township, district, state) and at the union level. 2.2.10. Establish information and knowledge system to provide advisory services to farmers: 2.2.11. Address farmers' and other stakeholders' demand for information and knowledge through facilitating direct contact with subject matter specialists; 2.2.12. Prepare and disseminate simple farmer-friendly technical documents, including manuals on crop, livestock, apiculture, fisheries and agri-business enterprises and activities and other tools; 2.2.13. Promote and use ICT to interactively link subject matter specialists (SBS), extension workers and farmers with Knowledge System, demonstrations, updated crop/animal/fisheries husbandry manuals, and advisory services – include research centers, call centers and knowledge centers. 2.2.14. Pilot voucher system for extension and advisory services to allow farmers to select extension service providers. 2.2.15. Introduce farmer marketing schools. 2.2.16. Train field personnel to be sensitized to Gender and Social Inclusion (GESI) and nutrition.

8.4.3 Outcome 2.3 on Education

154. Like the research system, the agricultural education system is underfunded and fragmented. The ADS proposes the development of education and training to build "human capital" in the agricultural and food sector responding to the evolving needs of farmers and the private sector in rural areas. This requires: (i) the university system to be consolidated and include colleges for agriculture, livestock and aquaculture; (ii) consolidated universities will include disciplines in addition to the traditional natural sciences including agricultural economics, agricultural business and marketing, agriculture engineering, water management, food technology, and agricultural extension and communications;[25] (iii) a 3-year diploma curriculums of State Agricultural Institutes (SAI), covering all states and regions, to provide training on all key sectoral disciplines; and (iv) the revival of high school level agricultural training and other vocational training institutions, both public and private.

25 At YAU, New Academic Departments have been extended and some existing departments are upgraded at the time of this document preparation.

Table 17: Outcome 2.3: Outputs on Education

Pillar 2 on Productivity – Outcome 2.3	Outputs
Develop (or revive) effective education and training to build "human capital" in the agricultural and food sector responding to the evolving needs of farmers and the private sector in rural areas.	**2.3.1. The current Yezin Agriculture Universities upgraded into one consolidated university with colleges for agriculture, livestock and fisheries with both undergraduate and graduate degrees.** **2.3.2. Sectorial disciplines in Yezin and other universities established/upgraded, including in agricultural economics, agricultural business and marketing, agriculture engineering, water management, food technology, and agricultural extension and communications.** **2.3.3. Three-year diploma curriculums of State Agricultural Institutes (SAI) in all states and regions upgraded to provide training on all key sectorial disciplines, including agriculture, livestock, fisheries, farm machinery, food technology, farm management, agribusiness and marketing.**

8.4.4 Outcome 2.4 on Irrigation and Water Management

155. The Irrigation and Water Utilization Management Department absorbs a large part of the MOALI infrastructure investment. Despite this considerable investment, however, the availability of water throughout the year is limited, both for the main crop (paddy) and for other crops. Most irrigation systems are designed for paddy, lacking the institutional and infrastructure needed for a more diversified agriculture.

156. Despite 84% of the agricultural land not being irrigated, rainfed agricultural farm system and soil and water management practices and technologies are not sufficiently researched, demonstrated or disseminated. Furthermore, in the Ayeyarwaddy delta, Bago, and Sittaung delta, large rainfed areas that require only drainage are underutilized.

157. In line with the goal of the National Integrated Water Resources Management Policy, the ADS will support further investment in the irrigation and water management sector together with a reorientation of the irrigation systems to ensure higher efficiency and impact. The ADS will: (i) emphasize on-farm water use management both for paddy and other crops, with a view to more diversified farming systems; (ii) provide support to the capacity building of strong WUA able to implement not only basic O&M functions, but progressively to manage entire irrigation systems; (iii) adopt a prospective of integrated water resources management to ensure water resources in Myanmar are developed shared and managed in an integrated, holistic, and socially inclusive manner, to contribute significantly to poverty alleviation, to green growth and sustainable development of the nation; (iv) address issues of drainage and flood protection, particularly in those

areas of the country more susceptible to flood Fifth, rainfed areas should be given the proper attention they deserve through research, extension, and investment in drainage systems; and (v) explore opportunities for sustainable and climate change adapted groundwater utilization.

Table 18: Outcome 2.4: Outputs on Irrigation and Water Management

Pillar 2 on Productivity – Outcome 2.4	Outputs
More responsive and reliable irrigation and drainage services and more efficient and sustainable water management systems.	**2.4.1. Develop Regulations for the Myanmar National Water Policy.** ▪ **Develop bylaws and regulations to implement the National Water Policy including regulations for rainfed agriculture, drainage, groundwater, water users' associations (WUA), and irrigation service fees (ISF);** ▪ **Develop bylaws and regulations related to research, studies, demonstration, training, and extension of water use management practices.**
	2.4.2. Develop appropriate Measures for Water Management in Rainfed Agriculture ▪ **Conduct research and training on water use management in rainfed systems;** ▪ **Conduct demonstrations and extension programs on water use management in rainfed systems;** ▪ **Conduct feasibility of drainage investment in rainfed area, particularly in delta areas;** ▪ **Carry out drainage work in delta areas.**
	2.4.3. Establish program on groundwater development ▪ **Conduct hydrological studies to establish resources for groundwater utilization;** ▪ **Develop program to promote use of sustainable groundwater use.**
	2.4.4. Rehabilitate system and modestly expand command arrange in Village Irrigated (VI) dam and Village Embankment systems (VE) of less than 200 acres command areas ▪ **Village Irrigated system rehabilitation (XXX acres) and new construction (XXX acres);** ▪ **Village Embankment rehabilitation (XXX acres) and new construction (XXX acres).**
	2.4.5. Rehabilitate Small Dam irrigation systems (500 – 1,000 acres): Rehabilitation of XXX acres.
	2.4.6. Establish Medium pond/recharge basins (basins that store water and recharge groundwater, for use by both irrigation and water supply). **a. Pilot construction of schemes, including linkage with surface or non-conventional irrigation (e.g. sprinklers, drip systems) under Public-Private Partnership arrangements.**
	2.4.7. Establish Non-conventional irrigation (NCI) systems (encompassing gravity piped water, water harvesting and small-scale pumped systems supplying drip or sprinkler irrigation: build these for high value crop production especially in hills and mountainous areas.

Pillar 2 on Productivity – Outcome 2.4	Outputs
	[Work undertaken by IWUD and community, also DRD] 2.4.8. Rehabilitate Reservoir Dam irrigation systems (the most dominant system with command areas of >1000 acres; there are about 200 dams, of which only 40% are good): Complete physical rehabilitation and other works to increase effectiveness and intensity of existing schemes (to cover 80,000 acres at total cost of $320 million or $4,000 per acre): ▪ Repair damaged surface systems and tube wells, may build new tube wells as part strengthening existing system. (No new construction schemes to be undertaken until rehabilitation completed) [Work undertaken by IWUMD and community]; ▪ To increase effective area of existing schemes, on a cost-sharing basis (e.g. farmers contribute labor), undertake following: i) lining or upgrading canals to reduce transmission losses; (ii) control structures to improve water management and distribution; (iii) land-levelling, better management, and constructing distribution networks (field channels); (iv) piped water conveyance in special need situation; and (v) building capacity of WUA in efficient irrigated agriculture management; ▪ Support canal network expansion to increase the irrigable area served by an existing irrigation system; ▪ Improve water allocation and crop planning through provision of irrigated agriculture extension services to assist representative farmers from all sections of the canal to prepare cropping plans with involvement of to improve water distribution, crop productivity, equity and strengthening WUAs. ▪ Construct permanent headworks and improve main canals on farmer-managed irrigation systems (FMIS); a. Improve catchment area management and restoration catchment. b. Construct inter-basin transfer schemes (IBT) to move water from permanent to seasonal rivers to augment supply in water-short irrigation systems if economically justified by generation of hydropower. Full environmental impacts must be assessed and mitigated for approval of any IBT;
	2.4.9. Improve management of irrigation systems and on-farm water, including: ▪ Prepare the Integrated Water Resources Management (IWRM) policy within the Framework of the National Water Policy; ▪ Build capacity of WUAs and provide advice and possibly funding to farmers to improve their irrigation systems and practices; ▪ Continue to implement on-going irrigation management transfer (IMT), include: transfer of management from IWUMD to WUA, for example in relation to employment of gatekeepers; ▪ Transfer of full responsibility and ownership to WUA or a federation of WUAs for medium schemes (5,000 to 10,000ha); ▪ Prepare and implement an Irrigation Management Transfer pilot project for two medium-to-large irrigation systems; ▪ Set up a model on-farm water management system in a feasible irrigation tract; ▪ Introduce the IWRM nationally based on, with management based on hydraulic boundary, starting in areas where there is inter-sectoral competition or conflict over water; ▪ Harmonizing and streamlining legal structures required for ownership transfer to WUAs.

Pillar 2 on Productivity – Outcome 2.4	Outputs
	2.4.10. Establish funding system and guidelines for Operation and Maintenance (O&M), encompassing: ▪ **Build incentives into scheme;** ▪ **Develop legislation to require a receipt for irrigation service fees (ISF) payment to be attached to land tax payment;** ▪ **Enforce existing requirement that ISF payments be brought up to date before a land sale can be registered;**

8.4.5 Outcome 2.5 on Crop Inputs

158. The ADS will support the development of a seed sector able to meet the requirements of farmers for a variety of open pollinated and hybrid seeds. The Government will provide the regulations, enforcement, and quality assurance to stimulate the growth of the seed sector and assure the available of quality seed on time. Private and cooperative sector and community based seed production will be promoted, together with seed crop assessment by certified private inspectors. The ADS will also establish an information system about seed demand and supply, including stocks of seed. It will also support the implementation of a Biodiversity Policy and develop regulations for the research and experimentation of Myanmar's biodiversity and genetic resources.

159. The ADS will promote measures to improve fertilizer use efficiency and integrated pest management (IPM) practices and will promote a greater role of the private sector in demonstrations and awareness campaigns and organic and bio-fertilizers.

160. The Government will establish a fertilizer use and distribution information system including imports and stock. It will also: (i) update and enforce quality standards and strengthen the fertilizer inspection system through capacity building and strengthening of the soil fertility division; (ii) strengthen pesticide and herbicide information and quality assurance systems, including improved pesticide laboratories; and (iii) enforce the laws on Fertilizers and Pesticides and a new Law on Trademarks to ensure proper testing and enforcement process to prevent circulation of counterfeit, adulterated, or mislabeled products.

Table 19: Outcome 2.5: Outputs on Crop Inputs

Pillar 2 on Productivity – Outcome 2.5	Outputs
Increased use of improved crop production inputs and technologies by crop growers.	**Seed and planting material:** **2.5.1. Undertake on-going review of seed policy and continuing reforms to permit private sector companies to develop and to import and export seeds, subject to appropriate certification.**
	2.5.2. Review and amend Seed Law, with emphasis on protection of seed farmers, and facilitate public participation on the drafting of implementing regulations and procedures for the Amended Seed Law.
	2.5.3. Strengthen certification of multiplied seed, including improved seed laboratories capacity

Pillar 2 on Productivity – Outcome 2.5	Outputs
	2.5.4. Build-up capacity of seed research stations to produce breeder and foundation seeds: ▪ Increase funding to enhance capacity of public research institutions and research stations, universities, and private sector industry; ▪ Maintaining good quality land races and open pollinated varieties (OPVs) of different crops in the remote areas that are dominated by subsistence agriculture; ▪ Establish good linkages with international agencies; ▪ Promote private and cooperative sector and community based seed production. This will involve: o Participate in partnerships with relevant private and cooperative organizations, farms and nurseries for production of quality seed and planting materials; o Facilitate private sector to produce breeder, foundation and hybrid seeds, especially by providing breeder and foundation seed to private and cooperative seed growers; o Promoting seed enterprise as an industry catering to the national needs and for export; o Promoting community based seed production and agro-biodiversity in inaccessible remote areas and for crops that are not attractive for private sector to produce seed; o Enforce quality assurance systems, involving: o Improved capacity of concerned government certification bodies and laboratories to undertake planting materials certification processes; o Enforcing compliance of nurseries with farm inputs quality standards; o Provide training and other support to enable accreditation of private seed certification laboratories to provide quality control and certification from private sector, in addition to services provided by government; o Enforce legislation that compensates farmers when purchasing poor quality seed not complying with existing standards; o Explore options and pursue cooperative programmes to allow evidence submitted to national seed committees elsewhere in ASEAN be accepted as equivalent to testing in Myanmar.
	2.5.5. Promote production of hybrids, including: (a) allowing imports of suitable hybrids after necessary testing, and (b) encouraging local hybrid seed production within government organizations, the private and cooperative sector, and in partnership with foreign companies.
	2.5.6. Establish an information system about seed demand and supply, including a publicly available and accessible updatable database with: (a) timely information about seed production and seed stock for main crops with information about nurseries, breeding stations, and research centers; and (b) estimated demand by crop and area and information about suppliers and inspections.

Pillar 2 on Productivity – Outcome 2.5	Outputs
	2.5.7. Develop and implement Biodiversity Policy and Varietal Conservation Programme, involving: (a) strengthening collection, classification, assessment and conservation of diversified bio resources relevant to agriculture, and support scientific report/ documentation – supported by Myanmar Crops Gene Bank with cold storage facilities distributed in a number of Research Centers; (b) initiating a system of registration of agro-biodiversity; developing regulations and guidelines for the research and experimentation of Myanmar Bio-diversity and Genetic Resources; develop regulation of genetically modified organisms (GMO) having negative impact on bio-diversity, genetic resources, and human health.
	Soil fertility management: 2.5.8. Measures to improve productivity and fertilizer use efficiency will involve promoting a greater private sector role, and include: ▪ Soil survey and mapping - to cover all Myanmar in greater detail than done in 1960s; ▪ Promotion and demonstration of soil conservation techniques; ▪ Promotion and demonstration of soil amelioration techniques with involvement of private sector; ▪ Strengthen laboratory facilities to ensure that farmers can get access to timely and affordable soil testing and other services; ▪ Enforce quality assurance systems, including fertilizer inspection; ▪ Capacity building of Soil Division staff, Units and facilities; ▪ Promote domestic fertilizer production and trade with involvement of private sector, including: o Feasibility studies on domestic production; o Establishment of commercial bio-fertilizer production enterprises based on municipal biomass and agro-processing waste ▪ Establish a fertilizer buffer stock under PPP arrangement; ▪ Establish database and monitoring system on fertilizer use and distribution, including both official and informal import (the latter to be obtained through survey data).
	Plant Disease and Pest Management: 2.5.9. Develop and promote integrated pest management (IPM) and bio-control of weeds.
	2.5.10. Strengthen pesticide and herbicide laboratories
	2.5.11. Establish quality assurance for pesticides and other plant protection products. This will involve: ▪ Strengthening pesticides, herbicides, and other products inspection through improved capacity of concerned public organizations ▪ Enforcing compliance of importers and dealers with quality standards, comprising: o Enforce the law on Fertilizer; - Enforce Law on pesticides and herbicides o Approve and implement a modern Law on Trademarks; o Ensure proper testing and enforcement processes to prevent circulation of counterfeit, adulterated or mislabeled products. ▪ Encouraging provision of quality control and certification from private sector as well as government.

Pillar 2 on Productivity – Outcome 2.5	Outputs
	2.5.12. Plant and animal quarantine – border and inland control facilities, including laboratories, storage, and replication/testing plots
	2.5.13. Encouraging provision of quality control and certification from private sector as well as government.
	2.5.14. Enforce the Law on Fertilizer and Law on Pesticides, and approve and implement a modern Law on Trademarks, to ensure proper testing and enforcement processes to prevent circulation of counterfeit, adulterated or mislabelled products.

8.4.6 Outcome 2.6 on Mechanization

161. The ADS will support the process of agricultural mechanization through the formulation of standards, enforcement of regulations, training and demonstrations, and financial analysis to help farmers make improved decisions. For long term, the private sector will be encouraged to provide mechanized services, including repair and maintenance, and spare parts. Agricultural Mechanization Department will need to gradually transfer the hiring service and its related capital stock in which agricultural mechanization stations are currently working to the private sector, so as to assure development of private sector in rural areas and to contribute to higher productivity.

Table 20: Outcome 2.6: Outputs on Mechanization

Pillar 2 on Productivity – Outcome 2.6	Outputs
Increased application of appropriate mechanisation in the agricultural value chain.	**2.6.1. Encourage farmers to consolidate their fields (including farm roads, drainage, irrigation networks, land leveling) to promote mechanization of land preparation, seeding and transplanting, as well as harvesting. In irrigated areas, this action could be promoted by water user associations.** **2.6.2. Improve the enabling environment for private financial institutions (and others, such as input suppliers and buyers) to expand credit to farmers and SMEs to purchase machinery and expand options for leasing and renting equipment, including "sharing" the use of expensive equipment among a number of farms.** **2.6.3. Ensure a gradual handover the hiring service and its related capital stock in which agricultural mechanization stations are currently working under the AMD to private sector or farmer organizations.** **2.6.4. Train and demonstrate machine use, repair, and maintenance on farm.** **2.6.5. Promote emergence of rural workshop for agricultural machinery repair and maintenance.** **2.6.6. In collaboration with private sector, ensure timely availability of spare parts.** **2.6.7. Provide financial analysis for use of alternative machinery to guide investment decision of farmers under different agroecological conditions.**

8.4.7 Outcome 2.7 on Livestock and Fishery

162. The starting point with the development of the livestock and fish sub-sectors will be the division of public and private responsibility for animal and fish breeding, husbandry and health services. Government will manage food safety and sanitary inspection, animal health and feed product testing and registration, disease epidemiological and statutory control of declared enzootic, epizootic and cross-border diseases and animal registration and movement control. Private enterprises and service providers will supply genetic material and breeding services, approved animal medicines and associated health services, approved animal feeds and forages and nutrition advice, and overall animal husbandry services. Livestock Breeding and Veterinary Department has been undertaken the animal breeding, animal disease prevention, veterinary services and research, systematically perform the livestock production and management, will support the technical and required assistance to private sector for the development of national Livestock sector. MOALI will promote livestock/crop production integration and the development of forage production.

163. The ADS will systematically improve the genetic composition of livestock and fish stock, while protecting biodiversity. A National Strategy and Action Plan for Animal Genetic Resources (AnGR) will be prepared, with supporting legislation, regulations, and guidelines. This would include, inter alia: (i) support for the development of nation-wide Artificial Insemination (AI) program using both imported and locally produced fresh and frozen semen; and (ii) support for pure breed production by the private and cooperative sector with private breed society recording of progeny, productivity, and efficiency.

164. The ADS will also: (i) strengthen the animal and aquaculture health information system, including developing and implementing a National Animal Health and Disease Surveillance Plan; (ii) reliable access to both locally prepared and imported vaccines; (iii) expand a Community Animal Health Worker program; and (iv) develop contingency planning and action for existing and emerging animal disease threats. Where private livestock and fish services cannot be profitably provided, the government would either subsidize their delivery (preferred option) or provide an alternative public service.

165. The ADS will support the development of a national Forage Strategy and Plan to 2030, that will identify the location of a new MOALI Feed and Forage Division, guide applied research in animal nutrition and improve pasture, fodder and grazing and feeding practices. It will strengthen the capacity of the Feed Testing Laboratory and support the testing/registration of quality fodder and feed genetic material, its private multiplication, and its demonstration in farming systems.

166. The ADS will promote small-scale producers of livestock and dairy products and emphasize capacity building for livestock income generation in rural areas, including vocational, entrepreneurship and enterprise training, with special attention to women.

167. The ADS will support expansion and increased importance of apiculture (bee honey) industry as primary and additional source of income generation for small-scale producers.

168. In the aquaculture sub-sector, the ADS will (i) support the restructuring and expansion of aquaculture seedling infrastructure for the production and distribution of fish and shrimp seed, including its privatization where appropriate; (ii establish a network of Aquaculture Technology Centers, with supporting laboratory facilities and the development of a legal and regulatory framework for fisheries and other aquatic livelihoods; and (iii) promote initiatives for aquaculture optimization, land development, and cage and pen technology.

Table 21: Outcome 2.7: Outputs on Livestock and Fishery

Pillar 2 on Productivity – Outcome 2.7	Outputs
Increased use of improved animal and fish breeding, health and husbandry services and technologies by livestock producers.	Livestock 2.7.1. Myanmar Animal Genetic Resources Information System developed and maintained; 2.7.2. National Strategy and Action Plan for Animal Genetic Resources (AnGR) - with legislation, regulations and guidelines developed; 2.7.3. Nation-wide artificial insemination (AI) programme/industry established, based on a study of: (i) the application of genomics in breed improvement in Myanmar; (ii) the economic merit of domestic semen production; and (iii) the clear definition of public and private sector roles in AI material supply and delivery; 2.7.4. Animal health information systems strengthened, including the National Animal Health and Disease Surveillance Plan and associated surveillance and reporting activities; 2.7.5. Production/importation and distribution of vaccines, including cold-chain management strengthened, including through private sector investment; 2.7.6. Community Animal Health Workers (CAHW) programme institutionalized nationally, with supporting legislation; 2.7.7. Contingency planning and financing for emerging animal disease threats established; 2.7.8. Farm animal population baseline survey implemented; 2.7.9. Inventory and data base on animal pastures, fodder and feed systems compiled; 2.7.10. Physical, human resource and financial capacity of the Livestock Breeding and Veterinary Department (LBVD) Feed Testing Laboratory strengthened; 2.7.11. National animal feed strategy prepared; 2.7.12. Good Animal Husbandry Practices for livestock production prepared and adopted; 2.7.13. Study, including surveys and field trials to assess the biological and ecological potential and capacity of apiculture as a source of income prepared. Fisheries 2.7.14. Aquaculture seedling infrastructure (hatcheries & breeding ponds) for production and distribution of fish and shrimp seeds reorganised, including privatisation where appropriate; 2.7.15. Identification, inventory and fishery resource conservation of adaptable fish species established; 2.7.16. Network of Aquaculture Technology Centers (Koica Research Center - Marine Biology Departments of Universities of Mawlamaine, Pathein, Meik and Yangon), with supporting laboratory facilities established; 2.7.17. Provision and availability of fishing infrastructure facilitated and aquaculture initiatives including land development and cage and pen technology integrated with existing ponds or reservoirs under appropriate legal frameworks; 2.7.18. Prepare a new Fisheries Law.

8.4.8 Outcome 2.9 on Good Agriculture Practices

169. The ADS will support the formulation of standards and extension activities to promote the adoption of good practices in crops, animal health, soil fertility management, plant and animal nutrient management, and organic farming. The standards and practices will be developed for their suitability to the agro-ecological conditions of Myanmar diverse environment. In several cases, ADS will help to establish standards and promote practices that are consistent with regional standards (e.g. ASEAN GAP) or with global standards (e.g. GLOBAL GAP) in the case of commodities destined to export (see also 8.5.11).

Table 22: Outcome 2.8: Outputs on Good Agriculture Practices

Pillar 2 on Productivity – Outcome 2.8	Outputs and activities
Sustainable Farming, Good Agricultural Practices (GAP), Good Veterinary Husbandry Practices (GVAHP) are established and adopted.	2.8.1. Coordinate, formulate, elaborate, document, and promote concepts, principles, guidelines, laws, regulations and protocols for GAP (including GAHP, GAqP and OA) in Myanmar: ▪ Establish GAP Unit or Focal Point within MOALI to coordinate and spearhead development and implementation of GAP, GVAP, GAqP, OA; ▪ Document, share and promote adoption of principles, guidelines, regulations and protocols for GAP – with attention to Myanmar, ASEAN and global markets; ▪ Build capacity for inspection and certification, including training and establishment of National Laboratory for GAP and other standards and protocols; ▪ Monitor, control, regulate and enforce compliance with GAP, GAHP, GAqP and OA, especially organic farming and pesticide free standards, especially to prevent use of hazardous chemicals in crops and regulate use of antibiotics in livestock production process; ▪ Undertake GAP, GAHP, GAqP and OA, certification and facilitate incentives for certification; 2.8.2. Increase production, value-addition, sale and consumption of GAP and OA rice, pulses, vegetables, fruits, meat, dairy, honey, cash crops, and other products: ▪ Build capacity and empower stakeholders, including facilitate formation of Myanmar GAP and OA farmer groups and cooperatives; ▪ Build capacity of MOALI Departments in GAP and OA; ▪ Undertake applied research in GAP and OA practices, including private sector support; ▪ Conduct value chain analyses and cost of production studies on GAP and OA; ▪ Conduct tailored extension programmes for transfer of technology on GAP and OA applications and production, including private sector support ▪ Support Good Animal Husbandry Practices (GAHP) development for small and medium scale animal, dairy and poultry producers; ▪ Fish products - Upgrade the existing laboratories up to the ISO 17025 Standard and promote the adoption of Good Manufacturing Practices and comply with the Hazard Analysis Critical Control Points (HACCP) for the exportable fishery products; ▪ Organize GAP competitions, fairs and ceremonies. 2.8.3. Establishment and exploitation of "Myanmar Brand" of GAP and OA products in domestic and international markets: ▪ Build market information base on GAP and OA ▪ Obtain at least two accredited management standards; ▪ Assist GAP and OA producers and dealers to evaluate, explore, develop marketing plans and exploit niche market potentials, including connect with Fair Trade (FT) groups/markets.

8.4.9 Outcome 2.9 on Resilience

170. **Building resilience of farmers to climate change and disasters will require the combination of adaptation and mitigation measures at the household, community, and national level. The ADS will promote research on stress tolerant breeds of crops, livestock and fish that can be resilient to climate change and stresses such as salinity intrusion, drought, and flood.**

171. Landscape-based measures to promote Community Based Disaster Risk Management (CBDRM) will help farming communities to be better prepared to respond to risks such as flood and drought through structural (eg flood

protection infrastructure, reservoirs, drainage, safe areas) and non-structural measures (eg rain water harvesting, crop diversification, early warning system, emergency kits). Early Warning Systems will be strengthened to provide adequate lead time for communities to respond effectively to drought, heat waves, flash flood, dam spillage, and flood. Preparedness system at the community or region/ state level might include food and seed reserves. If affordable and economically justifiable, crop and livestock insurance might also be developed to provide further protection to farmers (see also Pillar 3 outcome on access to financial services). This requires the strengthening and expansion of weather records station.

Table 23: Outcome 2.9: Outputs on Resilience

Pillar 2 on Productivity – Outcome 2.9	Outputs
Resilience of farmers to climate change and disasters improved.	**2.9.1. Conduct research on stress tolerant varieties and breeds of crops, livestock and fish for the development of climate resilient agriculture that are at the same time higher in yield.** **2.9.2. Establish an early warning system and adopt early warning information for managing climate change risks in agriculture and food and nutrition security.** **2.9.3. Establish climate information and weather indexation systems designed to provide information to farmers. This will include building capacity of the Meteorology Department to provide weather risk indexation at local levels (as described for agricultural insurance), and building capacity for crop yield forecasting based on weather indexation.** **2.9.4. Strengthen the food reserve system to cope with emergency and food safety distribution to targeted farm households.** **2.9.5. Strengthen the seed and feed/fodder reserve system to cope with natural disasters such as flood and drought.** **2.9.6. Improve capacity of extension staff and farmers in climate smart agricultural practices through training, farmer field schools (FFS), and demonstrations.** **2.9.7. Implement programme to in-build mitigation factors and resilience of livestock farmers to climate change, natural disasters and other uncertainties.** **2.9.8. Increased climate smart and conservation-oriented livestock utilization practices and conservation farming.** **2.9.9. Establish a fund for preparedness and response to droughts, flood, epidemics and emergencies affecting rural areas and farmers not covered by agricultural insurance.** **2.9.10. Carry out Community Based Disaster Risk Management (CB-DRM) capacity building.**

8.5 Pillar 3 on Market Linkages and Competitiveness

172. The outcome of the strategic pillar on Market Linkages and Competitiveness is: farmers and agro-enterprises in Myanmar are stakeholders in effective value chains and are competitive in regional and global markets. This is achieved by facilitating the process of transforming the agricultural sector from a situation where a substantial proportion of farming is carried out primarily for subsistence or for local markets into a sector in which most farming is carried out for profitable commercialization and is connected to the local, national, and international markets.

173. This transformation towards a more commercialized and competitive agriculture requires a set of measures that focus not only on farmers, but also on agro-enterprises involved in the distribution of inputs and the commercialization of agricultural products and services. These enterprises include input providers, producer and marketing companies and cooperatives, storage operators, logistic companies, agro-processors, importers and exporters of agricultural and food products, distributors, traders, and agricultural service providers (including financial service

providers, insurance providers, business service providers). Profitable commercialization requires an enabling business and investment climate, reforms to strengthen contractual arrangements and financial services to promote efficient commercial agriculture, and physical and virtual infrastructure.

174. The ADS recognizes the key role of infrastructure in facilitating connectivity through transport and communication infrastructure, access to reliable and affordable energy, and efficient supply chain management through value chain infrastructure such as warehouses, pack houses, collection centers, markets, logistics centers. The ADS supports the improvement of knowledge infrastructure to promote commercial agriculture through effective market information and intelligence services.

175. This pillar of the ADS has placed its focus on competitiveness. Competitiveness is founded on: (i) a competent, hard-working and efficient work force; (ii) a clear understanding of what makes Myanmar unique in the global market place; and (iii) the determination and entrepreneurship to maximize productivity and innovate with new products and processes based on the country's natural endowments. Competitiveness is about capturing market share through the provision of value to consumers. Myanmar agriculture might have comparative advantage at the farm level in several commodities, however, to gain competitiveness, the overall value chain need to be improved through innovations that reduce costs along each stage of the value chain, product innovations that bring new desirable features to the consumers (eg food safety, improved packaging, convenience in preparation, taste, storability), and logistics practices that maximize economies of scale.

176. To improve competitiveness, the energy and inventiveness of farmers and the private sector is essential. These changes demand an approach to agricultural promotion and competitiveness that acknowledges the vital role of the private sector and farmer organizations, without conceding the critical function of the government to oversee, regulate and facilitate growth that is both competitive and pro-poor. This blending of private sector and farmers' energy and innovation with the facilitation of the government to ensure positive public outcomes is the rationale for public-private partnerships (PPP).

177. The essence of these partnerships is to create some form of "additionality" that would not have been possible without the other partner's involvement. From the public perspective, it affords the opportunity to leverage its funds and channelize outcomes, while, for the private and farming sectors, the addition of public funds reduces the perceived exposure to investing in high-risk, high-potential projects.

178. This strategic pillar emphasizes the need of prioritizing a limited number of value chains to ensure they achieve scale economies and therefore have sectorial income and employment impact. Pillar 3 outcomes and outputs are described.

8.5.9 Output 3.1 on Business Environment

Investment environment

179. The operations of the agribusiness private sector are hampered by several legal and procedural issues that increase transaction costs and red tape. Unnecessary internal taxes, road and bridge tolls, and permits make movement of goods across the country more difficult. The ADS will support the improvement of legal institutions for commercial and labor contracts, especially for various kinds of contract farming systems by developing mediation and arbitration services to resolve contract disputes that are accessible in rural areas. In the case of contract farming, the ADS will identify models, lessons and prepare a law and guidelines for effective contract farming regulation and implementation.

180. The Government is working on a new draft of the Investment law to encourage responsible investors, both domestic and foreign to expand business. In pursuit of an improved business environment, the ADS will support the preparation and implementation of an investment Promotion Strategy and Plan for the agriculture and food sector.

Market information

181. The ADS will promote the strengthening of public and private services providing market information to farmers and agro-enterprises. This will involve developing a suite of products

for market information (eg prices, market trends, volumes, grades and quality) and market intelligence (demand and supply of specific actors, market shares) using ICT to ensure that market information and intelligence is available to users in Myanmar language through internet and mobile services.

Table 24: Outcome 3.1: Outputs on Business Environment

Pillar 3 Market Linkages and Competitiveness – Outcome 3.1	Outputs
Improved business environment, information and investment along the agri-food supply chain.	**3.1.1. Improve the institutional, legal, regulatory and procedural framework commercial and business operations and contracts, and make recommendations and implement reforms, including:** ▪ **Streamlining of commercial and labor contracts, including various kinds of contract farming systems, business;** ▪ **Facilitation of unnecessary internal taxes, road and bridge tolls, and permits to make it easier to move goods within the country;** ▪ **Facilitate in reduction of "transaction costs" by eliminating "red tape" (that is, overly complex procedures) related to starting and running businesses.** **3.1.2. Develop implementing regulations for the Law on Consumer Protection and operationalize public and private processes for resolving consumer complaints, particularly for smallholder farmers.** **3.1.3. Identify models, lessons, and guidelines for effective contract farming and implement standard operating procedures for contract farming.** **3.1.4. Design and implement an investment promotion strategy for the agricultural and food sector.** **3.1.5. To help strengthen the capacity of Myanmar Investment Commission to expedite investment applications in the agriculture sector while effectively accounting for environmental and social impact assessment.** **3.1.6. To help develop implementing regulations that encourage responsible investors, both domestic and foreign (including 100% foreign owned firms) and assure following:** ▪ **Provision of domestic investors with the same rights and incentives as foreign investors;** ▪ **Reduce sectorial restrictions that prevent entry of private investors through a transparent and short negative list of restricted investment sectors.** **3.1.7. Promote development of a suite of products for market information and market intelligence.** **3.1.8. Provide financial, logistical and other support to facilitate training and technical assistance for MOALI and staff of other relevant agencies like MOC in market intelligence and information systems and policy analysis, including provisions for international training and meeting.** **3.1.9. Enhance and use ITC to ensure that market information and intelligence is available to users in Myanmar language at all levels of the agri-food sector, including through Internet and mobile devices:** ▪ **MOALI/Department of Meteorology and Hydrology/ others to ensure that all kinds of info collected, collated, available accessible for use by provide sector information providers, including: market standards, grades, specifications; weather; agriculture technology and knowledge like fertilization and pesticide use; soil and land use maps; etc.;** ▪ **Private sector info providers to set up networks for info distribution through cell phones, Internet, info kiosks; etc.** **3.1.10. Ensure that research and extension services and personnel are linked into and contribute to and use ICT networks.**

8.5.10 Outcome 3.2 on Intellectual Property Rights

182. The ADS will protect intellectual property rights for the agricultural and food sector. Key measures include the Plant Variety Protection Law consistent with the International Union for the Protection of New Varieties of Plants (UPOV); the Trademark Law and implementing regulations to enable protection for geographical indications (GI) and trademarks for agricultural/food products; and intellectual property right (IPR) protection against counterfeit agricultural inputs, especially for pesticides, including stronger border control measures to reduce the import of counterfeit products. Department of Agricultural Research drafted the plant varieties of protection law in the framework of UPOV.

Table 25: Outcome 3.2: Outputs on Intellectual Property Rights

Pillar 3 Market Linkages and Competitiveness – Outcome 3.2	Outputs
Protected intellectual property rights for the agricultural and food sector.	**3.2.1. Develop, approve and implement a Plant Variety Protection Law that is consistent with the requirements of the International Union for the Protection of New Varieties of Plants (UPOV). Ratify (or accede to) the 1991 Act of the UPOV Convention.(The Bill has been recently by submitted at the parliament (Hluttaw) for adoption process. The draft law has been submitted to the parliament by DAR.** **3.2.2. Approve the draft Trademark Law and implementing regulations to enable protection for geographical indications, certification marks, and trademarks for agricultural/food products.** **3.2.3. Strengthen IPR protection against counterfeit agricultural inputs, especially for pesticides, including stronger border control measures to reduce the import of counterfeit products.** **3.2.4. Approve the Patent Law to protect domestic research and innovators in the agriculture and food sector.**

8.5.11 Outcome 3.3 on Quality System

183. The ADS recognizes that improvement in quality, which requires a system of quality control and assurance, will help farmers and enterprises to get higher prices. This system is built upon several measures aimed at developing product standards and certifications, quality grading, quality control measures, the application of standard weights and measures, and reliable conformity assessment procedures.

184. The ADS will support the revision of the Law on Standardization and the Law on Metrology, enable the establishment of a National Accreditation Bureau for testing processes and a National Metrology Institute for measurements. It will support the National Standards Council to expedite the passage of key national standards related to the agriculture (including meats, fish, etc.) and food processing sectors based on widely accepted international standards (including CODEX standards for food and related HACCP standards, Global GAP standards and International Standard Office (ISO) standards and Good Manufacturing Practice (GMP) for food industries). Although these activities are outside the authority domain of MOALI, insufficient coverage or lack of actual practices of standardization, certification and control measure will exert negative impact on the agricultural sector growth. Accordingly network facilitating collaboration with the authorized agencies to put these measures in place and in force will be a rewarding task for MOALI.

Table 26: Outcome 3.3: Outputs on Quality Systems

Pillar 3 Market Linkages and Competitiveness – Outcome 3.3	Outputs
Reliable quality system that helps farmers and food processors get higher prices for higher quality goods, incentivizing quality upgrading developed.	**3.3.1. To help develop product standards and certifications, quality grading, quality control measures, and reliable conformity assessment (testing) procedures.** **3.3.2. Participate in the process of revision of the Law on Standardization to introduce key international best practices and transparency requirements for the development of standards, conformity assessment processes, and technical regulations.** **3.3.3. To help establish a National Accreditation Bureau for testing processes and a National Metrology Institute for measurements.** **3.3.4. To support the National Standards Council to expedite the passage of key national standards related to agriculture (including meats, fish, etc.) and food processing sectors, based on widely accepted international standards (including CODEX standards for food and related HACCP standards and Global GAP standards).** **3.3.5. To help improve the quality standards, testing laboratories, skills and awareness for agricultural and processed products to be in line with international best practices and those used by major export destinations where possible.** **3.3.6. To review and help the approval process of draft revisions to the Law on Metrology to establish a more coherent and reliable system of measurements in Myanmar; complete the process of metrication to which Myanmar committed in 2011, including in traditional food markets.** **3.3.7. Support the development of public and private calibration capacities to ensure the use of accurate testing/measurement equipment.**

8.5.12 Outcome 3.4 on Participatory Planning for Rural Development

185. The integration of agriculture and rural development in the new MOALI requires enhanced institutional framework for the participatory planning and implementation of rural development programs.

186. This will be supported by several ADS initiatives for village level community development, township community development, and community capacity building in preparing and drafting action plans and rural entrepreneurship. These initiatives will specifically incorporate gender-equality.

Table 27: Outcome 3.4: Outputs on Participatory Planning and Rural Development

Pillar 3 Market Linkages and Competitiveness – Outcome 3.4	Outputs
Enhanced framework for gender-equitable and participatory planning and implementation of rural development programmes institutionalized.	**Outputs** **3.4.1. Establish new Research and Development Division within DRD or as a branch unit under the proposed policy and strategy department of MOALI under the future institutional restructuring scheme.** **3.4.2. Establish new Design Division for rural infrastructure.** **3.4.3. Village level community development initiatives (e.g. DRD Green Village Project).** **3.4.4. Township level community development initiative (DRD Community based project example).** **3.4.5. Community capacity building in preparation and drafting of action plan projects.** **3.4.6. Training on rural entrepreneurship and enterprise development (e.g. rural livestock raising)**

8.5.13 Outcome 3.5 on Rural Infrastructure

187. **Farm roads** are the first step in linking farmers to markets. The ADS ascribes the significant role of improvement of rural road infrastructure consistent with the Master Plan for Transportation and the Rural Road Strategy, Separate funding needs to be provided to the concerned agencies for development and maintenance of rural roads. To maximize the impact of rural roads, it will be important to remove all restrictions on internal movements of agricultural goods within and between states and regions, and all fees or taxes associated with such movements. The ADS recommended the participatory policy review process on road tolls, with a view to reducing transport costs and times, and monitor transport costs and times and share this information widely with value chain stakeholders.

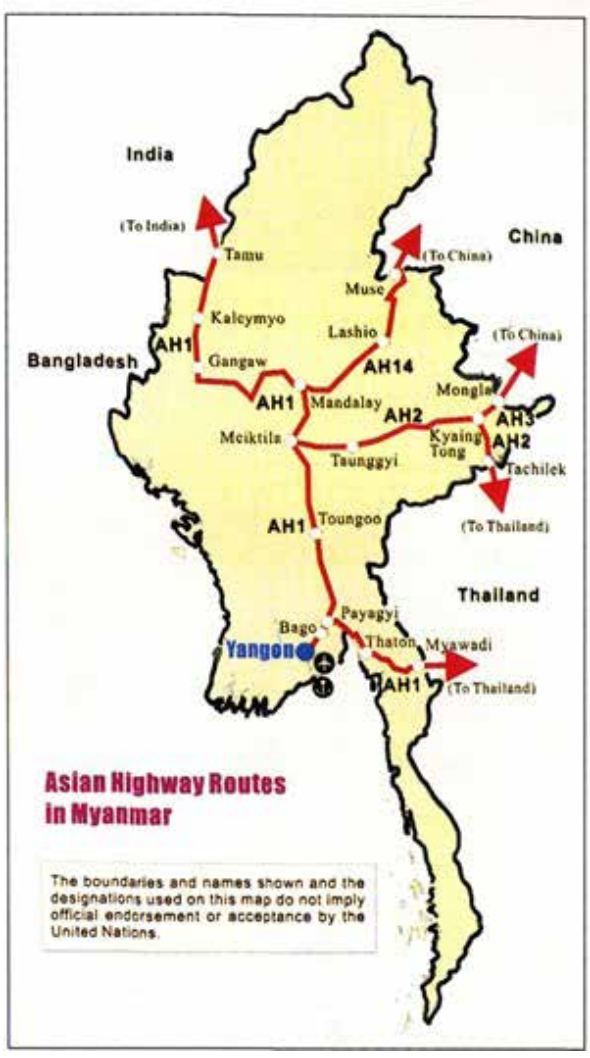
188. **Rural Energy**. The ADS will support current efforts by the Government to improve rural households' access to electricity and internet. The DRD is actively involved in several renewable energy activities including solar energy. More generally, depending on the farming systems and agro-ecology, the ADS will also promote other affordable renewable energies (e.g. mini-hydro, biogas, biomass gasifies), together with the use of PPP for power development and distribution to farming communities.

189. **Potable water,** The ADS will enhance access of rural households to potable water through the construction of rural water supply infrastructure and knowledge sharing on access to clean drinking water.

190. **Markets and Logistics Infrastructure.** Competitive value chains rely upon efficient markets and logistics infrastructure. This will depend on economic corridors that are built upon transport corridors currently envisaged by the Government. The Ministry of Industry has identified four main corridors (see Figure 5): North-South Corridor, East-West Corridor, Northeast-Southwest Corridor, and Yangon-Myawaddy Corridor, which are the foundation of the industrial policy. These areas account for the majority of Myanmar's economic production and population. The north-south corridor, for example, runs from Thilawa in Yangon to Myitkyina via Bago, Nay Pyi Taw, Meiktila and Mandalay. It currently encompasses 48% of Myanmar's population and provides 55% of GDP. The corridor also includes a special economic zone at Thilawa, 24 industrial zones and seven sub-industrial zones.

191. The industrial policy also discloses the government's plan to build two new deep-sea ports, at Pathein in Ayeyarwady Region and Ye in Mon State. The Pathein port will be in the Ngayokekaung area, just south of the state capital, and will be a landing point for ships from Africa and West Asia. The Ye seaport, at Kalagote Island, will be a transit point for cargo heading to Mawlamyine, Myawaddy and Mae Sot in Thailand. Around each corridor the policy envisages development of industrial activities oriented to both domestic and foreign markets. The Industrial Policy mentions the establishment of four Special Agro-industrial Economic Zones (SAEZ) covering Sagaing, Bago, Magwe, Ayeyarwady and Tanintharyi regions.

Figure 5 Industrial Development Corridors



192. With the industrial policy in mind, the ADS will identify strategic locations for agricultural market development and undertake feasibility studies. The ADS will emphasize improving market and logistics infrastructure in rural towns, including warehouses, cold storage, truck management, and ICT connection for distribution tracking, with major contribution by the private sector. The ADS will assist in developing rules and regulations and Standard Operating Procedures (SOP) for improved market infrastructure management, and capacity building programs for market infrastructure management, particularly in farmer markets or collection centers.

193. Within the context of the Greater Mekong Sub-region (GMS) Core Agriculture Support Program, Phase II (CASP II), MOALI has already identified investments in agro-industrial zones for the production and processing of safe and environment-friendly agro-based products. These zones will provide the marketing infrastructure and marketing logistics to help farmers and agribusiness enterprises to explore innovations, improve technologies and equipment, disseminate improved crop varieties and good practices, and promote specialized, standardized and intensive production and operation. In addition to infrastructure, capacity building for skilled workers and producers using sustainable production practices from raw material handling to waste disposal will be needed to carry out this investment. Electricity supply from bio-wastes by establishing solid waste and wastewater treatment plants will be included in the plan. Composts and biochar can be obtained from those waste treatment plants. First ADS priority should be under the Cross-Border Economic Zones Development Project at the border point with the China or Thailand. The second ADS priority should be given to middle Myanmar near wholesale markets such as the one being constructed in Mandalay and another planned for Nay Pyi Taw.

Table 28: Outcome 3.5: Outputs on Rural Infrastructure

Pillar 3 Market Linkages and Competitiveness – Outcome 3.5	Outputs
Rural infrastructure improves small-holder agriculture efficiency and profitability.	**Farm Roads** **3.5.1. Improve rural road infrastructure consistently with master plan for transportation (Ministry of Transport and Communication) and the Rural Road Strategy.** **▪ Rural road construction (improved access to areas outside the villages to collection center;** **▪ Reduce the time burden on rural family members for mobility and transfer of goods** **▪ Reducing damage to perishable crops during transport.** **3.5.2 Facilitate the removal process all restriction on internal movement of agricultural goods, incl. taxes and fees, within and between states and regions (Ministry of Commerce / Ministry of Transport and Communications / MOALI).** **▪ - Review existing transport regulatory system and suggest improved system ((Ministry of Commerce / Ministry of Construction / Ministry of Transport and Communications/ MOALI).** **▪ - Enact necessary legislation and regulations and by-laws on agricultural goods transportation (Ministry of Commerce / Ministry of Construction / Ministry of Transport and Communications / MOALI).** **3.5.2. Monitor transport costs and times and share information widely.** **Rural electrification** **3.5.3. Rural electricity projects.(off-grid)** **3.5.4. Facilitate connecting of rural communities and households to national grid.** **3.5.5. Promote renewable energies (mini-hydro, solar, biomass, biogas).** **3.5.6. Promote public-private partnerships (PPP) for development and distribution of power to rural farming communities.**

Pillar 3 Market Linkages and Competitiveness – Outcome 3.5	Outputs
	Potable water access **3.5.7. Construction of rural water supply infrastructure.** **3.5.8. Knowledge sharing on access to clean drinking water technology program.** **Market and logistics infrastructure** **3.5.9. Establish a dedicated Agribusiness and Marketing Division/ Unit in MOALI to work with corresponding entity within Ministry of Commerce (MOC), and streamline respective MOALI and MOC institutional set-up and modus operando, and coordinate arrangements between the two Ministries** **3.5.10. Identify strategic locations for agricultural market development and undertake feasibility studies.** **3.5.11. Improve market and logistics infrastructure in rural towns, including warehouse, cold storage, truck management, and ICT connection for distribution tracking, with major contribution by the private sector.** **3.5.12. Implement PPP financing support mechanisms.** **3.5.13. Develop rules and regulations and SOP for improved market infrastructure management.** **3.5.14. Capacity building programs for market infrastructure management.** **3.5.15. Develop agro-industrial zones for production and processing of safe and environment-friendly agro-based products.**

8.5.14 Outcome 3.6 on Agro-enterprise Development

Prioritized value chains

194. A value chain can be defined as a strategic partnership among inter-dependent individuals and businesses that collaborate to progressively create value for the final consumer, resulting in a collective competitive advantage. Successful value chains strive to add value to or differentiate a product to increase the consumer's willingness to pay, in ways that are complex for other firms to duplicate, thus providing a sustainable competitive advantage. These advantages, because of their multi-party scope and long-term nature, have the potential to provide sustainable competitive advantage. In this sense, value chains may be perceived as virtual enterprises. Smallholder farmers can benefit from value chain by engaging in productive, long-term partnerships with agro-enterprises. Farmers in these partnerships benefit from effective farmer organization, being able to mobilize larger product volumes of consistent quality, thereby raising their importance and negotiating power within the value chain. Farmers and their leaders will need to build their capacity in organizing, planning, accounting, negotiating, and marketing to achieve competitiveness in agri-food value chain.

195. This collaborative effort can best realize its potential if it is focused initially on a limited number of value chains selected through a process that considers: (i) financial and economic benefit; (ii) poverty reduction potential; (iii) growth potential; (iv) export potential; and (v) cross-cutting issues (social inclusion and gender, environmental sustainability, matching with national and regional strategic priorities, and geographical spread). Value chains engaged in the rice, beans, pulses, vegetables, oilseeds, coffee, rubber, sugarcane, cattle, and aquaculture sub-sectors would be prioritized. The ADS would support value chain development through key stakeholder (farmer groups and agri-business value chain associations) capacity building, improved access to appropriate financial services, and PPP investments that reduce "first "mover" risk and reward innovation and smallholder farmer inclusion.

196. To support agri-business and value chain development, the ADS will promote the strengthening of public and private services providing market information to farmers and agro-enterprises and agriculture based small scale industries (SSID). This will involve developing a suite of products for market information (e.g prices, market trends, volumes, grades and quality) and market intelligence (demand and supply of specific actors, market shares) using ICT to ensure that market information and intelligence is available to

users in Myanmar language through internet and mobile.

Small and medium agro-enterprises

197. The ADS will promote the growth of innovative small and medium (SME) agro-enterprises and agricultural board activities of small scale industries through measures including the establishment of Agri-business incubators, matching grant funds to promote SME innovation in agri-business, and an innovation competition fund for agro-enterprises and cooperatives. The ADS will also promote specific agro-entrepreneurship programs for youth, women, and disadvantaged groups and disadvantaged region.

Table 29: Outcome 3.6: Outputs on Agro-enterprise Development

Pillar 3 Market Linkages and Competitiveness – Outcome 3.6	Outputs
Increased competitiveness and stakeholder participation in agricultural value chains engaged with prioritized commodities.	**Prioritized value chains** **3.6.1. Establish 7 prioritized National Value Chain Programs (including crops, livestock, and aquaculture). Example: rice, vegetables, pulses, oilseeds, coffee, rubber, cotton, sugarcane, poultry, cattle, aquaculture.** **3.6.2. Conduct value chain study and identify bottlenecks and opportunities for respective prioritized enterprises.** **3.6.3. Prepare a value chain policy, strategy and development programme** **3.6.4. Establish value chain information desks to monitor cost of production, market information and analysis.** **3.6.5. Support formation of farmer organizations dedicated to specific value chain development.** **3.6.6. Support formation of trade associations dedicated to specific value chain development.** **3.6.7. Support the formation of industry associations including farmers, processors, logistics operators, and service providers dedicated to specific value chain development and lobby the enactment of agro-industries related law and regulation and establish PPP (eg. National Rubber Board, Sugar Council, Cotton Authority, etc.)** **3.6.8. Conduct regular (quarterly) meetings of value chain industry with Government.** **3.6.9. Establish a value chain competitiveness index and monitor its performance over time. Make financial support to value chain initiatives contingent upon improvement in the competitiveness index.** **3.6.10. Establish value chain development funds to promote farmer-enterprises partnerships.** **3.6.11. Establish a value chain innovation fund to fund an annual value chain innovation competition. Set up a fund raising programme for constructing livelihood and income generating training for the rural youth who could not complete their basic education.** **3.6.12. Organize annual value chain fairs, exhibits, seminars, workshops, conferences, and training both in Myanmar and abroad aimed to have access to markets for agri-food products from Myanmar.** **3.6.13. Promote the formation of PPP for value chain development.** **3.6.14. Training of Trainers (ToT) on Climate Friendly Agribusiness Value Chains.** **Small and medium agro-enterprises** **3.6.15. Lobby and adopt tax incentives to stimulate investment in agro-based enterprises.** **3.6.16. Promote establishment of Agribusiness Incubators.** **3.6.17. Establish matching grants to promote agro-enterprise innovation.** **3.6.18. Innovation Competition Fund for Agro-enterprises and Coops.** **3.6.19. Agro-Entrepreneurship Programs for youth, women, disadvantaged groups and disadvantaged regions.**

8.5.14 Outcome 3.7 on Food Quality and Safety

198. Myanmar is still at an early stage of establishing a system for assurance of food quality and food safety. Several regulatory, institutional, and capacity building measures are needed to bring the country to compliance with regional standards. The specific measures include the following: (i) modernize the Food Law and develop effective implementing by-laws and regulations as quickly as possible and ensure use of risk-based enforcement and of international standards; (ii) develop sanitary and phytosanitary regulations in line with international practices to protect crop and animal health in Myanmar; (iii) formulation and promulgation of food safety and quality standards, starting from the standards for the prioritized value chains; (iv) adopt legislation on accreditation of standards certification bodies and national laboratories for foods safety and quality certification; (v) strengthen and upgrade laboratories to international accreditation standards; (vi) establish regional laboratories and district offices for a number of food safety tests (soil testing, Maximum Residue Levels, water testing, pesticides, fertilizers, etc.); (vii) establish capacity for risk assessment (for both plant and animals), SPS management and surveillance; (viii) conduct awareness campaign on food safety; (ix) adopt One Health Approach and strengthen animal health surveillance, diagnostic, and response capacity; (x) strengthen food safety inspection and publication of negative findings; (xi) negotiate SPS protocols with key trading partners to facilitate exports; (xii) apply legitimate policy objectives based on international standards wherever possible with minimum compliance costs and unnecessary impacts on trade; (xiii) support the private sector as well as public sector to develop inspection and conformity (testing) assessment processes, increasingly accredited to be recognized as meeting international standards for operation; and (xiv) build capacities to trace production processes for agricultural and food products, both for implementation of domestic food safety and crop and animal health measures, but also to meet government and private requirements for traceability in countries where Myanmar exports agricultural and food products.

Table 30: Outcome 3.7: Outputs on Food Quality and Safety

Pillar 3 Market Linkages and Competitiveness – Outcome 3.7	Outputs
Enhanced food quality and safety.	**3.7.1. To help modernize the Food Law and develop effective implementing by-laws and regulations as quickly as possible and ensure use of risk-based enforcement and use of international standards.** **3.7.2. Develop sanitary and phytosanitary regulations in line with international practices to protect crop and animal health in Myanmar.** **3.7.3. Formulation and promulgation of food safety and quality standards, starting from the standards for the prioritized value chains.** **3.7.4. Adopt legislation on accreditation of standards certification bodies and national laboratories for foods safety and quality certification.** **3.7.5. Strengthen and upgrade laboratories to international accreditation standards.** **3.7.6. Establish regional laboratories and district offices for a number of food safety tests (soil testing, Maximum Residue Levels, water testing, pesticides, fertilizers, etc.).** **3.7.7. Establish capacity for risk assessment (for both plant and animals), SPS management and surveillance.** **3.7.8. Conduct awareness campaign on food safety.** **3.7.9. Adopt One Health Approach and strengthen animal health surveillance, diagnostic, and response capacity.** **3.7.10. Negotiate SPS protocols with key trading partners to facilitate exports.** **3.7.11. Apply legitimate policy objectives based on international standards wherever possible with minimum compliance costs and unnecessary impacts on trade;**

Pillar 3 Market Linkages and Competitiveness – Outcome 3.7	Outputs
	3.7.12. Support the private sector as well as public sector to develop inspection and conformity (testing) assessment processes, increasingly accredited to be recognized as meeting international standards for operation. **3.7.13. Build capacities to trace production processes for agricultural and food products, both for implementation of domestic food safety and crop and animal health measures, but also to meet government and private requirements for traceability in countries where Myanmar exports agricultural and food products.** **3.7.14. Identify border areas for the establishment of disease control zones including biosafety areas.**

8.5.15 Outcome 3.8 on Financial Services

199. The ADS supports the development of an agricultural finance policy that encourages banks, microfinance institutions (MFIs), non-bank financial institutions such as leasing and finance companies and insurance companies to provide needed services to rural communities, especially farmers and SMEs. This must be done in close cooperation with the Central Bank of Myanmar and Ministry of Planning and Finance (MOPF). The ADS supports the development of implementing regulations for the recently approved Financial Institutions Law, and ensure strong input by agricultural and food sector ministries and private stakeholders in this process. Critical regulatory reforms for banks to expand credit include (i) flexibility on taking collateral for loans (allowing the use of movable assets as collateral or in some cases allowing loans based on the viability of business plans and borrower's track records); and (ii) allowing loans with terms greater than one year; and allowing interest rate flexibility.

200. Over time revise the Law on Microfinance, but in the short-run implement several key regulatory reforms for MFIs to mobilize greater amounts of rural savings and credit including: (i) expanding MFI sources of funding through expanded deposit taking and more flexible borrowing from domestic and foreign banks and other funding sources, (ii) increasing interest rate flexibility, and (iii) expanding the range of financial services provided by MFIs.

201. The ADS promotes the development of digital financial services, particularly to increase access of low-cost financial services to farmers and others in rural areas. It sees an important role for guarantee funds, loan loss reserves and "compensating balance" grants to leverage private bank lending and reduce risk for "first movers" in the provision of seasonal input loans and medium-term investment financing (e.g. tube wells, livestock, farm machinery) for commercial smallholder farmers. The ADS also supports the development of more diversified financial products for value chain financing and the development of creditworthiness information systems that make it easier to provide credit to viable farmers and SMEs without full collateral backing.

Table 31: Outcome 3.8: Outputs on Financial Services

Pillar 3 Market Linkages and Competitiveness – Outcome 3.8	Outputs
Improved access to a range of financial services for farmers and agribusiness enterprises.	**3.8.1. To help develop an agricultural finance policy that encourages banks, microfinance institutions (MFIs), non-bank financial institutions such as leasing and finance companies and insurance companies to provide needed services to rural communities, especially farmers and SMEs.**

Pillar 3 Market Linkages and Competitiveness – Outcome 3.8	Outputs
	3.8.2. To help develop implementing regulations for the recently approved Financial Institutions Law, and ensure strong input by agricultural and food sector ministries and private stakeholders in this process. Critical regulatory reforms for banks to expand credit include (i) Flexibility on taking collateral for loans (allowing the use of movable assets as collateral or in some cases allowing loans based on the viability of business plans and borrower's track records); and (ii) Allowing loans with terms greater than one year; and allowing interest rate flexibility. 3.8.3. Over time revise the Law on Microfinance, but in the short-run implement key regulatory reforms for MFIs to mobilize greater amounts of rural savings and credit including: (i) Expanding MFI sources of funding through expanded deposit taking and more flexible borrowing from domestic and foreign banks and other funding sources, (ii) Increasing interest rate flexibility, and (iii) Expanding the range of financial services provided by MFIs. **3.8.4. Approve key regulations that would allow growth in e-money or mobile money (which allows the cell phone companies to mobilize their investments in cell-phone connectivity to provide low- cost access to financial services) and e-banking, which can greatly increase access of low-cost financial services to farmers and others in rural and otherwise isolated areas where the costs are high to reach traditional brick-and-mortar financial service offices.** **3.8.5. To help develop creditworthiness information systems that make it easier to provide credit to viable farmers and SMEs without full collateral backing.** **3.8.6. To help develop a rational business model for MADB that takes into account the needs of farmers relative to expanding commercial finance options and that clearly accounts for any subsidization.** **3.8.7. Consider options for privatizing or dramatically changing the MADB's corporate governance, including establishing an autonomous Board of Directors.** **3.8.8. Engage with MADB to offer longer term loans and allow loans beyond seasonal credit for specific crops.** **3.8.9. Provide training in financial management for farmers.** **3.8.10. On-going capitalization of MADB - MOALI budget, including development support to MOALI;** **3.8.11. Microfinance for cooperative using finance from Korea Banks.** **3.8.12. Explore options for financially and economically sustainable agricultural insurance and develop policy, law, and regulations as appropriate;**

8.5.16 Output 3.9 on Trade Facilitation and Export Growth

202. Trade facilitation. The improvement in competitiveness of agricultural and food products from Myanmar depends on measure that facilitate trade through improvement in import and export procedures and trade negotiation. Specific measures promoted by the ADS include: (i) significantly reduced licensing requirements for imports and for agricultural and food exports by (a) eliminating export licenses for all agricultural exports; and (b) rationalizing import licensing requirements for imports of agricultural products and inputs to agricultural and food production, including a short and transparent negative list of products requiring sector-specific import licenses; (ii) developing more effective trade facilitation capacities to reduce the cost of clearing goods through customs and border control by (a) streamlining and automating non-tariff measure processes, including for SPS measures and (b) completing the customs automation program and integrating approvals of non-tariff measures into a National Single Window (NSW) for customs clearance, linking the NSW to the ASEAN Single Window; (iii) upgrading customs clearance processes and logistics facilities for key land border crossings; (iv) negotiating with

neighboring countries to improve the trading regime at land-borders; (v) improving processes for transiting products through Myanmar, especially from Yangon to Muse by implementing the ASEAN Customs Transit System; and (vi) developing plans for handling surges in transit goods, as China increasingly uses Yangon ports as an entry point for transiting imports through Myanmar into growing Western China markets.

203. Export promotion. Given its export orientation, the ADS will promote exports through programs and trade diplomacy. The specific measures include: (i) implement an agricultural export promotion program, providing information to farmers and processors about export opportunities and requirements and promoting Myanmar products in targeted foreign markets: (ii) develop the capacity for more effective trade diplomacy in government, and of the private sector to participate therein, to protect national interests in international trade organizations important for agriculture and good, including the World Trade Organization (WTO) and ASEAN Economic Community; (iii) in particular, build capacities to negotiate more effectively with neighboring countries to reduce situations where Myanmar exports are restricted; and (iv) raise product quality to drive growth in export income.

Table 32: Outcome 3.9: Outputs on Trade Facilitation and Export Growth

Pillar 3 Market Linkages and Competitiveness – Outcome 3.9	Outputs
Trade facilitated agri-food and agricultural product export growth	**Trade facilitation** **3.9.1. Help reduce licensing requirements for imports and for agricultural and food exports by (i) eliminating export licenses for all agricultural exports); and (ii) rationalizing import licensing requirements for imports of agricultural products and inputs to agricultural and food production, including a short and transparent negative list of products requiring sector-specific import licenses.** **3.9.2. To help develop more effective trade facilitation capacities to reduce the cost of clearing goods through customs and border control by (i) streamlining and automating non-tariff measure processes, including for SPS measures; and (ii) completing the customs automation program and integrating approvals of non-tariff measures into a National Single Window (NSW) for customs clearance, linking the NSW to the ASEAN Single Window.** **3.9.3. To help upgrade customs clearance processes and logistics facilities for key land border crossings.** **3.9.4. Participate in negotiation with neighboring countries to improve the trading regime at land-border.** **3.9.5. To help improve processes for transiting products through Myanmar, especially from Yangon to Muse by implementing the ASEAN Customs Transit System.** **3.9.6. To help develop plans for handling surges in transit goods, as China increasingly uses Yangon ports as an entry point for transiting imports through Myanmar into growing Western China markets.** **Exports** **3.9.7. Prepare and implement National Export Strategy and Agricultural Export Promotion Program;** **3.9.8. Develop the national capacity for more effective trade diplomacy in government including private and public sector;** **3.9.9. Cooperation, coordination, negotiation with international loan/grant/grant assistance projects of MOALI;** **3.9.10. Document and provide guidance to enterprises that are not in line with Trade Related Investment Management.**

9. IMPLEMENTATION OF THE ADS

9.1 Institutional Mechanisms for Implementation and Coordination

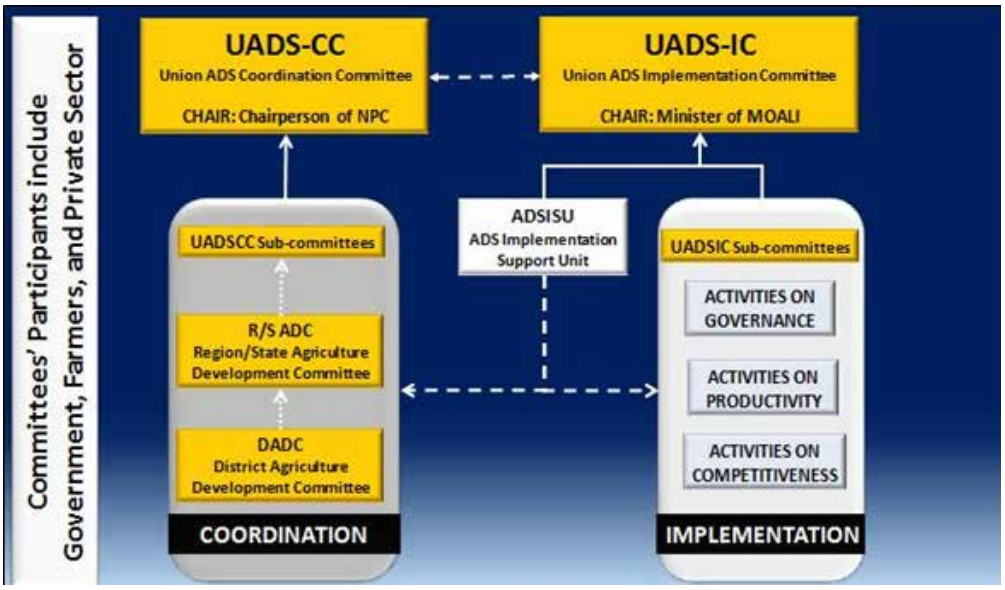
204. The implementation of the ADS, for which MOALI is the focus Ministry, requires the concerted effort of various organizations from the Nation, private sector, civil society, and DPs. The ADS provides the MOALI work program and budget. The National Planning Commission (NPC) will provide overall policy and planning coordination and MOALI will lead implementation.

205. The ADS will be implemented through existing sanctioned man power Government structures, led by MOALI. Recognizing the complexity and multi-agency requirements to implement the ADS, steps will be taken to strengthen existing agencies to assist with planning, coordination, implementation and monitoring.

206. Coordination of policies and programs will be achieved through the National ADS Coordination Committee (NADSCC), which will include representatives of government[26] and farmer and private enterprise organizations. As a subcommittee of the National Planning Commission (NPC), the NADSCC will be linked to Region/State, District and Township Development Committees, which will coordinate ADS implementation at their respective levels. Implementation of ADS programs and projects will be undertaken under the overall guidance of the National ADS Implementation Committee (UADSIC), in the form of expanded semester MOALI Executive Committee meetings,

26 Including, inter alia, Ministry of Natural Resources and Environmental Conservation (MONREC), or the National Adaptation Programme of Action to Climate Change (NAPA), Ministry of Planning and Finance (MOPF), etc.

Figure 6 Implementation Arrangements for ADS



chaired by the Hon. Minister of MOALI and including private sector, farmer and civil society representatives. The UADSIC will serve as the Steering Committee for the ADS Implementation Support Unit (ADSISU) which will be established within the MOALI Department of Planning, with responsibility to support implementation of the ADS during the initial 5 years.

9.1.1 The National ADS Coordination Committee (NADSCC) and its Subcommittees

207. The NADSCC will be supported through secretariat service provided by the ADS Implementation Support Unit (ADSISU) and will be facilitated by the following NADSCC sub committees, all formed from or convened by existing committees or organizations, and charged with improving the coordination of the ADS in their respective areas of responsibility:

a. Coordination Subcommittee with Private Sector. Coordination among public sector, private sector (e.g. Federation of Chambers of Commerce and Industry, Trade/Industry and Commodity Associations), cooperative sector (e.g. Myanmar Society of Cooperatives), and farmer organizations. The Union of Myanmar Federation of Chambers of Commerce and Industry could convene meetings of this sub-committee. [27]

b. Coordination Subcommittee with Non-Government Sector. Coordination between government sector and non-governmental organizations/international non-governmental organizations (NGOs/INGOs). The existing NGO Coordination Resource Centre Management Committee could convene meetings of this sub-committee.

c. Coordination Subcommittee with development partners. The existing Agriculture and Rural Development Sector Coordination Group of the Donor Consortium.

d. Coordination Subcommittee on Food Nutrition Security. Representatives from the Agriculture and Rural Development Sector Coordination Group of the Donor Consortium will, collectively, fill this role.

e. Coordination Subcommittee on Food Safety. The subcommittee will coordinate food safety issues arising at different stages of the supply chain. Typically, production issues such as those related to use of chemicals, animal and plant disease are the domain of MOALI. Other issues like those related to trade, processing, preparation, and consumption of food that is safe relate to Ministry of Trade, Ministry of Industry, Ministry of Health. Private sector, consumers' organizations and NGOs have also a key role to play in food safety organization. The Central Food and Drug Supervisory Committee – chaired by Director General, FDA (Department of Food and Drug Authorization) could convene meetings of this sub-committee.

f. Coordination Subcommittee on Regional/ State Planning. The subcommittee including representatives from the Regions/States Ministry of Planning and Finance (MOPF) and MoALI will ensure coordination between Union and Regions/States in the formulation of investment plans. This committee would be best convened by the NPC with the support of the ADSISU.

9.1.2 The National ADS Implementation Committee (NADSIC)

208. The NADSIC, which will be implemented through expanded semester MOALI Executive Committee meetings chaired by Hon. Union Minister of MOALI, will include Union-level representatives of MOALI, farmers' organizations, civil society and the and private sector. The ADSIC will be responsible to ensure the Implementation of ADS and should meet regularly (e.g. quarterly). The TOR of the Committee will include as follows:

1) Promote the implementation of ADS by policy, administrative and legislative changes in responsible institutions.

2) Promote resource mobilization both from internal (public and private) and external sources.

27 In early year, the present government has formed the Private Sector Development Committee headed by vice-president No.(1) and regular meeting with the private sector commodity associations at UMFCC, to adders issues and measure for solutions.

3) Provide guidance to MOALI and the key stakeholders to facilitate ADS programs and projects implementation from the grassroots to the national level.

4) To act as the Project Steering Committee for the MOALI Department of Planning -based ADSISU, which supports ADS implementation,

5) Together with NADSCC, organize periodic assessment of the ADS and recommend adjustments.

9.1.3 The ADS Implementation Support Unit (ADSISU)

209. The implementation of the ADS requires coordination among different agencies and stakeholders; it also requires policy, legal, planning, monitoring, and analytical capacities that are currently limited and dispersed.

210. The ADS Implementation Support Unit (ADSISU) will be endowed with human resources and capacity to support policy formulation and analysis, planning, monitoring, and coordination of the ADS. The unit will support the ADS over the first 5 years of the implementation and will contribute to bridging the gap between policy and implementation.

211. The unit will be established within the MOALI Department of Planning and will support the ADS implementation and capacity building of related stakeholders and the agencies involved in ADS implementation and coordination. Functions of the ADSISU include:

1) Conduct a workshop at ADS start-up with all key stakeholders to set ADS priorities, particularly for the 2018/19 and 2019/2020 annual work programs and budgets;

2) Provide capacity building in policy analysis and policy monitoring and integrated planning to relevant implementation agencies;

3) Support to development of a system and database for ADS monitoring;

4) Support formulation and amendment of policies, regulations, procedures, and manual for implementation of the ADS;

5) Support formulation of integrated periodic plans (annual and 5-year plans, and revisions /updates of ADS plans);

6) Support NADSCC and its subcommittee with analytical capacity and logistics;

7) Support monitoring of the ADS implementation and institutionalization, including monitoring of related policies;

8) Facilitate implementation of national programs such as the ADS Value Chain programs through advisory services to the Program Managers;

9) Support harmonization of Sector Policies with international commitments and guidelines;

10) Collect and analyze data of strategic importance to ADS implementation as needed and in synergy with existing data collection systems;

11) Coordinate development partner investments and programs to be in line with implementation of the ADS.

12) Secretariat to the NADSCC.

9.2 Key Results by Strategic Pillars

212. The implementation of the ADS involves a complex set of activities under each pillar. To guide the implementation and focus the effort of implementation agencies and coordination committees, it is expedient to identify Key Results under each strategic pillar.

213. The Key Results are those needed to ensure that the ADS overall is successful, even though not all remaining results in the monitoring framework could be achieved on time. The Key Results are the priorities that the any coordination meeting, any monitoring report, and any other major ADS gathering should address before trying to address other issues. The following table identifies the Key Results.

Table 33 Key Results of the ADS

No.	Key Results under Pillar 1 on Governance	Key Results under Pillar 2 on Productivity	Key Results under Pillar 3 on Competitiveness
1	Seventy percent of Myanmar farmer and private enterprise stakeholders' express satisfaction with MOALI integrated, participatory planning process.	National Agriculture Research Centre established, has approved a 5-year research strategy and is coordinating farming systems-based applied research program in Myanmar	Returns to farmer stakeholders have increased by at least 20% in 7 prioritized value chains.
2	MOALI M&E at Ministry and department levels providing annual reports and informing MIS on a quarterly basis.	Agricultural extension policy with clear division of public and private sector roles and responsibilities mandated	Food safety and quality standards established for rice, beans, pulses, vegetables, oilseeds, sugarcane, cattle, and aquaculture sub-sectors
3	National Land Use Council established, and Umbrella Land Law legislated.	The Integrated Water Resources Management (IWRM) policy within the Framework of the National Water Policy prepared.	Ecosystems-based participatory adaptation and disaster risk reduction plans implemented in 10 major water catchments.

9.3 Quick wins

214. It will be essential to gain broad support during the first year of ADS implementation, both within MOALI and across key stakeholders. This will require some quick wins for each pillar, achievable within the first year of ADS implementation, as indicated in the following table.

Table 34 Quick Wins to be realized during Year 1 of Implementation of the ADS

No.	Quick Wins under Pillar 1 on Governance	Quick Wins under Pillar 2 on Productivity	Quick Wins under Pillar 3 on Competitiveness
1	NADSCC, NADSIC and ADSISU operational.	National Agriculture Research Council established and Master Plan for Research finalized	Financial and economic analysis of value chains engaged in the 7 priority commodities completed and value chain programs with adequate resources for at least two prioritized value chains (eg. rice and pulses) established.
2	MOALI Policy and M&E Divisions established.	Action Research Fund established	One agribusiness incubator established
3	MOALI DOC farmer organizations registration unit operational	Law on Extension drafted with stakeholder participation.	Department of Agribusiness and Market Information established.
4	MOALI restructuring plan drafted with stakeholder participation	Formulate, approve, and disseminate at least 2 GAP standards for important crops, (eg. Mango, and Corn)	At least 2 Geographical Indications approved.
5	National Land Use Council operational and Umbrella land law drafted with stakeholder participation.	Sold out and transfer assets from at least three agricultural mechanization stations	Establish agricultural innovation competitions and award prizes to initial region/state winners.

SECTION – II

ADS INVESTMENT PLAN (2018-19 TO 2022-23)

1. RESPONSIBILITIES OF DIFFERENT AGENCIES

215. The investment plan has been jointly compiled by the Development Partners and the respective departments of MOALI. The responsibility to carry out the ADS activities has been described to each department as primary role division as secondary role and section as the tertiary role. It is complied with respect to three pillars of ADS. The detail investment plan is printed as reference copy for each department of MOALI and concerned agencies. (as ANNEX 1[28] to the main ADS volume)

28 ANNEX 1 reports the agency for primary, secondary responsibility with respect to Department, Division and Section of each agency. In several cases, other agencies share responsibilities. These activities of the investment plan with respect to Pillar 1,2,3 are compiled and printed as a companion volume of the ADS text. The ADS investment plan matrix at the activity levels were compiled with respect to 14 departments budget estimate, output and activity levels. During this process, each department and its division and section submitted their budget requirement for ADS and these budget figures are incorporated in the investment plan matrix. It is printed to be adopted or referred to by the respective department of MOALI.

2. INVESTMENT PLAN

2.1 Introduction

216. The ADS provides the vision, the framework and the long-term development goals and strategic priorities of the Republic of the Union of Myanmar for the sustainable development of the agricultural sector up to 2030. The assurances of food and nutrition security as well as livelihood and income enhancement are key objectives of the ADS. The Investment Plan (IP) for the five-year period 2018/19 to 2022/23 has been prepared as an integral component of the Agricultural Development Strategy (ADS). The IP is based on the ADS's (i) vision, impacts, outcomes, outputs and suggested activities; (ii) recommendations for policy formulation and action; and (iii) suggestions for the coordination and implementation and other medium and long-term considerations.

217. The IP also takes into consideration the recently completed Public Expenditure Review (PER) (World Bank 2017), the Mid-term Expenditure Framework (MTEF), and the assessment of donor pipelines two recent changes in the structure of MOALI. The first regards the transfer of the MADB to the MOPF. The second relates to the Division of Roads and Bridges, which has been transferred from DRD to the MOC.

218. The ADS and its constituent IP development has involved wide-ranging stakeholder consultation. The Myanmar Agricultural Policy – 2016 provided the central tenets and guiding principles of the consultative process. In addition, the process included a thorough review and analysis of other policies, strategies, and plans, as well as past, current and planned and anticipated programmes, projects and expenditures. The ADS preparation also included consultations with the staff of the various MOALI Departments and with other stakeholders including farmers, private sector, DPs, A & RDSWG, civil society organizations.

219. Based on these reviews, analyses and consultations, the ADS undertook and presents an evaluation of the socio-economic, agro-technological, agro-ecological, institutional and other conditions associated with Myanmar's agriculture sector. It then uses a programme approach to structure the various measures and interventions required to achieve the vision, goals, and objectives of the sector through identified objectives, outcomes, outputs and activities. This programme approach facilitates the identification of implementation responsibilities among the respective MOALI departments, including annual work plan and budget allocations. The programme approach also facilitates the division of responsibilities between the Government, farmers, the private sector and DPs for funding and implementation of various recommended planned programmes, projects and activities under the respective outputs, outcomes, objectives and Pillars of the ADS, as well as those that will be identified and planned at later stages.

220. This section contains a summary of the IP for achieving the objectives of the ADS, and, through that, those of the Agricultural Policy. The presentation entails reviews of current and past budgets and plans, an assessment of mid-term prospect for the agriculture budget, a statement of priorities of the IP, and then an outline of the ADS IP for the period 2018/19 – 2022/23. Primary responsibilities for the implementation of the IP are presented in Annex 1. Annex 2 summarizes the data and budget calculations of investment requirements for each ADS Pillar and

their respective objectives, outcomes and outputs[29] . The Investment Plan is a living document, which, over time, will be subject to modifications as new information is collected through monitoring and evaluation and as the policy debates evolves. The MOALI, Department of Planning will maintain and update the database containing the calculation tables used for the compilation of the IP. If any changes are made to the IP, they should first be entered in the DOP's database.

2.2 Trends in Agricultural Budgets

221. In nominal terms, the agricultural budget has more than doubled in the period from 2012/13 to 2017/18 (Table). The budget of just three departments (Agricultural Mechanization, Irrigation and Water Utilization, and Rural Development) represent about 86% of the total MOALI agricultural budget and is mainly related to rural infrastructure (irrigation, rural roads, rural water, rural energy) and equipment (tractors and other machinery).

222. While this percentage has been relatively stable over time Figure 7 the share of the three departments has changed considerably, with the share of AMD and DRD growing rapidly over the past 5 years (AMD's share growing from 4.9% to 14.4% and DRD's from 11.2% to 43.8%) and the share of Irrigation and Water Utilization Department (IWUMD) declining from 67% of the total budget to 27% Figure 7. The large share of these three components of the MOALI budget has resulted in other key functions and subsectors being relatively neglected despite their importance to agricultural growth. The following budget allocation issues (Table35) are of concern:

- very low resources to agricultural research (on average only 0.2% of total budget) despite the demonstrated high return to agricultural research investment globally;
- very low resources to livestock and fishery (together only 3.3% of budget) despite their contributing 30% of agricultural GDP and growing twice as fast as the crop sub-sector;
- Marginal resources to agricultural planning (0.2%) despite the crucial task and need of coordinating a larger ministry encompassing various dimension of agriculture and rural development and the movement towards decentralization requiring coordination with the states/regions, private sector, farmers, community based organizations (CBOs), DPs, and other agencies.

29 The budget for each outcome has been built from budget for each output/activity. Those output/activity level details are available with the Department of Planning of MOALI. The budget for each output has been built from budget for each activity. These activity level details are printed as investment plan matrix in the a companion volume of ADS document.

Table 35 Agricultural Budget of MOALI from 2012/13 to 2017/18 in nominal terms (Million Kyat)

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Minister's Office	835	876	1,421	2,478	2,493	1,557
Department of Planning	3,771	641	904	818	764	792
Department of Agriculture	34,490	35,078	40,856	65,220	83,761	52,765
Irrigation and Water Utilization Management Department	322,413	407,823	423,221	420,378	333,898	297,087
Agricultural Land Management and Statistics	22,919	24,653	25,819	28,431	32,138	32,431
Agricultural Mechanization Department	23,391	22,976	41,171	126,158	113,182	152,553
Yezin Agricultural University	6,806	15,381	9,084	14,783	5,688	9,226
Department of Agricultural Research	3,625	2,903	7,428	9,289	10,073	8,474
Livestock Breeding and Veterinary Department	2,450	2,785	21,027	14,874	18,712	21,240
Department of Fisheries	1,803	2,047	9,835	9,262	5,565	12,536
Rural Development Department	53,852	85,162	402,516	500,041	540,891	464,047
University of Veterinary Science	597	1,299	4,128	2,941	2,105	1,485
Department of Cooperative	1,470	3,268	5,384	6,130	3,977	4,774
Small Scale Industries Department	357	581	4,187	1,726	1,325	1,434
TOTAL	478,779	605,473	996,983	1,202,529	1,154,572	1,060,401
Source. World Bank PER Team.						

Figure 7 Shares of Total Budget Agriculture (2012-13 to 2017-18)

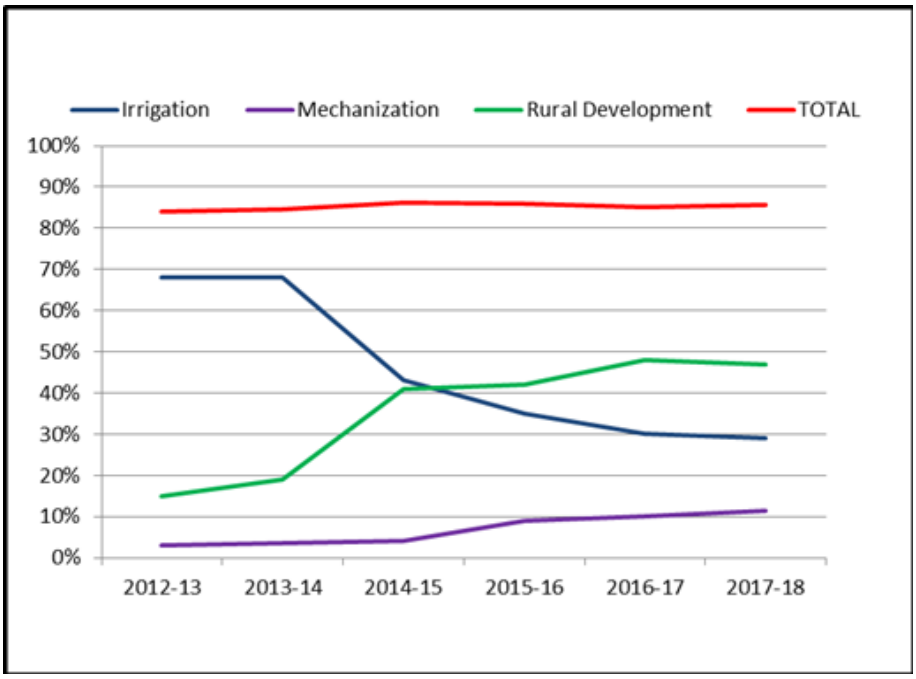


Table 36 Share of total and growth of Budgets of Various Department of MOALI (2012-13 to 2017-18)

	Average Share of Total Budget	Average Annual Growth of Budget
Minister's Office	0.2%	13.3%
Department of Planning	0.2%	-26.8%
Department of Agriculture	5.8%	8.9%
Irrigation and Water Utilization Management Department	44.8%	-1.6%
Department of Agricultural Land Management and Statistics	3.3%	7.2%
Agricultural Mechanization Department	7.9%	45.5%
Yezin Agricultural University	1.2%	6.3%
Department of Agricultural Research	0.7%	18.5%
Livestock Breeding and Veterinary Department	1.3%	54.0%
Department of Fisheries	0.7%	47.4%
Department of Rural Development	33.0%	53.8%
University of Veterinary Science	0.2%	20.0%
Department of Cooperatives	0.4%	26.6%
Small Scale Industries Department	0.2%	32.1%
TOTAL	100.0%	17.2%
Combined Departments of Agricultural Mechanization, Irrigation and Water Utilization, and Rural Development	85.7%	18.0%

2.3 Recent Development in the Budget (2016-17 to 2017-18)

223. Recent revisions in the agricultural budgets for 2016-17 and 2017-18 (Table37) have only slightly modified the trends discussed in the previous section. The preferential budget allocation towards three departments (AMD, IWUMD, and DRD) remains, although slightly reduced from 77% to 71% of the total budget. Other departments' share remained very small. The change in the proportion of the share of recurrent and capital expenditure, however, is noteworthy, becoming almost equal in 2017/18 (48% for recurrent expenditures and 52% for capital expenditures).

Table 37 Agricultural Budget Revisions in 2016-17 and 2017-18

	2016-17 (million Kyat)			2017-18 (million Kyat)			Shares of Total Budget	
Departments/ Organization	Current	Capital	Total	Current	Capital	Total	2016-17	2017-18
Minister's Office	1,552	284	1,836	1,436	106	1,542	0.2%	0.1%
Department of Planning	552	212	764	771	21	792	0.1%	0.1%
Department of Agriculture	39,876	43,886	83,761	41,004	11,835	52,839	8.2%	4.7%
Irrigation and Water Utilization Management Department	121,337	212,561	333,898	119,560	167,196	286,757	32.8%	25.6%
Department of Agricultural Land Management and Statistics	30,795	1,343	32,138	31,125	1,242	32,367	3.2%	2.9%

	2016-17 (million Kyat)			2017-18 (million Kyat)			Shares of Total Budget	
Agriculture Mechanization Department	41,323	71,046	112,369	44,358	11,840	56,198	11.0%	5.0%
Yezin Agricultural University	2,744	2,944	5,688	2,605	6,473	9,078	0.6%	0.8%
Department of Agricultural Research	5,540	4,533	10,072	5,270	2,748	8,017	1.0%	0.7%
Livestock Breeding and Veterinary Department	12,590	6,122	18,712	14,598	5,912	20,510	1.8%	1.8%
Department of Fishery	2,852	1,660	4,512	9,708	2,704	12,412	0.4%	1.1%
Department of Rural Development	23,140	320,299	343,440	184,467	266,298	450,765	33.7%	40.3%
University of Veterinary Science	1,023	1,082	2,105	1,043	440	1,483	0.2%	0.1%
Department of Cooperatives	3,474	503	3,977	25,497	76,413	101,910	0.4%	9.1%
Small-Scale Industry Department	1,105	220	1,325	1,210	234	1,443	0.1%	0.1%
Myanmar Agriculture Development Bank	64,408	20	64,428	55,297	27,213	82,510	6.3%	7.4%
Total	352,312	666,713	1,019,024	537,949	580,675	1,118,625	100.0%	100.0%
Shares of Total	35%	65%	100%	48%	52%	100%		
Shares of AMD+I-WUMD+DRD	53%	91%	77%	65%	77%	71%		

224. In general, budget fund allocation is made against itemized lines that are not necessarily linked to planned outputs, outcomes or objectives. There is little evidence of systematic or rigorous ex-ante or ex-post evaluation of investment or of the monitoring and evaluation of implementation and results. The ADS would address this misalignment between budgets and policies.

225. The budget is also not aligned to agriculture's contribution to the GDP. A time series on Agricultural GDP (AGDP) from 2005-06 to 2015-16 indicate a rapid growth in the share of livestock and fisheries (Table 38), which almost doubled from 16% in 2005-06 to 30% in 2015-16, almost double the growth rate of crops.

Table 38 GDP Growth of Agriculture and subsectors

Sectors	2005-2006	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	Annual Nominal Growth Rate (%)
	Billion Kyat							
AGRICULTURE	5,736	14,659	14,872	15,680	17,133	18,162	19,468	13%
Crops	4,718	11,108	11,113	11,350	12,316	12,781	13,418	11%
Livestock and Fishery	941	3,392	3,759	4,141	4,632	5,243	5,907	20%
	Percentage of AGDP							
AGRICULTURE	100%	100%	100%	100%	100%	100%	100%	
Crops	82%	76%	75%	72%	72%	70%	69%	-2%
Livestock and Fishery	16%	23%	25%	26%	27%	29%	30%	6%

226. At the same time, the allocation of the agricultural budget to livestock and fisheries has remained modest, being just 3% of total budget in 2017-2018.

Table 39 Percentage of total Agricultural Budget going to Fisheries and Livestock

	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Livestock Breeding and Veterinary Department	1.4%	1.4%	0.4%	0.5%	0.5%	2.1%	1.2%	1.6%	2.0%
Department of Fisheries	1.1%	1.1%	0.4%	0.4%	0.3%	1.0%	0.8%	0.5%	1.2%
University of Veterinary Science	0.0%	0.0%	0.1%	0.1%	0.2%	0.4%	0.2%	0.2%	0.1%
Total Fisheries and Livestock	2.4%	2.5%	0.9%	1.0%	1.0%	3.5%	2.3%	2.3%	3.3%

227. The other serious imbalance is the small amount spent on agricultural research and development (R&D). When compared to agriculture GDP (AGDP), Myanmar's spending on agricultural R&D is one of the lowest in the region. Even neighboring countries such as Vietnam, Lao PDR and Thailand spend between 5 and 10 times as much.

Table 40 Spending on Agricultural R&D as a proportion of Agricultural GDP

Country	Agricultural R&D Spending as % of Agricultural GDP	Ratio to Myanmar
Myanmar (2016/17)	0.04	1
East Asia and Pacific Region (2000–2011)	0.60	15.0
China (2010)	0.62	15.5
Lao PDR (2013)	0.42	10.5
Indonesia (2008)	0.31	7.75
Thailand (2008)	0.32	8
Vietnam (2015)	0.19	4.75
South Asia (2000–2011)	0.90	22.5
India	0.30	7.5
Bangladesh	0.38	9.5
Latin America and Caribbean (2000–2011)	1.32	33.0
Developed countries	2.51	62.75
Source: WB Agriculture PER 2017.		

228. In addition to the issues of allocation, there is also a major gap in the existing agriculture budget related to the absence of programs and institutional structures within MOALI to promote productive partnerships between farmers and agro-enterprises and, more generally, to promote agri-food value chain development. The ADS aims to improve the competitiveness of Myanmar agriculture. This requires the emergence and growth of efficient, value chains that integrate and provide higher value added to smallholder farmers. Within the current MOALI structure and budget there is no allocation of resources for this purpose. The ADS and IP will address this gap.

2.4 Medium Term Outlook for Agricultural Budget

229. The ADS IP must be consistent with MTEF set by the MOPF. The MTEF indicates that the opportunity for additional budget allocation to the agricultural sector in the medium term (5 years)

is dependent on the fiscal revenues the Union Government will be able to raise, on the growth of GDP of the Myanmar economy, and on donor funding.

230. Total Union revenues in Myanmar are small (about 10-12% of GDP) compared to other countries (Figure 8), and are projected to stay relatively small in the medium term (Figure 9).

Figure 8 Fiscal Revenue as % of GDP

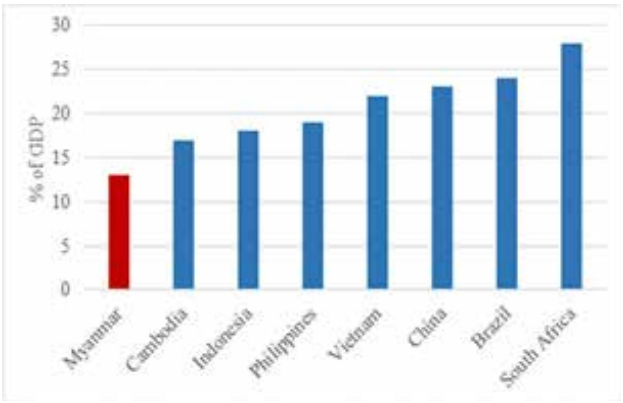
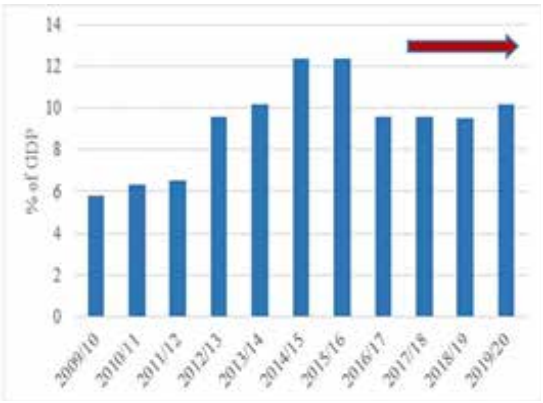


Figure 9 Union Budget Revenues in Myanmar as % of GDP (projections)



231. The MTEF anticipates the MOALI budget (including DRD) to increase from 1.3% of GDP in 2016-17 to 1.4% in 2020-21 (Table 41). Agriculture is still expected to be among the few ministries with a growing budget, along with the energy, education, and health ministries. Most other ministries are projected to receive less funding in the future, which may not necessarily materialize as quickly as planned, putting at risk even the slight increase in public finance for agriculture..

Table 41 Budget to Agriculture as % of GDP

Sector	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Agriculture	1.5	1.3	1.2	1.1	1.2	1.4
Energy	0.2	0.3	0.6	0.6	0.8	1.2
Education	2.1	1.9	1.9	2.1	2.5	2.9
Health	1.1	1.0	1.0	1.2	1.4	1.6
Other Ministries	8.0	7.2	6.8	6.4	5.9	5.5
Total	12.9	11.7	11.5	11.4	11.8	12.6

232. The GDP of Myanmar is expected to grow strongly over the period 2018-19 to 2022-23, averaging 7%. The assumptions underlying the analysis of MOALI budget growth are relatively conservative and include:

a. Available budget for MOALI is set as percentage of GDP, where the percentages are based on the MTEF. For the last two years of the period 2018-19 to 2022-23, the percentage are kept at the same value (1.4%) of the year 2020-21 of the MTEF.

b. Growth of GDP is assumed to be 7%.

c. Exchange rate is assumed to be 1365 kyat/ USD.

d. The Rural Roads investment is taken out from the MOALI budget following the transfer of the Directorate of Rural Roads and Bridges from MOALI DRD to MOC. The assumption as to the value of this investment is based on the value of 2017-18, increasing at 7% per year over the five years of the investment plan.

e. The MOALI capital budget is assumed to be 56% of total MOALI budget, consistent with 2017-18.

f. Growth of donor funds is based on data available from World Bank up to 2019-20 and then extrapolated to grow at 5% in the years after.

Table 42 Projections of Available Funding for MOALI Budget over 2018-19 to 2022-23

	Unit	2018/19	2019/20	2020/21	2021/22	2022/23	Total 2018-19 to 2022/23
Growth of GDP	%	7%	7%	7%	7%	7%	
GDP to 2016/17 prices	Mil Kyat	92,125,470	98,574,252	105,474,450	112,857,662	120,757,692	529,789,532
Exchange Rate	Kyat /USD	1,365	1,365	1,365	1,365	1,365	
MOALI Budget as % of GDP according to MTFF[a]	%	1.1	1.2	1.4	1.4	1.4	
Available funds for MOALI Budget	Mil Kyat	1,013,380	1,182,891	1,476,642	1,580,007	1,690,608	6,943,529
	Mil USD	742	867	1,082	1,158	1,239	5,087
Expenditure on DRD Rural Roads	Mil Kyat	137,461	147,083	157,379	168,396	180,183	790,502
Available Budgets of MOALI net to Rural Roads	Mil Kyat	875,919	1,035,808	1,319,263	1,411,612	1,510,425	6,153,027
	Mil USD	642	759	966	1,034	1,107	4,508
Capital Budget as % of MOALI Budget		56%	56%	56%	56%	56%	56%
Available Capatil Budget of MOALI	Mil Kyat	490,515	580,052	738,787	790,503	845,838	3,445,698
Available Recurrent Budget of MOALI	Mil Kyat	385,404	455,755	580,476	621,109	664,587	2,707,332
Growth of Donor Funds for Agriculture		5%	5%	5%	5%	5%	5%
Donor Funds for Agriculture	Mil Kyat	200,655	210,688	221,222	232,283	243,897	1,108,746
	Mil USD	147	154	162	170	179	812
Donor Funds as % of MOALI Budget	%	20%	18%	15%	15%	14%	
Donor Funds as % of MOALI Capital Budget	%	41%	36%	30%	29%	29%	
Total Funds available for agriculture including MOALI Budget and Donor Funds	Mil Kyat	1,214,035	1,393,579	1,697,864	1,812,291	1,934,505	8,052,274
	Mil USD	889	1,021	1,244	1,328	1,417	5,899
Note: [a]MTEF assumption on MOALI budget as % of GDA (see PER)							

233. Based on these assumptions, the available MOALI budget for agriculture (net of rural roads) over the ADS implementation period (2018-19 to 2022-23) is Kyat 6,153 billion (or $ 4.5 billion). These numbers are in 2016-17 prices.

234. In addition to these Union Budget funds, donor funding to agriculture is expected to add about Kyat 1,108 billion (or $ 812 million) over the same timeframe. Some of the donor funding might be channeled directly into the ADS or other government programs, and some could go directly to NGOs and the private sector.

235. These estimates should not be confused with the actual budget that will be approved over the course of the next 5 years; however, the estimates provide an indication of expenditures that would be consistent with the MFEF. The estimates, moreover, provide a ceiling for MOALI and ADS IP budgets.

2.5 Five Year Investment Plan for the ADS

236. The ADS IP is consistent with the on-going MOALI planning and budget allocation initiatives. To ensure that the proposed ADS measures are implemented, the IP proposes adjustments within the policy framework, institutional setting, administrative structuring, and professional and technical capabilities of the sector.

237. The ADS preparation entailed consultations with all MOALI Departments to understand their views and recommendations related to the resources needed for implementing the activities planned in the ADS. Several regional/ state consultations were also undertaken to receive opinions and ideas regarding the ADS framework.

238. The recommendations from these consultations were integrated into an IP that would enable MOALI, in collaboration with farmers, the private sector, civil society and DPs, to make substantial progress towards the vision and outcomes of ADS. The ADS IP has been compiled for the 5 year period 2018-19 to 2022-23. The details of the IP (by outcome, output, and activity) are reported in Annex 1. The following tables summarize the IP by pillar (Table 43) and by department (Table 45).

Table 43 Summary of ADS Investment Plan by Pillar

Pillar	Investment - Kyat million						
	2018-19	2019-20	2020-21	2021-22	2022-23	Total	Percent-age
PILLAR 1 – Governance	38,558	67,284	81,039	79,283	65,453	331,617	10.6%
PILLAR 2 – Productivity	277,527	323,793	351,718	347,575	349,961	1,650,574	52.7%
PILLAR 3 - Competitiveness	173,446	190,196	237,431	280,652	270,526	1,152,253	36.8%
Total	489,531	579,274	672,188	707,511	685,940	3,134,444	100.0%

239. The IP is clearly within the available resources budgeted according to the MTEF (see Table 41). The total of the IP over 5 years (3.134 billion kyat) ($2296 million) is lower than the total amount of both the available MOALI budget of Kyat 6,153 billion and the total capital budget of Kyat 3445 billion. In fact, the IP is feasible both in terms of the total and annual 5-year investment amounts (Table44).

Table 44. Gap between ADS Investment Plan and Available Capital Budget

	Investment - Kyat million					
	2018-19	2019-20	2020-21	2021-22	2022-23	Total
ADS Investment Plan	**489,531**	**579,274**	**672,188**	**707,511**	**685,940**	**3,134,443**
Available capital budget of MOALI	**490,515**	**580,052**	**738,787**	**790,503**	**845,838**	**3,445,695**
Gap between ADS investment plan and available capital budget	**984**	**778**	**66,599**	**82,992**	**159,898**	**311,251**

240. Another feature of the ADS investment plan that can be elicited by considering Table is the distribution of investment both over the three pillars (Governance, Productivity, and Competitiveness) and over time. In terms of pillars, the Productivity pillar is the one to absorbs most of the resources (about 52.7% of the total) in recognition of the considerable weight of investment in irrigation and water resources, research, extension, and specific programs for crops, livestock, and fisheries, sustainable practices, and resilience to climate change and disasters. The Competitiveness pillar absorbs about 33% of the total investment, oriented towards rural infrastructure, community development, value chain development, and several measures to improve quality, food safety, and innovation of farmers and enterprises. The last pillar on Governance absorbs about 10% of the total; despite the smaller amount, the impact of this investment is critical to the overall success of the ADS as it ensures the basic conditions of governing (planning, coordination, communication, policy formulation and review, monitoring and evaluation, participation of different stakeholders, statistics), progress on addressing land issues, acute situations of food insecurity, and institutional issues.

241. Looking at the IP over time, there is an average investment growth of about 10% per annum, which is less than the increase of the overall available budget for MOALI (expected to growth at 15%). Again, this is prudent planning, providing a margin of maneuver for additional investments that are not yet envisaged, but could emerge as priorities in the years to come.

242. The distribution of ADS investments is detailed in Table 45, which when compared with Table 37 highlights the changes in investment prioritization. These changes are visualized as in Figure 10 and Figure 11.

Table 45 Investment Plan 2018-2019 – 2022-2023 – Investment Breakdown by Department

Department	2017-18	2018-19	2019-20	2020-21	2021-22	Total	%
Minister's Office	3,040	20,971	31,159	31,220	21,320	107,710	3.4%
Department of Planning	12,490	17,808	16,203	16,893	16,348	79,740	2.5%
Department of Agriculture	63,277	67,500	80,206	81,580	86,211	378,774	12.1%
Irrigation and Water Usage Management Department	148,550	165,650	187,150	197,100	201,858	900,308	28.8%
Department of Agricultural Land Management and Statistics	5,600	12,520	16,790	13,290	8,830	57,030	1.8%
Agriculture Mechanization Department	47,828	37,954	34,591	34,934	32,689	187,994	6.0%
Yezin Agricultural University	1,650	2,750	2,050	2,500	750	9,700[30]	0.3%
Department of Agricultural Research	9,325	17,220	19,340	15,810	12,450	74,145	2.4%
Livestock Breeding and Veterinary Department	27,827	46,086	43,112	34,877	39,537	191,439	6.1%
Department of Fishery	5,600	12,550	15,550	10,500	7,200	51,400	1.6%
University of Veterinary Science	2,158	2,482	2,855	3,283	3,775	14,553	0.5%
Department of Rural Development	125,035	126,025	126,358	127,208	129,153	633,778	20.2%
Department of Cooperatives	6,300	6,365	37,020	68,860	68,540	187,085	6.0%
Small-Scale Industry Department	3,007	6,509	11,511	11,512	10,014	42,553	1.4%
Department of Agribusiness and Market Information	27,845	36,885	48,295	57,945	47,265	218,235	7.0%
TOTAL	489,531	579,274	672,118	707,511	685,940	3,134,444	100.0%

30 The investment plan (2018 to 2021) of YAU the investment fund is increased in the first four year period accordingly for by 13% rate of increase (exclusive fifth year value). However, the total investment amount of the first four year is only 22375 MMK Million. Recently YAU's has expanded four new academic departments and upgraded two existing departments. It is recommended that the annual amount of 5000 MMK million.

Figure 10 Breakdowns on Capital Budget 2016-17

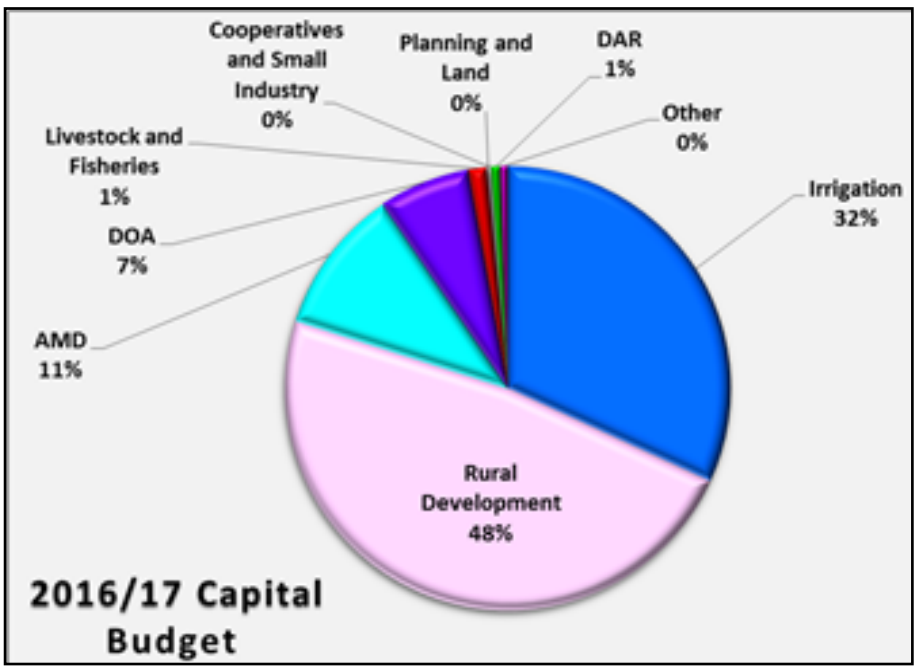
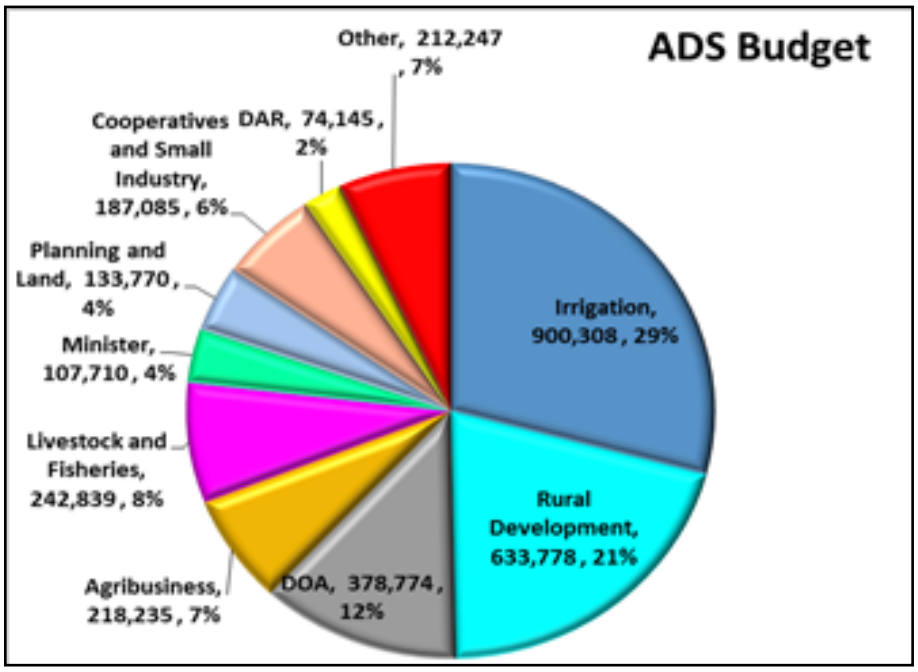


Figure 11 Breakdowns on ADS Budget



243. The most obvious difference is the lower share of the DRD in the budget, which decline from 48% in the Capital Budget of 2016/17 to 20.2% in the ADS Budget. This is the result of two factors: (i) the Department of Roads and Bridges has been transferred from DRD to the MOC, which is taken into account in the investment plan of the ADS; (ii) the ADS indicates a reorientation within DRD from a major focus on rural infrastructure (e.g. water, energy) to community driven development.

244. The second major difference is the stepwise privatization of AMD's Agriculture Mechanization Centers. The consequence of this restructuring is that the share of AMD in the ADS budget declines from a significant level of 10.7% in the 2016/17 capital budget to 6% under the ADS IP.

245. The reduction of DRD and AMD budget share (from 44.7% in the 2016/17 capital budget to 26.2% in the ADS IP) allows for the re-allocation of resources to other areas critical to agricultural growth. When comparing the capital budget 2016/17 to the ADS IP, the main budget reallocation includes:

a. Research budget share increases from 0.7% to 6%;

b. DOA budget share increase from 6.6% to 12.1%;

c. Departments of Fisheries and Livestock budget increase from 1.1% to 8%;

d. Department of Planning budget increases from 0.03% to 2.5%;

e. Minister's Office budget share increases from 0.04% to 3.4%;

f. Department of Agricultural Land Management and Statistics from 0.2% to 1.8%;

g. Department of Cooperatives from 0.08% to 6%;

h. Small-scale Industry Department from 0.03% to 1.4%,

246. This reallocation is consistent with the objectives and pillars of the ADS and with findings of the Agriculture PER (World Bank and LIFT 2017), namely:

a. Investment in agricultural research has a high rate of return and a key role in improving productivity and competitiveness;

b. Extension, both public and private, plays a critical role in farmers' adoption of improved and sustainable technology and good practices;

c. Livestock and Fisheries are growing rapidly, but lack the support of adequate institutions, and research and extension programs;

d. Planning is perhaps the most neglected functional areas within MOALI in spite of several new emerging challenges such as the consolidation of three ministries into one; the coordination within MOALI and with outside agencies; the coordination of regional/ state planning with Union planning; the coordination with other agencies, particularly for those areas necessary for value chain development; the need of communicating and involving a number of stakeholders such as farmer organizations, the private sector, NGOs, CBOs, and DPs; review and formulation of policy, and monitoring and evaluation;

e. The Minister Office will have to lead complex issues of restructuring or reorganization, including the creation of new Departments and Divisions, the reorganization and retraining of entire divisions, and the adjustment costs in human resources that this might entail.

f. Land issues need to be urgently addressed as the expectations of improvement in this area are testing the credibility of the overall ministry;

g. Statistics and access to information needs to be improved to provide a reliable basis for enhanced decision making.

h. Farmer organizations, including cooperatives, need to be strengthened to enable farmers to engage in productive partnerships with the private sector, produce and commercialize products and get better access to inputs.

i. Small agro-enterprises provide opportunities for rural off-farm employment and contribute to innovation and competitiveness of agriculture sector.

247. The largest budget share in the ADS is for irrigation and water resources, taking 28.8% of the overall budget, the same as in the 2016/17 budget, and incorporates recent structural changes whereby the construction of new dams and irrigation systems is suspended in preference to the rehabilitation of existing systems, development of drainage systems, pumped groundwater and other non-traditional irrigation systems, and efficient water management and systems operations and maintenance.

248. One ADS IP innovation is the allocation of resources to activities supporting value chain development and agribusiness growth, including value chain infrastructure, marketing information, and logistics. These investments will accelerate the integration of smallholder farmers into efficient value chains, improving competitiveness (Outcome 3). In the absence of appropriate institutional support in MOALI, this investment will require the establishment of a Department of Agribusiness and Market Information, preferably under the direct responsibility of the Minister's Office.

2.5.1 Investment Plan by Outcomes

249. We have seen that the three pillars of the ADS – Governance, Productivity, and Competitiveness – represent 10.6%, 52.7%, and 36.8% of the total investment in the IP.

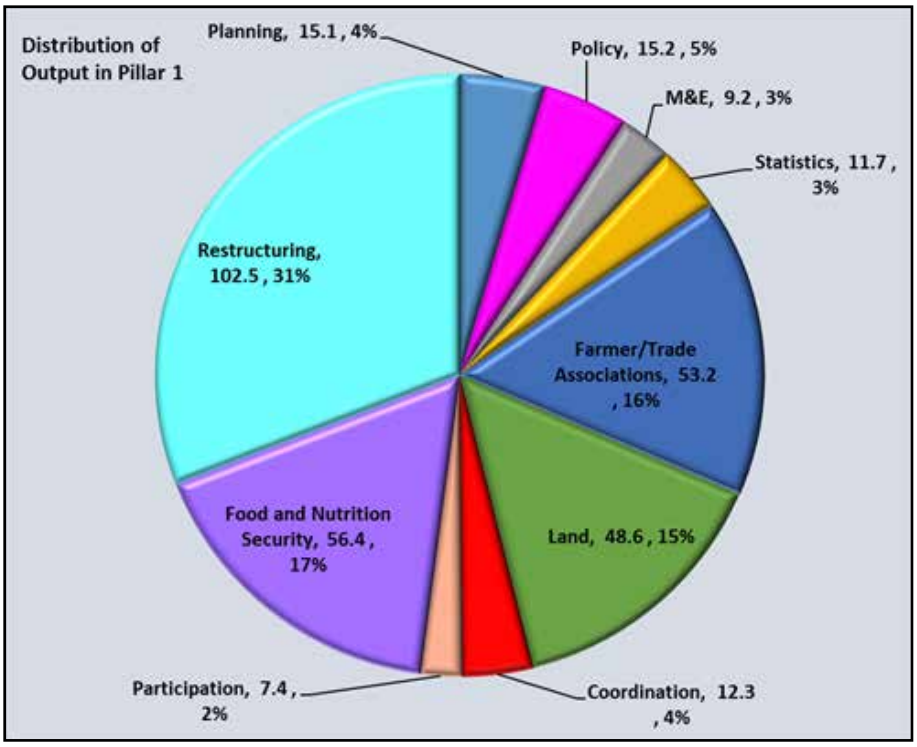
250. With reference to the Governance Pillar 1 of the ADS, Table 46 provides the details of the investment in the outcomes.

Table 46 Investment by Outcomes of Pillar 1 by Year (Kyat million)

Output	2018-19	2019 - 20	2020 - 21	2021 - 22	2022 - 23	Total 2018-19 to 2022-23	% of Pillar	% of Total
Total Pillar 1 on Governance	38,558	67,284	81,039	79,283	65,453	331,617	100%	10.6%
Output 1.1 on Planning. Effective integrated planning based on participatory processes both at the union and at the state/ region level.	1,970	3,170	3,310	3,290	3,340	15,080	5%	0.5%
Output 1.2 on Policy Capacity. Improved capacity for policy formulation and analysis.	1,700	3,950	2,755	3,330	3,500	15,235	5%	0.5%
Output 1.3 on M&E. Timely and Effective Monitoring and Evaluation processes that inform a web-based Management Information System (MIS).	1,340	1,590	1,960	2,080	2,250	9,220	3%	0.3%
Output 1.4 on Statistics. Sound statistical systems for evidence based decisions.	1,135	2,060	2,610	3,510	2,360	11,675	4%	0.4%
Output 1.5 on Associations. Strong farmer and industry associations and federations.	10,140	10,530	10,610	10,900	10,990	53,170	16%	1.7%
Output 1.6 on Land. Strengthened farmers' land rights and enhanced capacity of institutions involved in agricultural land.	5,190	10,760	14,530	10,680	7,470	48,630	15%	1.6%
Output 1.7 on Coordination. Enhanced MOALI capacity for ADS coordination and implementation.	2,406	2,480	2,470	2,470	2,470	12,296	4%	0.4%
Output 1.8 on Participation. Mechanisms established for participation of civil society in the planning, implementation, and monitoring of the ADS	1,295	1,451	1,464	1,600	1,600	7,410	2%	0.2%
Output 1.9 on Food and nutrition security. Improved food and nutrition security of most disadvantaged groups.	10,880	11,045	11,045	11,095	11,095	55,160	17%	1.8%
Output 1.10 Restructuring. MOALI restructured to better integrate existing units and become more responsive to farmers enterprises, and civil society.	2,500	20,000	30,000	30,000	20,000	102,500	31%	3.3%
Output 1.11 003A Capacity building of the UVS teaching staff	3	248	285	328	378	1,242	0%	0.0%

251. The distribution of investment under Pillar 1 is illustrated by Figure 12. The biggest components are the outcomes of restructuring (31%), Farmer and Trade Associations (16%), Food and Nutrition Security (17%), and Land (15%). The restructuring of MOALI and capacity building both at the union and regional/state level is a critical step towards the achievement of other outcomes of the Governance pillar.

Figure 12. Distribution of Investment by Output in Pillar 1 (levels in Kyat million)

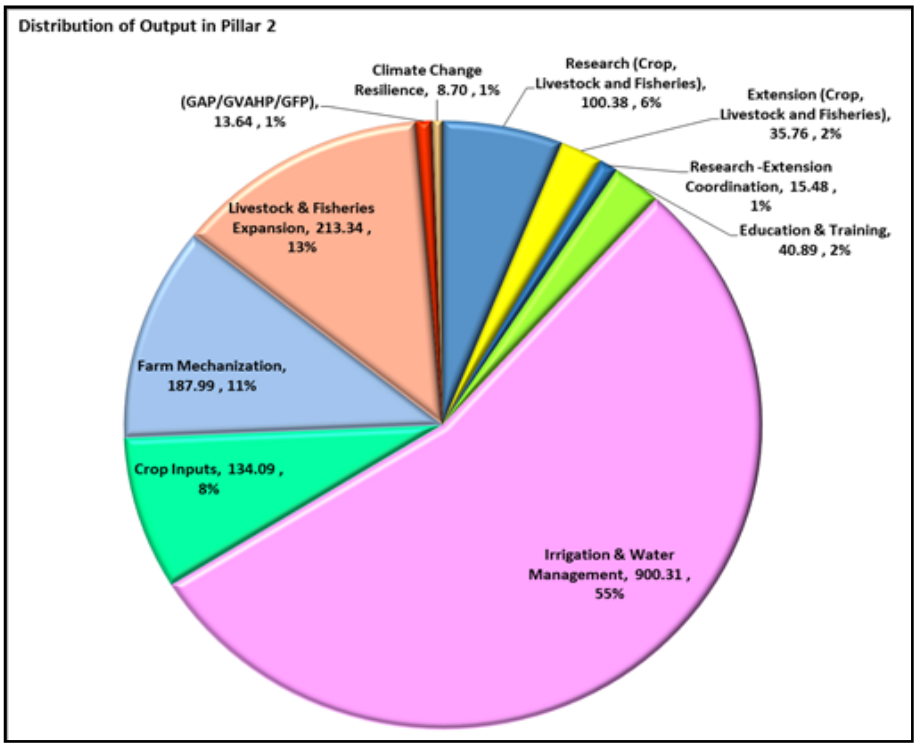


252. With reference to the productivity Pillar 2 is illustrated by figure 13.The biggest components are the outcomes of irrigation and water management 55% crop input 14% , livestock and fish 13%, and research 6%. Although the irrigation and water output takes a large share of the total investment, there is considerable more balance than in the past between crops and livestock and fish, moreover , the research , extension , and education system all together represent 12.4% of pillar 2. Table 47 provides the details of the investment in the outcomes.

Table 47 Investment by Outcomes of Pillar 2 by Year (Kyat million)

Output	2018-19	2019-20	2020-21	2021-22	2022-23	Total 2018-19 to 2022-23	% of Pillar	% of Total
Total Pillar 2 on Productivity	277,527	323,793	351,718	347,575	349,961	1,650,574	100%	52.7%
Output 2.1 on Agricultural research - Improved research system for crop, livestock, and fisheries.	12,925	25,785	27,995	19,165	14,505	100,375	6.1%	3.2%
Output 2.2 on Agricultural extension – Transformed agricultural extension system delivering improved products (crop, livestock, fisheries) and technology for adoption and adaptation.	5,700	6,500	8,500	7,500	7,556	35,756	2.2%	1.1%
Output 2.3 on Research-extension coordination - Improved research-extension coordination systems with participation of farmers and private sectors.	2,509	3,285	3,195	3,245	3,245	15,479	0.9%	0.5%
Output 2.4 on Education and Training - Develop (or revive) effective education and training to build “human capital” in the agricultural and food sector responding to the evolving needs of farmers and the private sector in rural areas.	4,473	6,250	5,556	6,500	4,800	27,579	1.7%	0.9%
Output 2.5 on Irrigation and water management - More responsive and reliable irrigation and drainage services and more efficient and sustainable water management systems.	148,550	165,650	187,150	197,100	201,858	900,308	54.5%	28.7%
Output 2.6 on Crop inputs - Increased use of improved farm production inputs and technologies by crop growers.	20,760	22,900	27,900	30,100	32,426	134,086	8.1%	4.3%
Output 2.7 on Mechanization - Increased application of appropriate mechanization in the agricultural value chain.	47,828	37,954	34,591	34,934	32,689	187,994	11.4%	6.0%
Output 2.8 on Livestock and fish - Increased use of improved livestock and fish breeding, health and husbandry service and technologies by livestock and fish producers.	29,627	49,536	49,562	40,977	43,637	213,339	12.9%	6.8%
Output 2.9 on Sustainable Practices - Sustainable Farming, Good Agricultural Practices (GAP), Good Animal Husbandry Practices (GAHP), Good Aquaculture Practices (GAqP), and Organic Agriculture (OA) practices are established and adopted.	2,000	2,000	3,000	3,100	3,543	13,643	0.8%	0.4%
Output 2.10 on Resilience - Resilience of Farmers to Climate Change and Disasters improved.	1,000	1,700	1,700	2,000	2,304	8,704	0.5%	0.3%
Output 2.11. Strengthening the UVS	2,156	2,234	2,569	2,954	3,398	13,311	0.8%	0.4%

Figure 13. Distribution of Investment by Output in Pillar 2 (levels in Kyat million)v



253. With reference to the Competitiveness Pillar 3 of the ADS, Table 48 provides the details of the investment in the outcomes.

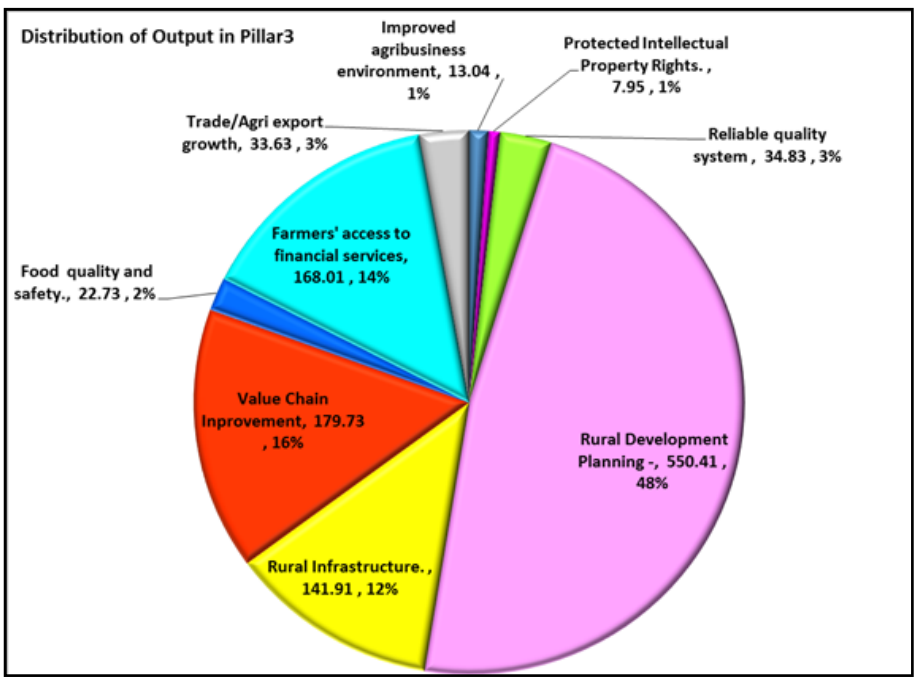
Table 48 Investment by Outcomes of Pillar 3 by Year (Kyat million)

Output	2018-19	2019-20	2020-21	2021-22	2022-23	Total 2018-19 to 2022-23	% of Pillar	% of Total
Pillar 3 on Competitiveness	173,446	188,196	239,431	280,652	270,526	1,152,253	100%	36.8%
Output 3.1 on Business Environment - Improved business environment, information and investment along the agri-food supply chain.	1,950	2,400	2,715	2,860	3,117	13,042	1.1%	0.4%
Output 3.2 on Intellectual Property Rights, Protected intellectual property rights for the agricultural and food sector	1,500	1,500	1,500	1,700	1,754	7,954	0.7%	0.3%
Output 3.3 on Quality. Reliable quality system developed that helps farmers and food processors get higher prices for higher quality goods, incentivizing quality upgrading developed.	6,960	6,560	7,525	6,795	6,991	34,831	3%	1.1%
Output 3.4 on Rural Development Planning - Enhanced framework for gender-equitable and participatory planning and implementation of rural development programmes institutionalized.	109,591	110,130	110,160	110,213	110,318	550,411	47.8%	17.6%
Output 3.5 on Rural Infrastructure. Rural infrastructure improves smallholder agriculture efficiency and profitability.	11,194	20,650	32,483	43,130	34,456	141,913	12.3%	4.5%

Output	2018-19	2019-20	2020-21	2021-22	2022-23	Total 2018-19 to 2022-23	% of Pillar	% of Total
Output 3.6 on Value Chains. Increased competitiveness and stakeholder participation in agricultural value chains engaged with prioritized commodities.	30,272	32,784	39,926	38,932	37,819	179,733	15.6%	5.7%
Output 3.7 on Food Safety. Enhanced food quality and safety.	4,500	4,000	5,000	4,500	4,726	22,726	2%	0.7%
Output 3.8 on Financial Services. Improved access to a range of financial services for farmers and agribusiness enterprises.	1,000	1,200	1,400	3,000	3,000	9,600	0.8%	0.3%
Output 3.9 on Trade and Exports. Trade facilitated agri-food and agricultural products export growth.	5,880	8,373	7,523	6,323	5,536	33,633	2.9%	1.1%
3.10 Improved access to a range of financial services for farmers and agribusiness enterprises	600	600	31,200	63,200	62,809	158,409	13.7%	5.1%

254. The distribution of investment under Pillar 3 is illustrated by Figure 14. The biggest components are the outcomes of Rural Development Participatory Planning (48%), Value chains (16%), and Rural Infrastructure (12%).

Figure 14. Distribution of Investment by Output in Pillar 3 (levels in Kyat million)



2.6 ADS Implementation Plan and Other Capital and Recurrent Expenditures

255. The IP includes investment measures that are consistent with the objectives, outcomes, outputs, and activities of the ADS. Unlike past practices, the IP is not just a budgeting exercise, but also a planning exercise through which progress towards achievement of objectives and targets of the agricultural policy can be monitored. At the same time, the IP financial outlays are not mere expressions of need, but are anchored on a realistic assessment of the fiscal framework provided by the MTEF.

256. The overall value of the ADS IP over the period 2018-19 to 2022-23 is about Kyat 3.134 billion, which is comfortably within the fiscal envelope for the available MOALI budget and consistent with the MTEF of Kyat 6,153 billion (Table 49). In addition to the ADS IP, MOALI will have recurrent and capital expenditures that are not included yet in the ADS implementation plan. These expenditures have been calculated in Table considering that the: (i) non-ADS recurrent budget is assumed to be 44% of total available budget of MOALI; and (ii) non-ADS capital budget is the residual from the overall MOALI budget when ADS IP and non-ADS recurrent budget are considered.

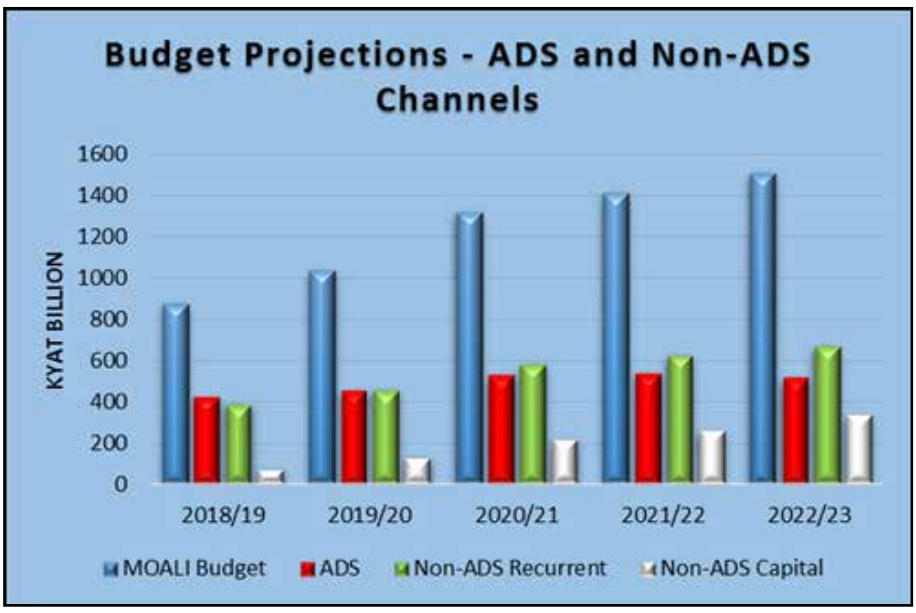
257. Given the innovations included in the ADS IP, it is envisaged that the adjustment from the current system of budgeting to a result-based budgeting will require some time and some adjustment costs in terms of staff retraining and reallocation and institutional reorganization. Over time, however, there will not be an ADS and non-ADS budget, with all MOALI expenditures being consistent with the ADS.

258. The details of this MOALI budget evolution to a unified system consistent with the ADS will be developed by senior management of MOALI and its DOP. The ADS includes a number of measures and resources to achieve this adjustment, including strengthened responsibility and resourcing of the DOP and endowing the Minister's Office with responsibility for guiding the overall process of Ministry restructuring.

Table 49 ADS Implementation Plan and MOALI Budget

	Projections (Million Kyats)					
	2018-19	2019-20	2020-21	2021-22	2022-23	Total 2018-19 to 2022-23
Available Budget of MOALI as per MTEF and net of Rural Road	875,919	1,035,808	1,319,263	1,411,612	1,510,425	6,153,027
1. ADS Implementation Plan	489,531	579,274	672,188	707,511	685,940	3,134,444
2. Non-ADS recurrent budget	385,404	455,755	580,476	621,109	664,587	2,707,332
3. Non-ADS capital budget	984	778	66,599	82,992	159,898	311,251

Figure 15. MOALI budget projections of ADS and non-ADS Channels



259. Figure 15 shows projections of MOALI budget consistent with three channels as follows:

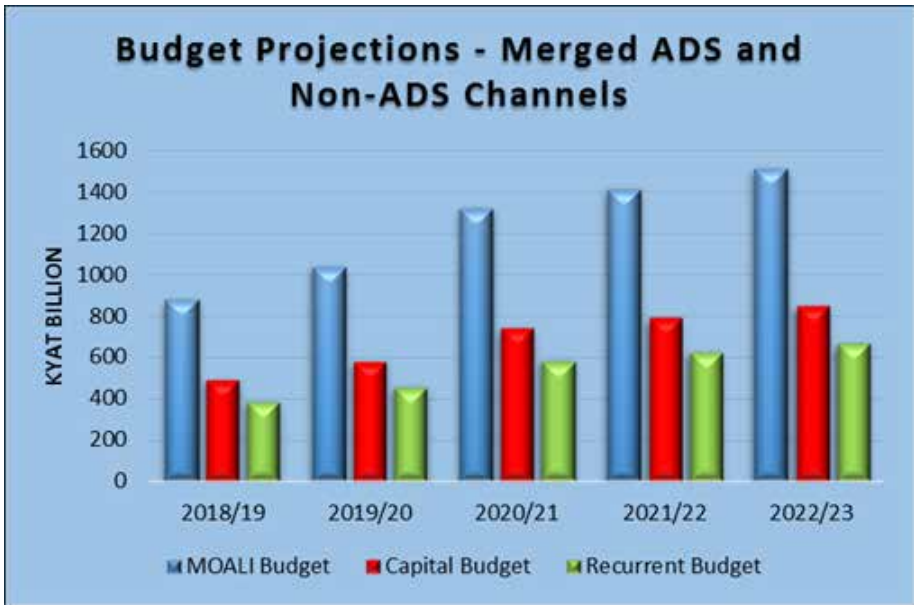
Channel 1. Expenditures included in the ADS implementation plan;

Channel 2. Recurrent expenditures not included in the ADS implementation plan;

Channel 3. Capital expenditures not included in the ADS implementation plan.

260. Over time Channel 3 will be merged with Channel 1. Even Channel 2 - Recurrent expenditures -might be slightly different from the assumption of 44% of total budget. Figure 16. shows the evolution of the MOALI budget under the assumption that Channel 1 and 3 marge.

Figure 16. MOALI budget projections with merged ADS and non-ADS channels.



2.7 Funding Sources for the Implementation Plan

261. It is anticipated that 66.6% of the ADS IP (totaling about Kyat 2.031 billion (USD 1,488 million)) will be funded through budgetary provisions of the GORUM with the remaining 33% contributed by other stakeholders including the private sector, farmers, and DPs (Table Table 50). The private sector will contribute about 3%, through both in-kind and public-private-partnership investments. Farmers and their organizations are expected to contribute around 0.6% of the IP, mostly in-kind. Development partners will finance the remaining 31% of the ADS IP.

Table 50 ADS Investment Plan – Sources of Funding

Sources of Funding	PILLAR 1 - Governance	PILLAR 2 - Productivity	PILLAR 3 - Competitiveness	TOTAL
	Kyat million			
Government	112,819	1,244,163	674,791	2,031,773
Private	2,299	29,678	63,629	95,606
Farmer	963	10,176	8,632	19,771
Donor	215,535	366,557	405,200	987,293
Total	**331,617**	**1,650,574**	**1,152,253**	**3,134,444**

Sources of Funding	PILLAR 1 - Governance	PILLAR 2 - Productivity	PILLAR 3 - Competitiveness	TOTAL
	USD million			
Government	83	911	474	1,488
Private	2	22	47	70
Farmer	1	7	6	14
Donor	158	269	297	723
Total	**243**	**1,209**	**844.1**	**2,296**
	% of Pillar 1	% of Pillar2	% of Pillar 3	% of TOTAL
Government	34%	75%	59%	65%
Private	1%	2%	6%	3%
Farmer	0%	1%	1%	0.6%
Donor	65%	22%	35%	31%
Total	**100%**	**100%**	**100%**	**100%**

262. The projected DP contribution to the ADS is within the expected DP overall funding for the agricultural sector (total ADS contribution is $723 million versus total expected $812 million contribution to the sector).

Table 51 Expected Donors contribution to the ADS and Agriculture (USD million)

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
ADS Investment Plan	359	424	492	518	503	2,296
Expected donor contribution to ADS Implementation Plan	113	134	155	163	158	723
Expected donor contribution to Agriculture	147	154	162	170	179	812

2.8 Absorption Capacity

263. The Myanmar Agriculture PER (World Bank 2017) highlights the issue of low government absorption capacity of existing donor funds, due primarily to: (i) weak implementation capacity of government staff; (ii) a lack of clear internal procedures within the MOALI to work with donor projects; and (iii) the Ministry's reluctance to use loan funds to hire consultants for temporary help and technical support in implementation of such donor projects. This is a government-wide issue.

264. This low absorption capacity is mostly related to donor funding, the absorption capacity the Union Budget seeming to be reasonable. A comparison between MOALI budgeted and actual expenditure for the fiscal year 2016/17 (Table 52) shows the absorption capacity to be close to 100% overall, although there are large differences within current and capital expenditures.

265. The ADS aims for a rapid increase in the absorption capacity of donor funding through several measures including: (i) strengthening capacity of planning; (ii) strengthening coordination with DPs; (iii) the support of the ADSISU and related TA.

Table 52 Actual MOALI Expenditures and Budget for 2016-2017

Departments/Organization	Revised Budget 2016-17 (Kyats Million)			Actual Expenditures 2016-17 (Kyats Million)			Actual Expenditure 2016-17 (Kyats Million)		
	Current	Capital	Total (Current + Capital)	Current	Capital	Total (Current +Capital)	Current	Capital	Total (Current +Capital)
Minister's Office	1,552.2	283.9	1,836.1	1,378.8	210.2	1,589.0	88.8%	74.0%	86.5%
Department of Planning	672.1	211.6	883.7	644.7	172.0	816.8	95.9%	81.3%	92.4%
Department of Agriculture	40,549.8	43,885.5	84,435.3	40,419.9	21,647.9	62,067.7	99.7%	49.3%	73.5%
Irrigation and Water Utilization Management Department	122,725.0	212,561.0	335,286.0	21,219.9	165,384.5	286,604.4	98.8%	77.8%	85.5%
Department of Agricultural Land Management and Statistics	30,795.4	1,342.5	32,137.9	29,433.2	833.7	30,266.9	95.6%	62.1%	94.2%
Agriculture Mechanization Department	42,133.9	71,046.4	113,180.3	41,164.1	24,839.1	66,003.2	97.7%	35.0%	58.3%
Yezin Agricultural University	2,743.9	2,944.2	5,688.1	2,649.5	1,650.2	4,299.7	96.6%	56.0%	75.6%
Department of Agricultural Research	5,540.5	4,532.6	10,073.1	5,320.5	4,328.0	9,648.5	96.0%	95.5%	95.8%
Livestock Breeding &Veterinary Department	15,203.5	6,121.7	21,325.2	12,486.4	1,649.5	14,135.9	82.1%	26.9%	66.3%
Department of Fishery	3,900.9	1,659.8	5,560.7	3,417.0	1,483.2	4,900.1	87.6%	89.4%	88.1%
Department of Rural Development	212,364.8	320,299.5	532,664.2	186,967.0	275,353.2	462,320.3	88.0%	86.0%	86.8%
University of Veterinary Science	1,023.0	1,082.0	2,105.1	981.8	1,037.7	2,019.6	96.0%	95.9%	95.9%
**Department of Cooperatives	27,789.2	502.6	28,291.8	28,405.9	501.1	28,907.0	**102.2%	99.7%	102.2%
Small-Scale Industry Department	1,115.3	219.5	1,334.8	1,001.5	201.2	1,202.7	89.8%	91.7%	90.1%
**Myanma Agriculture Development Bank	64,407.9	19.9	64,427.8	74,735.9	19.4	74,755.3	**116.0%	97.5%	116.0%
Total	572,517.3	666,712.7	1,239,230.0	550,226.1	499,310.9	1,049,537.0	96.1%	74.9%	84.7%

Source: MOALI: (loan settlement budget and expenses are shown in above table,)
** Budget deficit was filled up by the corresponding amount transferred from general surplus reserved fund.

2.9 Principles for the Implementation of the ADS Investment Plan

266. Going forward, the following principles have been specified for the funding of activities under the ADS Investment Plan:

Overall – applicable to all investments regardless of Pillar:

1) evaluate all investments for their positive impact on achieving food and nutrition security, reducing poverty, and building sustainable livelihoods and well-being in the rural areas and in the country as whole;

2) balance investment in various agro-ecological zones and geographical regions of the country, considering the regional needs of value chains handling prioritized commodities. (See Box 1 for a further explanation of this priority);

3) ensure that investments promote social inclusion, especially the upliftment of women and smallholder farmers;

4) promote private sector initiatives by supporting trade improving policies, value addition and support to public private partnerships.

Pillar 1:

1) assure sufficient resources for addressing land issues, particularly sufficient competent human resources;

2) assure sufficient, competent human resources to implement planning, policy review and formulation, M&E, coordination, communication, and participation.

3) carry out food and nutrition interventions;

4) carry out the reorganization of MOALI.

Pillar 2:

1) restructure agricultural mechanization to rationalize public and private sector activities, including privatization of MOALI mechanization stations;

2) increase the size, efficiency and coordination of investment in research, extension and education;

3) rationalize research and extension towards prioritized commodities;

4) assure O&M for irrigation infrastructure.

Pillar 3:

1) assure sufficient resources for value chain development for prioritized commodities;

2) establish innovation, competition, and matching grants funds for SMEs;

3) ensure sufficient funding of quality and safety assurance systems;

4) assure support for the O&M of rural road and other types of rural infrastructure;

5) conduct feasibility studies for the establishment of agro-industrial zones in the four economic corridors (north-south, east-west, northeast-southwest and Yangon-Myawaddy).

3. RISKS AND MITIGATION

Table 53 Risks and Mitigation Measures in the ADS

	Risk	Mitigation Measures in the ADS	Risk Level (Low,Medium, High, Extreme)
1.	Natural disasters (flood and drought, heat spells, flash flood) might destroy the livelihood sources of the most vulnerable rural household, causing disruption to programs, and considerable loss and damage	Outcome 2.9 is focused on improving resilience of farmers and communities to climate change and disasters.	Medium
2.	Pests and disease outbreaks, including increased risk with climate change	Outcome 2.8 provides improved plant disease and pest management; improved animal health management and the introduction of good practices in crop and animal husbandry.	Low
3.	Disharmony between regional and national plans due to insufficient coordination between different levels of government	The ADS introduces a National Coordination Committee to minimize disharmony and achieve improved planning coordination.	Medium
4.	Disruptions from informal border trade causing excessive price volatility	Outcome 3.1 provides market information and intelligence that will help to identify market demand trends. Output 1.5 on value chains in prioritized commodities will strengthen linkages of smallholders with enterprises and provides improved strategies to react to changes in demand.	Large
5.	Distribution of adulterated, fake, and counterfeit products and agricultural inputs	Outcome 3.7 on food quality and safety and quality system will strengthen inspection systems.	Low
6.	Persistence of land grabbing and slow progress in compensation for confiscated lands and land use titling.	Outcome 1.6 on land rights is expected to address land grabbing issues.	High
7.	Corruption	Several measures under monitoring and evaluation (Outcome 1.3) and participation of civil society (Outcome 1.7) promotes transparency and accountability.	Medium
8.	Lack of funding for O&M	Outcome 2.4 on water and irrigation and Outcome 3.5 (a) on rural roads stress the need of adequate funding and institutional mechanisms for O&M.	High
9.	Conflict arising from land issues.	Numerous steps or legislative, institutions, investment, and capacity building are indicated in Outcome 1.6 to minimize this risk	High
10.	Failure of successive administrations to apply the ADS	Secure strong ownership of the ADS across key stakeholders	Moderate

4. MONITORING AND EVALUATION

4.1 Introduction

267. Monitoring and evaluation is one of the main outcomes of the Governance component (Outcome 1.3). Several activities related to monitoring are described in the Governance component. A specific system for monitoring and evaluation at the union and local level will be formulated at the beginning of the ADS and monitoring capacity of union and local level institutions will be strengthened.

4.2 Monitoring and Evaluation of the ADS

268. The ADS needs to be monitored regularly, professionally, and in a participative manner. Monitoring division and units will be strengthened (see Output 1.3) at the Ministry and department levels and will be provided support and capacity building by the ADSISU.

269. In addition to project and program monitoring, the ADS will require regular policy monitoring to be carried out by a new Policy Analysis Division supported by the ADSISU. Monitoring of the ADS will go beyond inputs and output monitoring and include outcomes and impact monitoring per the targets and design monitoring framework of the ADS programs. Monitoring reports will be publicly available both in Myanmar and English language and discussed regularly at union and state/region events.

4.3 Monitoring, Outcomes, and Outputs

270. The ADS Vision and its targets are reported in the impacts and its indicators are reported in Table 3; targets for the outcomes are reported in Table 4, and preliminary indicators for the outcomes are provided in the following Table 54, Table 55 and Table 56.

Table 54: Outcome Indicators for Objective 1 on Improved Governance

Outcomes	Indicators	Baseline	Target
1.1Planning. Effective integrated planning based on participatory processes both at the union and at the state/region level.	▪ Annual plans ▪ 5-year plans available	▪ No plan online	▪ Union and State/Regional Plans available online
1.2 Policy Capacity. Improved capacity for policy formulation and analysis	▪ Policy division operational ▪ Policy reviews ▪ Independent ADS policy review	▪ No policy division ▪ No policy review ▪ No ADS Policy review	▪ Policy division established ▪ At least 3 policy reviews per year ▪ 1 independent ADS policy review per year
1.3 M&E. Timely and Effective Monitoring and Evaluation processes that inform a web-based Management Information System (MIS).	▪ M&E reports	▪ No M&E reports	▪ Quarterly M&E Reports available online in Myanmar and English language
1.4 Statistics. Sound statistical systems for evidence based decisions.	▪ Census ▪ ICT used in collection and dissemination of data ▪ Annual surveys on policy issues	▪ No Census including crops, livestock, and fisheries ▪ Limited use of ICT ▪ Few surveys available for policy decisions	▪ Census data collected and disseminated ▪ Agricultural data statistics available online ▪ Agricultural survey databases shared online
1.5 Associations. Strong farmer and industry associations and federations.	▪ Meetings of MOALI with farmer and industry associations at different level (state/region and union)	▪ No farmer organization structure from local to union level ▪ Limited interaction between MOALI and farmers and industry associations at the state/region level ▪ Limited capacity of farmer organization	▪ Annual meetings with MOALI with farmer organizations at state/region/union level ▪ Annual meetings of MOALI wind industry associations at union level ▪ Annual meetings of MOALI with industry and farmer associations at union level
1.6 Land. Strengthened farmers' land rights and enhanced capacity of institutions involved in agricultural land.	▪ Customary tenure rights ▪ Updated cadastral information ▪ Land law and regulation developed according to National Land Use Policy ▪ Land conflicts ▪ Access to information ▪ Agroecological zoning	▪ Specific regulations for implementation of National Land Use Policy under formulation and revisions ▪ No National Land Use Council ▪ Several restrictions to land tenure ▪ Limited crop and land use by farmers ▪ Inventory and audit of VFV land ▪ Outdated cadastral information ▪ Customary tenure rights not recognized ▪ Unclear and framework for addressing land conflicts ▪ No agroecological zoning based on principle of global agroecological zones	▪ National Land Use Council established ▪ Land Use formulated ▪ Cadastral information updated ▪ Clear rules and process for land conflict resolution ▪ Customary tenure rights recognized and documented ▪ Agrocological zoning conduced on the basis of Global Agroecological zones Principle ▪ Access to land information substantially improved ▪ Assurance of land use title security

Outcomes	Indicators	Baseline	Target
1.7 MOALI capacity for ADS coordination and implementation	▪ Implementation Support Unit ▪ Information desks ▪ Presentations of M&E reports ▪ ADS website	▪ Limited coordination within MOALI, between MOALI and other agencies, between MOALI and state/region, and between MOALI and stakeholders ▪ Civil society is often not aware of planning and implementation of MOALI programs ▪ No mechanisms for civil society to provide regular feedback to MOALI	▪ Establishment of the ADS Coordination Unit ▪ Establishment of the ADS Implementation Support Unit ▪ ADS Information desks at the Union and State/region level established ▪ Periodic presentation of ADS M&E reports to civil society ▪ ADS website established and regularly updated and allowing to make comments
1.8 Food and nutrition security. Improved food and nutrition security of most disadvantaged groups.	▪ Food and nutrition security program	▪ Scarce attention of MOALI to nutrition initiatives	▪ Establish targeted food and nutrition security program through community development
1.9 Restructuring. MOALI restructured to better integrate existing units and become more responsive to farmers enterprises, and civil society.	▪ Units for M&E, Policy, ADS Coordination, and Agribusiness ▪ Capacity of staff to perform tasks	▪ No unit at MOALI focused on M&E, Policy, Coordination, and Agribusiness. ▪ Need of reorganizing some units and division to optimize staff and retraining. ▪ Need to establish system of performance evaluation based on performance indicators.	▪ Establish unit for Policy, ADS Coordination, and M&E ▪ Coordinate with new restructuring options under Pillar2 (NARC and NARES) ▪ Establish Department of Agribusiness ▪ Definition of tasks and performance indicators ▪ Improved capacity of staff to perform their functions

Table 55: Outcome Indicators for Objective 2 on Productivity

Outcomes	Indicators	Baseline	Target
2.1. Agricultural research - Improved research system for crop, livestock, and fisheries	▪ National Agricultural Research and Extension Committee ▪ Joint activities between research and extension worker ▪ National Agricultural Research and Extension Committee ▪ Joint activities between researchers and extension workers.	▪ Lack of coordination between research and extension	▪ NARES established ▪ R&E annual meetings ▪ Jointly demonstrations in training and adaptive research centers ▪ Jointly preparation of commodity manuals
2.2. Agricultural extension – Transformed agricultural extension system delivering improved products (crop, livestock, fisheries) and technology for adoption and adaptation	▪ Policy and strategy document; ▪ Extension plans ▪ Capacity of extension staff ▪ Involvement of farmers in the formulation of extension plans ▪ Involvement of the private sector in extension delivery, including publicly financed private sector delivery.	▪ Lack of participatory methods in extension ▪ Little attention to demand of farmers for specific extension services, particularly women farmers ▪ Lack of involvement of farmers in the formulation of extension plans ▪ Little use of ITC ▪ Little use of F2F and E2F extension delivery; ▪ Lack of coordination between research and extension	▪ National gender-sensitive Extension Policy and Strategy that defines public and private sector roles formulated and implemented ▪ Village participatory extension plans formulated and implemented ▪ Capacity of extension staff improved ▪ Increase number of subject matter specialists ▪ Strengthen farmer organizations ▪ Innovative extension delivery systems introduced including F2F and E2F extension ▪ Use of ITC in extension ▪ Regular evaluation of extension activities in terms of productivity and inclusion ▪ NARES established ▪ R&E annual meetings ▪ Jointly demonstrations in training and adaptive research centers ▪ Jointly preparation of commodity manuals
2.3. Education and Training - Develop (or revive) effective education and training to build “human capital” in the agricultural and food sector responding to the evolving needs of farmers and the private sector in rural areas.	▪ Consolidated University system ▪ 3-year diplomat at State Agricultural Institutes ▪ High school and vocation training in agriculture	▪ Underfunded and fragmented system	▪ Yezin University as consolidated university including crops, livestock, and aquaculture colleges ▪ State Agricultural Institutes in all states and region ▪ High school level and vocational training in agriculture

Outcomes	Indicators	Baseline	Target
2.4. Irrigation and water management - More responsive and reliable irrigation and drainage services and more efficient and sustainable water management systems.	▪ Relevant policy documents ▪ Measures for water management in different systems ▪ Rehabilitation of existing systems ▪ Programs for groundwater, non-conventional irrigation ▪ Level of O&M ▪ Access and efficiency of water use	▪ Mostly focused on paddy ▪ Lacking integrated water resource management policy ▪ Inadequate attention to groundwater, non-conventional irrigation system, rainfed agriculture, and drainage.	▪ Myanmar National Water Policy formulated ▪ Appropriate measures for water management in rainfed agriculture developed ▪ Established program on groundwater development ▪ Rehabilitation of a number of schemes ▪ Funding systems and guidelines for O&M established ▪ Alternative measures of water use access and efficiency
2.5. Crop inputs - Increased use of improved farm production inputs and technologies by crop growers	▪ Use of improved seeds ▪ Seed law and regulations ▪ Soil mapping ▪ Fertilizer productivity and use efficiency ▪ Enforcement of Law on Fertilizer, Law on Pesticides and Herbicides	▪ 10% of farmers use improved seeds ▪ Nitrogen efficiency at 30kg paddy/kg of N ▪ Numerous complaints on low quality, fake, and adulterate chemicals	▪ 50% of farmers use improved seeds ▪ Revised seed law with input of farmers and private sector ▪ Soil survey and mapping of Myanmar ▪ Quality assurance system for seed and fertilizer enforced ▪ Nitrogen efficiency at 40 kg paddy/kg of N ▪ Law on Pesticides and Herbicides enforced
2.6. Mechanization - Increased application of appropriate mechanisation in the agricultural value chain	▪ Initial stage of Private mechanization stations ▪ Private rural workshops ▪ Availability of spare parts	▪ AMD has a large stock of equipment that needs to be handed over to farmers and private sector ▪ Limited options for financing machinery	▪ Transferring machine assets at the initial stage of privatization of mechanization stations of AMD ▪ Emergence of rural workshops for repair and maintenance ▪ Availability of spare parts ▪ Bank financing of agriculture mechanization
2.7. Livestock and fish - Increased use of improved livestock and fish breeding, health and husbandry service and technologies by livestock and fish producers.	▪ Increase private sector delivery of animal and fish breeding, health and husbandry services	▪ Free or under-priced public-sector services undermine the potential for private sector service and technology delivery.	▪ National policy clearly defines public and private sector roles in livestock and fish technology and service delivery; ▪ Privatization of some public utilities for animal and fish breeding, health care and husbandry.
a. Animal breeding - More productive and profitable genetic composition of animals	▪ Strategy document ▪ Private breeding farms ▪ AI dissemination ▪ Livestock insurance	▪ Human resources, facilities, and financial resources for animal breeding limited ▪ Limited involvement of private sector in animal breeding ▪ No livestock insurance scheme	▪ National Strategy and Action Plan for Animal Genetic Resources approved and implemented ▪ Emergence of private breeding farms ▪ Expansion of AI ▪ Livestock insurance scheme in operation

Outcomes	Indicators	Baseline	Target
b. Animal health - More healthy and productive animals	▪ Animal health information system ▪ Community Animal Health Workers ▪ Distribution of vaccines ▪ Contingency planning for emerging animal disease threats	▪ Inadequate animal health information system and parathion for animal disease threats ▪ Limited distribution of vaccines due to coverage of cold-chain	▪ Strengthened Animal Health Information System ▪ Enhanced program of Community Animal Health Workers ▪ Implement contingency planning and action for emerging animal disease threats ▪ Enhanced distribution of vaccine and cold-chain management
c. Animal nutrition – Better fed and productive animals	▪ Information on pasture/ fooder/feed system ▪ Feed laboratory ▪ Demonstration ▪ Research program	▪ Scarcity of information on national pastures, and fodder/ feed systems ▪ Weak feed testing labs and no research program on animal nutrition	▪ National database on animal pasture, fodder, and feed systems compiled and maintained ▪ Strengthened feed testing laboratory ▪ Fodder/forage demonstrations ▪ Applied research program on animal nutrition implemented
d. Small scale livestock and dairy production - Strengthened capacity of small-scale animal producers	▪ Small-scale livestock production unit	▪ Limited capacity of smallholder farmers to engage in small-scale animal production compliant with sustainable livestock production standards	▪ Small-scale animal production compliant with national standards expanded
e. Apiculture – Expansion and increased importance of apiculture (bee honey) industry as primary and additional source of income generation for small-scale producers	▪ Production of bee honey	▪ Despite potential for the subsector, little is known, and capacity is limited	▪ Production and sales of bee honey expanded
f. Fisheries and aquaculture inputs and services - Maximum output and profit from fishing and aquaculture industries using sustainable practices	▪ Hatcheries and breeding points ▪ Laws and regulations ▪ Aqua-feed production	▪ Considerable contribution and growth of fisheries with high potential ▪ Constrains by inadequate regulations and weak infrastructure for breeding, fishing and aqua feed	▪ Expansion of seedling infrastructure ▪ Legal and regulatory framework for fisheries and aquaculture formulated and implemented ▪ Production of aqua feed promoted ▪ Conservation of fish species and marine and fishery resources
2.8. Sustainable Practices - Sustainable Farming, Good Agricultural Practices (GAP), Good Veterinary Husbandry Practices (GAHP), Good Fishing Practices (GAqP), and Organic Agriculture (OA) practices are established and adopted	▪ Regulations on good practices for crops (GAP), animal (GAHP), fish (GAqP), and organic agriculture (OA) ▪ Production of products compliant with good practices	▪ Limited knowledge, demonstration, promotion, and production of agrifood products produced according to good practices	▪ Protocols and regulation for good practices (GAP, GAHP, GqP, and OA) developed and disseminated ▪ Production and sales of GAP and OA foods increased

Outcomes	Indicators	Baseline	Target
2.9. Resilience - Resilience of Farmers to Climate Change and Disasters improved.	▪ Community-based disaster risk management (CBDRM) programs ▪ Research on stress-tolerance varieties ▪ Early warning systems ▪ Reserves (food, seed, feed)	▪ Climate and disaster resilience of farm communities weak and constrained by capacity, inadequate early warning system (EWS), absence of rapid response due to lack of reserves, and research on stress-tolerant varieties.	▪ Stress tolerant varieties research supported (on crops, livestock, and fish) ▪ EWS improved ▪ Food and seed/feed reserve systems established ▪ CBDRM program implemented nationally

Table 56: Outcome Indicators for Objective 3 on Competitiveness

Outcomes	Indicators	Current Situation	Target 5 years
3.1. Improved business environment, information and investment along the agri-food supply chain.	▪ Transaction costs (e.g. time to start a business, time to get a document for doing business, transportation road blocs, …) ▪ Successful cases of contract farming ▪ Volume of investment in agri-food sector ▪ Access to agricultural market information and intelligence	▪ Difficult to start and run a business due to the number and level of transaction costs ▪ Contract farming still largely not working due to poor design and insufficient preparation. ▪ Need to create a level playing field between foreign and domestic investors ▪ Very limited access to market information and other market intelligence. ▪ ITC in agriculture extremely underdeveloped	▪ Reduction of transaction costs in internal and external trade ▪ Reduction of transaction costs in starting and running a d business ▪ Contract farming regulations and good practices formulated and disseminated. ▪ Database of contract farming with performance ▪ Volume of investment in agri-food sector increased ▪ Market information available to farmers and private sector through online services and ITC
3.2 Protected intellectual property rights for the agricultural and food sector.	▪ Laws (plan protection, trademark, patent law) ▪ Border measures	▪ Draft laws in different stages of formulation ▪ Persistent problem of counterfeit imported products particularly pesticides	▪ Plant Variety Protection Law consistent with UPOV approved ▪ Trademark Law allowing GI approved ▪ Strong border measures to protect against counterfeit agricultural products enacted ▪ Patent law to protect domestic research and innovators in the agri-food sector approved
3.2 Reliable quality system that helps farmers and food processors get higher prices for higher quality goods, incentivizing quality upgrading developed.	(Indirect Indicators) ▪ Laws (standardization, metrology) ▪ Institutions (National Accreditation Bureau, National Metrology Institute) ▪ National Standards	▪ Laws and institutions for developing reliable quality systems at an incipient stage	▪ Law on Standardization revised ▪ Law on Metrology revised and approved ▪ National Accreditation Bureau and National Metrology Institute established ▪ National Standards for food and food processing approved

Outcomes	Indicators	Current Situation	Target 5 years
3.2 Enhanced framework for gender-equitable and participatory planning and implementation of rural development programmes institutionalized.	▪ Divisions within DRD ▪ Community development initiatives	▪ DRD needed the technical and research support to carry out its work more effectively ▪ Limited coverage of and community and women's participation in community development initiatives	▪ Community development initiatives upscaled ▪ Participatory and gender sensitive village and township agriculture and rural development plans.
3.2 Rural infrastructure improves smallholder agriculture efficiency and profitability.	▪ Community and private sector participation in the planning, construction and operation and maintenance of rural infrastructure.	▪ Insufficient community participation in rural infrastructure planning and operation and maintenance	▪ Rural infrastructure improves smallholder agriculture efficiency and profitability.
a) Expanded and improved rural road network integrated with national transport plans.	▪ Length of rural roads and bridges	Expanded and improved rural road network integrated with national transport plans.	▪ Length of rural roads and bridges
b) Improved access to rural electrification and renewable energies	▪ Access of rural communities and households to electricity	A variety of options for improving access to electricity through Public Private Partnerships (PPP) in renewable energies (micro-hydro, solar, micro, biomass, biogas)	▪ Connections of rural communities to national grid expanded
c) Access to potable water in rural areas	▪ Access to rural water	Ongoing expansion of rural water supply infrastructure	▪ Access to rural water expanded
d) Market and logistics infrastructure developed and managed	▪ Institutions for market and logistics infrastructure Market and logistics infrastructure	No institution responsible for market and logistics infrastructure development related to agri-food sector	▪ Department of Agribusiness and Marketing established ▪ Markets, warehouses, cold storage infrastructure developed in PPP mode Agro-industrial zoned developed

Outcomes	Indicators	Current Situation	Target 5 years
3.6 Increased competitiveness and stakeholder participation in agricultural value chains engaged with prioritized commodities	▪ Value chain program ▪ Competitive value chain and SME innovation fund ▪ Value chain associations ▪ Value added in prioritized value chain ▪ Agribusiness incubators ▪ Competition funds	▪ Absence of value chain programs including stakeholders in the decision board (farmers, industry, and government) ▪ Several value chain initiatives ongoing, but largely uncoordinated and lacking scale. ▪ Most information related to value of a value chain limited to production and official export. Need baseline survey conducted on large sample. ▪ No organized system for helping start-up agro-enterprises to grow and innovative, particularly for youth, women, and marginal groups	▪ Competitive value chain programs for 7 prioritized commodities established and operational ▪ Competitive value chain and SME innovation co-financing funds established ▪ Farmers, traders, and industry associations for value chain development established ▪ Value chain value added for key commodities increased by 40% ▪ Agribusiness incubators established
3.7 Enhanced food quality and safety	(Indirect Indicators) ▪ Laws ▪ Food safety and quality standards ▪ Laboratories accredited ▪ Capacity for risk assessment	▪ Food safety not compliant with international standards ▪ National laboratories few and inadequate to provide needed testing for food safety ▪ Capacity for risk assessment still incipient stage	▪ Revised Food Law and regulations ▪ Food safety and quality standards promulgated ▪ Accredited laboratories for food safety tests ▪ Capacity for risk assessment (for both plants and animal products) enhanced

Outcomes	Indicators	Current Situation	Target 5 years
3.8 Improved access to a range of financial services for farmers and agribusiness enterprises	▪ Laws and policies ▪ Pilots on agricultural insurance	▪ With the transfer of MADB to MOPF, several responsibilities of agricultural finance will be under MOFP ▪ Microfinance law needs revision to allow expansion of functions and outreach ▪ Credit bureau information system make it easier to expand credit ▪ Agricultural insurance, including crop and livestock insurance still at very incipient stage ▪ Legal environment for the delivery of digital financial services under developed.	▪ Options for financially and economically sustainable agricultural insurance piloted and appropriate policy, law, and regulations developed ▪ Improved capacity for crop forecasting ▪ Credit bureau information system established ▪ Revised Law on Microfinance ▪ Revised law on digital finance ▪ Policy on Agricultural finance ▪ At least 4 commercial banks offering digital financial services, directly or through registered MFIs, to at least 5 million male and female rural customers.
3.9 Trade facilitated agri-food and agricultural products export growth	▪ Time and cost for carrying export and import processes ▪ Handling surges in transit goods ▪ Strategy	▪ Considerable amount of informal trade at border points ▪ High costs and long time for carrying out export and import processes ▪ Need of improve trade diplomacy, negotiation with international partners and documentation for enterprises engaged in trade related investment	▪ Rationalized import and export procedures for agrifood products ▪ Upgraded custom clearances processes at land-borders ▪ Improved processes for transiting goods through Myanmar, particularly from Yangon to Muse ▪ National Agricultural Export Strategy approved and implemented

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