

AGRICULTURAL DEVELOPMENT STRATEGY AND INVESTMENT PLAN
Draft
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1. INTRODUCTION

1. Over the last five years (2011-2015) Myanmar has been engaged in a process of political and economic liberalization that will transform the country's economy and society and see the nation emerge as an important economic entity in ASEAN and the wider regional and global economy.

2. After decades of isolation, and with the lifting of sanctions earlier imposed by Western countries, Myanmar is actively re-engaging with the global economy. At the same time, Myanmar's rich natural resource base, abundant labor and strategic location wedged between India and China, make the country a very attractive destination for foreign investment. The potential for rapid growth and development is enormous. After more than five decades of stagnant and relative decline, the country is at a crucial juncture and seems to be on the verge of taking off as a new 'tiger' economy. Myanmar's gross domestic product expanded by over 8 percent per year during the period 2010/11 to 2015/16. Over the same period agricultural GDP has expanded at an average growth rate of 3.2%.

3. While much of the initial interest has been in areas such as tourism, mining and gems, and infrastructure development, the opening and re-engagement with the global economy has also seen a growing interest in the development potential of the agricultural sector. Myanmar remains a largely agricultural and rural economy. Agriculture, livestock and fisheries account for about 28% of GDP and over two thirds of employment. Together these sectors are a key source of foreign exchange earning over \$3.1 billion in 2015/2016 through exports of products such as pulses, rice, shrimp, livestock, and rubber.

4. Historically, Myanmar was a major exporter of rice, while in more recent times it has become an important exporter of pulses. In addition to annual crops (including oilseeds and vegetables), Myanmar also has an industrial crop sector that includes rubber, sugarcane, cotton, oil palm, coffee, and 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.

5. **Immense potential and formidable challenges of the agricultural sector.** Experiences in other transition economies in South East Asia, such as Vietnam and Laos, as well as China, suggest that agriculture and the rural economy respond rapidly to economic reforms and can provide significant economic gains during the early stages of reform. However, while the potential for significant production and productivity gains in agriculture and the natural resources sector, including fisheries and forestry, is immense, Myanmar also faces some formidable challenges in realizing this potential. These challenges include a weak rural infrastructure; a range of complex land issues that remain largely unresolved; low agricultural productivity and competitiveness of agrifood products; an underfunded and poorly organized agricultural research, extension, and education system; weak coordination within the Ministry of Agriculture, Livestock, and Irrigation (MOALI), and between MOALI and other stakeholders; and vulnerability to natural disasters (floods, droughts, cyclones, sea level rise) and climate change.

6. **A Growing Need of Clear Directions.** Myanmar is amid major changes and several new ideas and approaches are being formulated. Given the ferment of ideas, strategies, and plans in circulation today, there is a growing need of clear direction among the agencies responsible for implementing policies and plans. The Ministry of Agriculture, Livestock and Irrigation (MOALI) which is the result of merging three Ministries (Agriculture and Irrigation; Livestock Fisheries and Rural Development; and

Cooperatives) is in urgent need of restructuring. The existing plans of each former ministry need to be harmonized into the unified plan of one Ministry. Examples of questions that need to be addressed include the following:

- (i) How will the Agricultural Sector Plan 2016/17 to 2020/21 (focused primarily on crops and irrigation) be harmonized with similar plans for livestock and fisheries, and rural development?
- (ii) What are the priorities in the Agricultural Sector Plan?
- (iii) How do we know we are moving towards the vision of the agricultural sector that has been articulated by the Government of the Republic of the Union of Myanmar (GORUM)?
- (iv) What are the responsibilities of different agencies?
- (v) Are there agricultural plans for each of the 15 states and divisions of the Union of Myanmar? Are these provincial plans integrated with the overall sector plans?
- (vi) What is the link between plans and budgets?
- (vii) What is the link between activities and outputs, outputs and outcomes, and outcomes and impacts?
- (viii) Is there a unit within the Ministry responsible for monitoring plans and policies implementation?

7. **Consolidating Different Ideas into a Common Strategic Document.** The Agricultural Development Strategy (ADS) aims to be an integrated and shared strategic document based on the considerable efforts made by the government, the private sector, civil society, and development partners in proposing various approaches to agricultural development. This strategy is the result of a process led by the Government with the participation of several stakeholders. The strategy aims at indicating clear priorities in the short, medium, and long term.

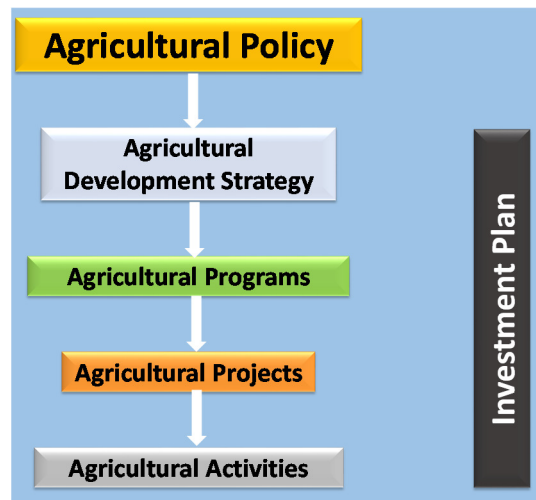


Figure 1 From Policy to Strategy

8. **From Strategy to Investment Plan for the Agricultural Sector.** The development of the strategy is consistent with the existing strategic documents of the government, particularly with the recently developed Agricultural Policy. In fact, the Agricultural Development Strategy (ADS) is the basis for an operationalization of the Agricultural Policy. The implementation of the ADS requires an Investment Plan. The Investment Plan clarifies the results that need to be achieved by different stakeholders, their time line, and the activities to achieve the results. Each activity is costed and indicative funding sources

are identified so that stakeholders have a better idea of the resources (financial, physical, human) required and the contribution of different funding sources.

9. **Rationale of the ADS and Investment Plan.** The preparation of the Agricultural Development Strategy and Investment Plan responds to the following needs:

- (i) A systematic approach to **operationalize** the implementation of the Agricultural Policy and link it to the Investment Plan.
- (ii) The **consolidation and integration** of various plans, strategies, roadmaps, and approaches currently developed by various stakeholders.
- (iii) A powerful tool to **coordinate** activities, projects, programs, and policies.
- (iv) A mechanism to dialogue with development partners and private sector and **harmonize Foreign Aid and Foreign Investment** in agriculture.

2. BACKGROUND

10. Myanmar has an ethnically diverse population of about 51.7 million in a land area of 676,578 square kilometers. The country is divided into 15 states and regions, with 135 different officially recognized ethnic groups.¹ Approximately 72% of the population lives in rural areas where 85% of poverty is concentrated, and 24% of rural households are considered vulnerable.² According to the Integrated Household Living Conditions Survey (IHLCS), the poverty rate in Myanmar in 2011 was approximately 25.6%. In Myanmar 61% of employment is generated by the agriculture sector, and 54.2% of those engaged in agriculture, hunting and forestry fell below the general poverty line. With a per capita income of USD1,205, Myanmar is ranked 165th out of 180 countries in the world,³ and according to the World Bank, approximately 66.9% of total employed in the country are the working poor at PPP\$2/day⁴.

11. In Myanmar, there is a gender-based division of labor in crop-cultivation, although it may differ according to cropping patterns by state and region. Women perform most tasks related to crop cultivation. This normally tends to include planting, caring, weeding, transplanting, harvesting, threshing, postharvest operation, and marketing. Women in Myanmar have a high burden of work, which includes both productive and reproductive work.

12. Recent information from 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, including livestock and fisheries is estimated at slightly less than 30% of GDP, with industry accounting 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 sector.

14. The agriculture sector also accounts for between 25-30% of total exports by value. Pulses are currently the largest agriculture export item, bringing in \$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 continues to dominate Myanmar's agricultural production (45.7% of harvested area and 53.4% of production volume of major crops produced in Myanmar) at 28.2 million MT (2014/15), but has seen a slight decline in production levels since 2010.⁵ While the country as a whole has a surplus of rice and the 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.⁶

¹ 125,870 square kilometers (18.6% of total land area) is devoted to agriculture.

² Dimensions of Poverty, Vulnerability and Social Protection in Rural Communities in Myanmar, 2015.

³ On a nominal basis (International Monetary Fund).

⁴ The World Bank.

⁵ Department of Agriculture, Land Management and Statistics, MOALI, 2015.

⁶ Ibid.

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

17. By volume, fish is second to rice in its contribution to the Myanmar diet. It may hence be the single 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 on the coastal areas, employing some 2.6 million persons. In these areas, fishery is one of the rare activities that provide employment throughout the year.

18. Livestock currently is a relatively small sector of agriculture, contributing only 7.5% of total agricultural GDP; however, the sector is growing and with rapidly growing income per capita, particularly in urban area, the livestock subsector can be expected to increase in importance to meet growing domestic demand. Moreover, it could also have considerable potential as a source of meat for the GMS region, if animal health and transboundary disease issues are addressed.

19. Despite its potential for development, the agriculture sector has suffered for decades from a lack of investment in basic infrastructure such as rural roads, as well as from weak support services, such as research, extension and finance. Most investment in agriculture has focused on irrigation infrastructure, particularly in the building of dams, reservoirs, and main canal systems to provide surface irrigation to rice production. 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), resulting in stagnant or declining rural incomes, a growth in landlessness, a high degree of rural indebtedness and thus widespread rural poverty.

20. Food security is a problem in remote upland areas (ADB, 2012a) but some sources have also reported this as an issue in the more prosperous areas of the Delta since Cyclone Nargis (Steinberg, 2010; Dapice et al., 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 strengths, weaknesses, opportunities, and threats (SWOT) analysis of the Myanmar Agriculture and Natural Resources sector.

Box 1: SWOT Analysis of Myanmar’s Agriculture and Natural Resources Sector

Strengths	Weaknesses
<ul style="list-style-type: none"> • Rich endowment of natural resources (water, soil, forest, coastline) • A variety of agroecological areas suitable to agriculture, livestock, fisheries, and forestry • Large irrigated areas • Relatively high land/labor ratio • Basic structure of agricultural research, extension, and education institutions • Surplus in a few commodities (rice, pulses, fruit, maize, shrimp, cattle, ...) • A growing domestic market • Improved regional integration and connectivity particularly with GMS and 	<ul style="list-style-type: none"> • Research, Extension, and Education are underfunded, and weakly coordinated • Departments of MOALI still need to be fully integrated • Limited access of farmers to timely and quality inputs such as seeds, fertilizers and pesticides, and animal health services • Extension systems not responsive to female and male farmers needs and demands • Limited diversification away from rice • Limited access of female and male smallholder farmers to secure land right • Land registration, classification and titling in need of reorganization • Limited quality and safety of agricultural products

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<p>ASEAN</p> <ul style="list-style-type: none"> • Strategic location for exports to China, India, and ASEAN. 	<ul style="list-style-type: none"> • Weak transport and communication infrastructure • Gender inequality and women’s rights in agriculture • Low capacity of institutions to carry out key governance functions such as planning, policy formulation and analysis, monitoring and evaluation, safeguards • Unbalanced expenditures within MOALI with limited funds available for research, extension, education, seed development, land administration and management. • Inefficient use of water resources and irrigation systems • Weak statistical systems • Weak capacity in policy formulation and analysis • Limited access of smallholder farmers to financial services • Low productivity levels and productivity growth • Low value added produced by agroindustry
<p>Opportunities</p> <ul style="list-style-type: none"> • 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 ICT and economic corridors • High potential for competitive exports in several value chains (rice, pulses, fruit, vegetables, shrimp, cattle, maize, cassava, rubber) 	<p>Threats</p> <ul style="list-style-type: none"> • Land grabbing continues and results in social and economic unrest • Unsustainable use of natural resources might result in environmental damage and land degradation • Natural disasters • Pace of HRD too slow to sustain rapid economic reforms (i.e. absorptive capacity remaining too low!) • Slowing down of reform process and increasing social economic unrest • Little preparedness to face competition from more competitive ASEAN neighbors in the presence of AEC

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, increase foreign exchange earnings and contribute to rural development. The role of the Ministry has evolved over time, from one mostly focused on crop agriculture, to one that is aimed at diversification towards high value products, including livestock and fisheries, and the development of rural non-farm sector. Diversification of income and development of rural non-farm sector are key elements of the process of agricultural transformation and bear on the modernization objective of the government of Myanmar. During the process of agricultural transformation, the wage differential between men and women also reduces and gender equality and women's rights are improving.

23. The ADS is a strategy for the operationalization of the agricultural policy to guide the agricultural sector of Myanmar over the next 15 years. Over the course of this period, the structure of the agricultural sector in Myanmar is expected to change considerably with agribusiness to grow faster than agriculture. Strong linkages between agriculture and other sectors in the economy 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 complexity**, 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, extension).

25. The strategy is formulated considering the conceptual framework of agricultural transformation of Myanmar from a society based on agriculture 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 time⁷. 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 bigger.

27. The relevant lessons derived from a review of the experience of several countries going through the process of agricultural transformation can be summarized as follows⁸:

- (i) Accelerate investment in Science and Technology. Specifically, investment in the Knowledge Triangle consisting of research, education, and extension (REE) has large impacts on increasing agricultural productivity.

⁷ Timmer 2007.

⁸ Goletti 2011

- (ii) Ensure broad-based and inclusive agricultural growth. Investment in programs to moderate social and geographic inequalities result in more stable and higher growth.
- (iii) Integrate smallholder farmers with competitive value chains. Smallholder farmers are the backbone of Myanmar agriculture; linking smallholder farmers to agrifood 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 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, Myanmar agriculture is dominated by smallholder farmers; and female smallholders perform most tasks in crop agriculture. The ADS cannot ignore male and female smallholders. In fact, regional experience indicates that emphasis on male and female smallholders might have not only benefits in terms of poverty reduction and reducing inequality, but also in terms of economic efficiency and growth.

30. For example, in the case of rice intensification, the success stories in Asia, whether for domestic consumption or export, have come from smallholder agriculture, rather than large-scale large plantations. Studies from the mid-1960s onwards from the early years of the Green Revolution have consistently shown the lack of any significant economies of scale in wet rice cultivation. Indeed, many studies have shown an inverse relationship between farm size and productivity. 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 rice smallholder sector.

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, since both the domestic and export trade were liberalized 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 by far the country's largest agricultural export item, with exports reportedly valued at \$1.1 billion in 2015/16.

32. 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.

33. In other subsectors too, the scope and potential for smallholder agriculture 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. But 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 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 clones. In other subsectors, such as sugar and even oil palm smallholder farmers can be involved through outgrowers schemes and contract farming, although the nutrition impacts of consumption of sugar and palm oil should be taken into account⁹. Regional experience from both South East and South Asia show that this can also work with livestock, especially with dairy and poultry.

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 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 increasingly 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.

⁹ Overweight and obesity are rapidly increasing in Myanmar: WHO survey 2014 showed 14.1% of men and 30.8% of women to be overweight or obese. 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 (Journal of nutrition 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.'

3.3. Agricultural Diversification

3.3.1. Issues in Rice Intensification

39. Given the importance of rice as a staple food as well as the historical importance of rice exports, a rapid expansion in rice exports is one of the Government's priorities. Moreover, there is considerable private sector interest, both domestic and foreign, in making this a reality, particularly through the modernization of the seed, processing, marketing, and logistics systems. At a national level, an increase in rice exports would help to diversify an agricultural export base that is currently heavily dependent on the export of pulses. 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 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 able to compete in the export rice market, Myanmar needs to convince buyers that it will have a continuous exportable surplus and improve its quality and price competitiveness, more precisely to be able 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, quality and timely delivery of inputs, and efficient use of fertilizers, water and credit. 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 tend to be low. Similarly, given the small size of paddy farms, the boost to farm incomes through rice intensification is often limited. In such a situation, other farm and non-farm activities compete with paddy. Thus, while in some areas, such as the Ayerwaddy Delta, paddy may well be the main stay 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.

43. There have been only limited improvements in drainage and land development. Paddy fields are found to be quite difficult to convert to upland crops cultivation in summer in most part of the delta areas thus limiting diversification away from paddy. Change from rice centric policy to food basket system requires investment in water management particularly in low lying areas and delta. Wherever opportunity is given farmers are ready to change to diversified farming for profit. It is due to land improvement barriers that farmers keep working in the rice centric trap. In upper Myanmar irrigated tracts several farmers switch to other profitable crops including mango trees.

44. Rice fortification might provide opportunities to contribute to improved nutrition (through access to vitamins and mineral typically lacking such as iron, vitamin A, and several B vitamins), added value, and value chain development.

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

45. With rising incomes, the non-paddy subsectors can be expected to become increasingly important. Growing demand for high quality animal protein will also encourage the growth of feed crops such as maize and soybean. Fisheries are already an important export sector and given the country's long coastline there is a huge potential, while there is also substantial scope for aquaculture. Other cash crops such as tea, coffee and cocoa, could also offer potential, particularly in some of the country's upland areas where rural poverty is at its highest.

46. Improvements in post-harvest systems, marketing and processing within all subsectors will be necessary to take agriculture forward. Value addition processing linked to cash crop production (e.g. fruit, vegetables, oilseeds and nuts) will also contribute to the growth in non-farm sector. 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 that are already well advanced in their rural transformations indicates that at some point a process of 'deagrarianization' 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 major urban centers rather than remaining on the land (Vokes, 2013).

47. 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 Burmese 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 labor supply and thus mechanization. It also leads to the ageing of agriculture, a steady rise in the average age of farmers, something that is reportedly happening in Myanmar despite the country being at a relatively early stage in its rural transformation.

48. A strong agricultural economy based on smallholder farmers' development will entail a growth of the rural non-farm economy. This can be accelerated through several public investments, particularly in rural roads, electrification, telecommunication, and market infrastructure (market places, warehouses, collection centers, packing houses). A constellation of SMEs well integrated with their farm-base and with larger agribusiness concerns within the supply chain will stimulate the growth of an inclusive rural economy.

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

- Upstream: Groundwater tubewell drilling and maintenance services (these are in huge demand and also already spreading for example in the CDZ);
- Upstream: Equipment operation, rental, and provision of services (an example is mobile combine services that are spreading quickly in rice in the Delta and the CDZ).
- Upstream: mobile labor teams for land preparation and chemical application, with proper safety gear and equipment;
- Upper-midstream: Drying, sorting, cleaning services for paddy and pulses
- Lower-midstream: Sorting and handling of vegetables, milk and fish collection, etc.
- Midstream: transport services

3.4. Institutional Development

3.4.1. Land

50. Secure 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 and 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 'sales' 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 (VFV Law). 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 which are moving Myanmar towards a market based system, there is growing concern that the Farmland law does not always provide security of tenure for all smallholders. First, the law only applies over "farmland" which is narrowly defined and does not include all agricultural production systems such as agro-forestry. 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. While the dynamics of a land market support the effective use of land, it may also facilitate stress sales as a result of indebtedness. The other legal building block of land management, the VFV land law, is an instrument to allocate temporary land use rights over land classified as being "Vacant", "Fallow" or "Virgin". Unclear definitions and perceptions of "Vacant", "Virgin" and "Fallow" 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 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 and compensation. There have been many reports in recent years of 'land grabbing, either as legal or unlawful confiscation often for larger-scale projects by large-scale agribusiness companies.

51. 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 Culturable land, Fallow land and Waste land) and new legislation (the 2012 VFV land 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 concession) investment 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 been arising 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 did not yet result in tangible development of these areas. In fact, as little as 20-25% of allocated land under the VFV Land law are 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 a poor handling of land issues such as confiscation may impact more profoundly on Myanmar society as such and the national reconciliation and peace building process than just on the agricultural growth process. Any kind of economic growth cannot be achieved under circumstances of protracted conflict. Dealing with land needs therefore be considered in a larger context than just as a production factor for agricultural production.

52. 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 has endorsed a comprehensive National Land Use Policy (NLUP) in January 2016. The policy development process stands out as a milestone in Myanmar's history. The NLUP was developed using an unprecedented multi-stakeholder consultative process managed by both the public sector and civil society. 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. The NLUP represents the collective voice of the people, and provides an important foundation on which improvements to this "living policy" can be made over time as more information becomes available. While the development of the NLUP was a strong national process, the NLUP adopts a broad set of international good practice for addressing the range of land governance issues in the country, well streamlined with those found in the Voluntary Guidelines on the Responsible Governance of Tenure (VGGT) of which Myanmar is a signatory.

53. The NLUP covers a broad range of issues that need to be dealt with in the future including: i) institutional and legal framework that comprises a National Land Use Council, the development of new legislation and the harmonization of existing legislation; ii) land use planning; iii) land administration; 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. In addition, the Umbrella Law would specifically identify the need to having 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 will 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 will need to fit into this future framework. It is essential that a future Land Rights law addresses the issues of customary land rights, occurring mainly but not exclusively in Ethnic 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 national reconciliation efforts to have a chance of being successful.

54. While appropriate legislation that gives farmers secure rights of use, transfer, inheritance, exchange and collateralization is essential, effective **implementation of the law(s)** is as important. This requires an appropriate institutional structure and capacity at both the national and 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 would define land-use planning tools to be used (i.e. different types of plans at different levels), institutional responsibilities, needs and rights for public participation, information sharing, and other basic principles.

55. Several donors including USAID, SDC, the EU, DfID, LIFT and their implementing partners) have already been supporting development and implementation of the National Land Use Policy through various pilot programmatic 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

56. The main institution providing finance to the rural sector has been the Myanmar 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.

57. While MADB is lending directly to agriculture, 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, the high administrative costs, and the fact that the traders are benefiting from subsidized rates also suggest an element of exploitation in the high rates in the informal sector, given the generally weak bargaining position of farmers vis-à-vis the lender. 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.

58. Hence, 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 take off rapidly. Given an extensive branch network that covers over 60% of the county's townships (K. N. Myint, 2012), MADB needs to be developed as a properly functioning rural finance institution. It has already embarked on a restructuring

process. However, even with an influx of capital, it will take time to retrain staff to fit their new roles as credit officers, supervisors and financial analysts, even with capacity development from external sources. MADB can however, draw both positive and negative lessons from the experience of public sector agricultural development banks in neighboring countries, notably Bank Pertanian Malaysia and the Bank of Agriculture and Agriculture Cooperatives in Thailand which are among the more successful public sector rural banks.

59. Allowing other banks, including private banks to expand into the rural sector is likely to be necessary to meet rising credit needs. However, this will only happen if financial sector reforms, including the removal of interest rate caps, allow such lending to be profitable. One advantage Myanmar has as a 'late-starter' is that the use of modern technology, along with mobile banking units and the use of mobile phones for banking, can help to reduce the costs of serving a clientele that consists of many relatively small farmers. At the same time, private banks can help the sector more generally by providing credit to agribusiness companies and suppliers.

60. Microfinance will also need to be developed. 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. 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. At the same time, developing sustainable microfinance models has been a difficult and controversial area, including most recently in India and China. The interest rates needed to ensure sustainability are often seen as too high and politically unacceptable and there is no single blue-print. However, promising financial innovations include mobile payment and banking, no-frills saving accounts, credit plus approaches, value chain finance, and person to person (P2P) lending provided through a P2P platform, with advances in technology again helping to reduce the transaction costs involved in microfinance (see ADB 2012).

61. Apart from meeting the urgent and rising credit needs within the agricultural and rural economy, experience elsewhere shows the importance of moving from the idea of providing credit to providing a full range of rural financial services, including facilities for savings. Clearly the policy and regulatory environment becomes even more critical once deposit taking is involved.

62. Although still an evolving area in the development field, the introduction of crop and livestock insurance could also be an important element of Myanmar's rural finance sector. As the cyclones in 2008 and 2010 have shown, disaster risk is high, while the country is also vulnerable to increased risks from climate change. Having a well-functioning system of insurance should ultimately lead to a lower cost of credit while also protecting livelihoods.

3.4.3. Research and Extension

63. Myanmar's system of research and extension has been commodity and productivity focused, with little coordination between the large number of different institutions involved (UNDP, 2004). Crop research is carried out in different departments (e.g. DAR and DOA), whereas very little institutionalized research takes place in livestock and fisheries.

64. In the case of extension, there is little use of participatory methods and focus on needs and demand of farmers. Moreover, the coordination between research and extension is very weak.

65. Agricultural research and extension are grossly underfunded, with their existing budget representing a out 1% of overall budget of MOALI, and less than 0.1% of Agricultural GDP.

66. 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, pests and diseases, water management, overall farm income, and suitability to agro-ecological zones. Therefore, the uptake of improved technologies has been limited. A major reorientation of both research and extension to a farming systems approach will be required.

67. On the research side, Myanmar can draw on the existing knowledge base within the CGIAR system and focus on adaptive research. On the extension side, appropriate retraining of the large number of government extension agents will be needed. As with research, greater decentralization of the system is also necessary if extension advice is to be relevant to farmers in different localities. Some newer approaches have already been undertaken with external support under the multi-donor funded Livelihood and Food Security Trust Fund (LIFT) program and could now be scaled up. Finally, there is significant potential for private sector involvement in both research and extension, including in the production and distribution of improved seed. These are also areas where public-private partnerships are possible. As in other areas, proper regulation of the private sector will also be required.

3.4.4. Farmer Organizations

68. In an agrarian structure characterized by smallholders, farmer organizations 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. Hence, a 'bottom-up approach' encouraging the growth of more informal grassroots community based organizations, cooperatives, user-groups, self-help groups and federations, is likely to offer the best route to the development of more viable and sustainable farmers organizations. NGO support in building capacity of such organizations is likely to be important. Since Cyclone Nargis there has been a rapid growth of NGOs in Myanmar. This is also an area where INGOs can play an effective role.

3.4.5. Policy Analysis, Planning, and Monitoring and Evaluation

69. Myanmar has embarked on an ambitious reform process that is both challenging and complex and this is particularly true in the case of the agriculture sector and the rural economy. Taking agriculture and rural development forward involves coordinated action in a range of areas and across sectors and sub-sectors. 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 the potential productivity gains and the constraints faced by producers. If development is to be driven by the private sector, whether small-scale or larger-scale, an enabling environment, including 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.

70. 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. The lack of reliable data and statistics is a major constraint to effective policy analysis, strategy development, and planning that needs urgent attention. It is also a basic requirement for effective monitoring of policy and planning outcomes to enable the adjustment and fine tuning of policies. 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 is needed.

71. Lacking is the systematic monitoring and evaluation of policy. The organizational structure of MOALI does not include policy units or M&E units dedicated to the regular preparation and dissemination of M&E reports that are conducted professionally and independently.

3.5. Infrastructure Development

72. While there has been some investment in road and irrigation infrastructure, Myanmar's rural infrastructure overall is still poor. The investment needs are huge, but in addition to government investment, support is likely to come from both multilateral and bilateral development partners. There are also areas where the private sector can play an active role, notably mobile phones, energy and ports. The private sector can also play a role through public private partnerships (BOO, BOOT); communities can play a role through community driven development (CDD) programs for infrastructure development. While absorptive capacity will be an issue, a significant improvement can be expected within a 5-year period.

73. From the viewpoint of the agricultural sector, priority areas include connectivity in all forms, roads, including rural/farm to market roads, rivers, mobile phones and internet. Given Myanmar's abundant water resources, an expansion of irrigation could well be important to rebuilding the country's comparative advantage in rice as well as reducing the production risks more generally. At the same time, the legal and regulatory framework on water management and use needs to be improved. (ADB, 2012a). Expanding access to electricity in the rural areas will also be necessary to support the development of both the farm and non-farm sector.¹⁰ Particularly in the case of smaller-scale rural infrastructure development, a pro-poor approach based on community involvement will help to generate employment and incomes and encourage a sense of ownership and a due concern for maintenance.

74. The efficient operation and maintenance of newly created infrastructure should also be a priority. This will require the allocation of adequate fiscal resources and the involvement of the private sector, including local communities. Operation and maintenance (O&M) of publicly-funded infrastructure such as irrigation schemes, rural roads, and bridges is mostly carried out by the public sector, but, due to lack of resources (financial and human), the effectiveness of O&M remains limited. Involvement of farmer groups and communities, and institutional mechanisms that make the involvement effective is a necessary element of the solution of inadequate O&M.

3.6. Imbalance between Budget and Policy

¹⁰ Myanmar's abundant natural gas supplies, may well also mean that the country could possess a comparative advantage in producing fertilizers domestically.

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

76. Given this unbalance in the allocation of resources, it is difficult to ensure that some of the key policy goals of the government, such as those related to addressing the land issues, promoting farmer organization, improving productivity and diversifying towards higher value added, could be successfully implemented by the staff of the ministry. The ADS will redress this unbalance by providing a direction for future budget preparation.

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	Irrigation and Water Utilization	225.252	9.193	18.175	252.621	34.9%
3	Land Records and Statistics	0.119	0.336	0.026	0.480	0.1%
4	AMD (agriculture mechanization)	0.917	76.800	3.808	81.526	11.3%
5	DOP (planning)	0.000	0.257	0.000	0.257	0.0%
6	YAU (Yezin Agricultural University)	1.314	0.210	1.382	2.906	0.4%
7	DAR (agricultural research)	2.924	1.548	0.153	4.625	0.6%
8	DOA (agriculture)	5.113	6.767	13.416	25.296	3.5%
9	Fisheries	1.226	0.229	0.133	1.587	0.2%
10	Vet and Husbandry	1.232	0.279	0.026	1.537	0.2%
11	Vet University	0.760	0.183	0.000	0.943	0.1%
12	DRD (rural development)	283.277	2.623	64.082	349.982	48.4%
13	Cooperatives	0.071	0.138	0.345	0.554	0.1%
14	Cottage Industries	0.038	0.173	0.008	0.220	0.0%
15	MADB (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

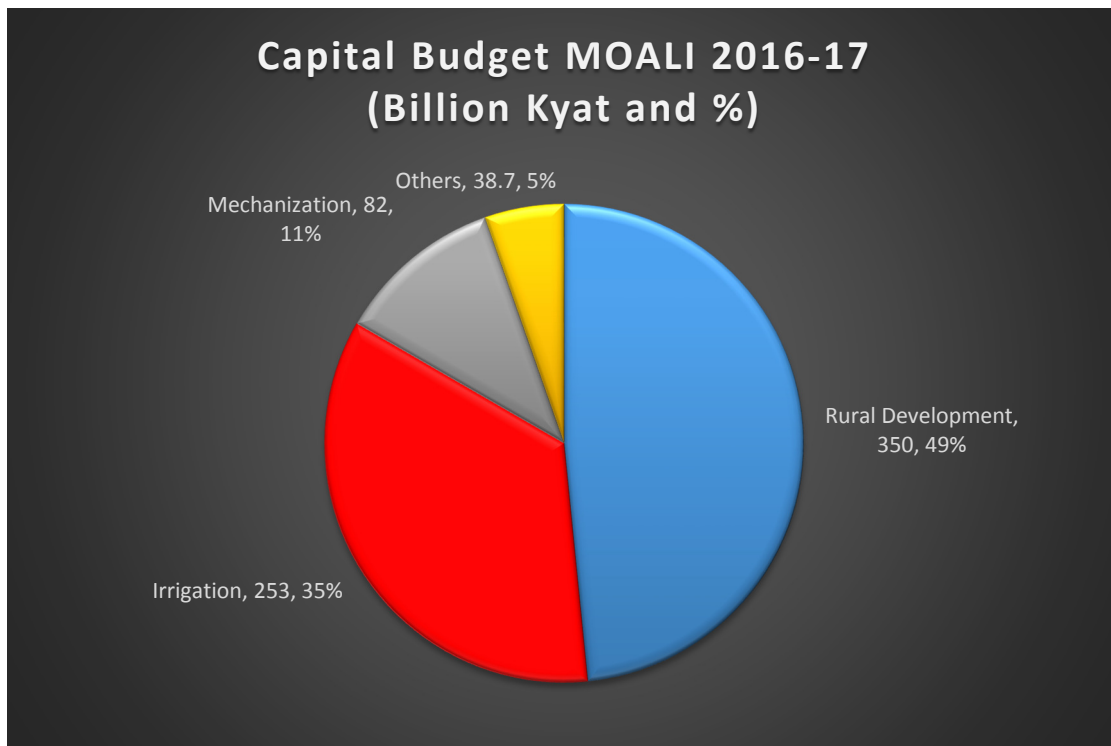


Figure 2 Capital Budget MOALI 2016-17 in Billion Kyat

77. 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 also a number of key rural development issues such as those related to rural infrastructure (rural roads, rural energy, potable water), credit, and cooperatives. The Department of Rural Development absorbs almost half of the budget of the Ministry. This makes it clear that the MOALI is recognizing 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 essential not only for increasing farmer’s income, but also to ensure employment and diversified income for the marginal and landless farmers.

78. A quick look at the distribution of capital budget for DRD (see Figure 3) and the Department of Irrigation and Water Utilization indicate that overall more than 80% of MOALI capital expenditures are for hardware of agriculture and rural development. The ‘hardware’ includes rural roads, rural energy, irrigation systems, potable water, buildings, equipment, machinery, and facilities. Although in most cases, this is very much needed infrastructure and equipment, there are however two issues of concern that are addressed in the ADS.

79. The first issue is related to the need of integrating the ‘hardware’ of development with the ‘software’ of development including social mobilization, participatory planning, farmer organizations, food and nutrition security. This integration could also assure that closer collaboration among different departments results in great efficiency and impact of the investments. For example, a closer integration between DRD, DOA, and DIWU might enhance the impact of irrigation schemes through (i) better connection to market via rural roads; (ii) improve linkages between smallholder farmers and enterprises

through organization of farmer groups and establishment of contract farming relations to to produce goods in high demand by final markets; (iii) improve the efficiency of water use through extension activities on both crop husbandry and water management; and (iv) help diversifying towards higher value produces through the design of irrigation systems and institutions for O&M that are not rice-centric.

80. The second issue is to assure **Effective Asset Management**. Given the substantial amount of investment by MOALI in infrastructure and ‘hardware’ then it makes good sense to improve the effectiveness of the investment by: (i) conducting ex-ante and ex-post evaluation of investment; (ii) monitoring and evaluating the performance of the infrastructure investment in providing the expected services; and (iii) involving the beneficiaries and stakeholders in the design, O&M, and M&E of the infrastructure investment.

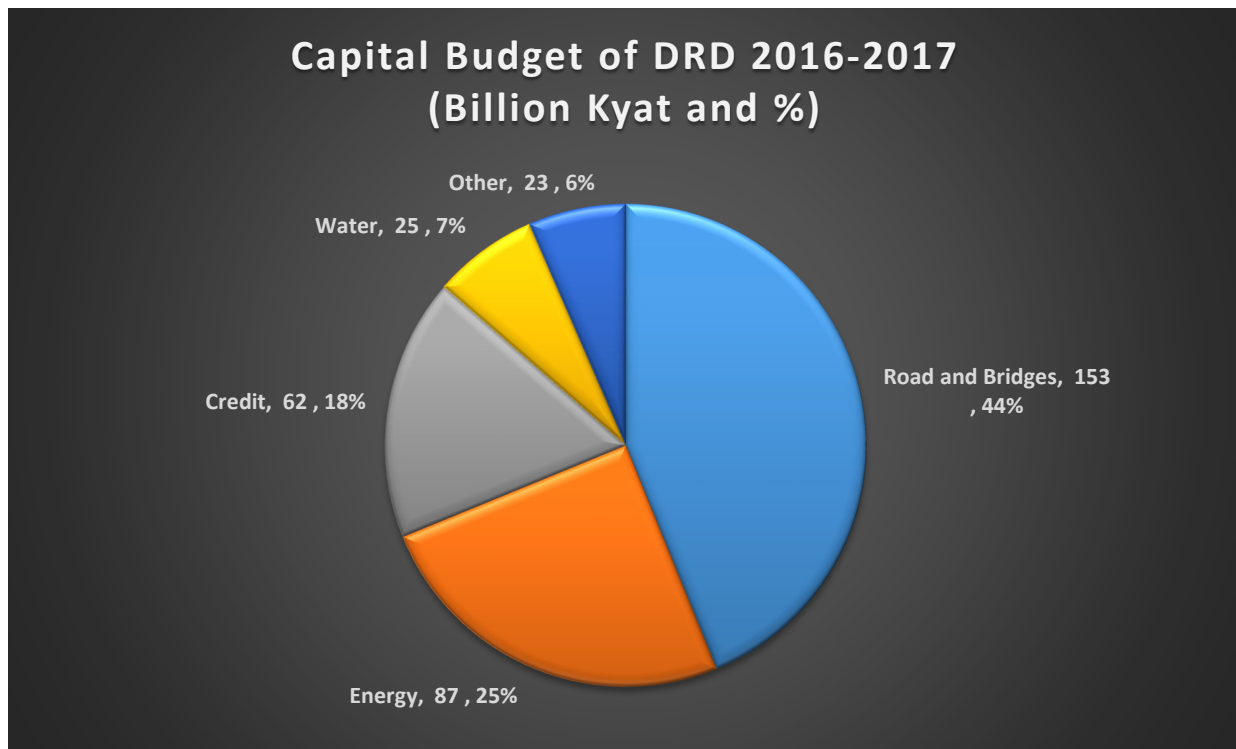


Figure 3 Capital Budget of Department of Rural Development 2016-2017 (Billion Kyat)

4. POLICIES AND STRATEGIES

81. Agricultural policy and planning in Myanmar is formulated within a context of policies, plans, and regulations that include the Framework for Economic and Social Reforms (FESR), 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.

82. 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. The FESR 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, the FESR aims to improve productivity targets in the rice sector through "... improved seed quality, better agronomic practices, optimized inputs, and integrated pest management".

83. The FESR also seeks to improve agricultural development through the opening up of marketing systems to the private sector, including "...a substantial improvement in the government's extension and other support services that provide affordable inputs, such as seeds and fertilizer, that will boost agricultural productivity." The FESR also notes that "...it is also critical to improve supply chain management in the trading and marketing of agricultural produce, as farmers face high transaction costs, lack of technology and know-how ... such management can be done in cooperation with specialized leading companies, as well as other investors in the agriculture sector".

84. The National Comprehensive Development Plan (NCDP) prepared in 2011 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 2031, the following outcomes are sought:

- To achieve maximum market share in the domestic and world markets for specialty foods and other agro-based value-added products
- To improve food security of rural people
- To achieve green growth harmonizing with the natural environment

85. In the short run, the sector objectives are stated in the following statements:

- Accelerate the productivity of the agriculture sector
- Increase the productivity of rural agro-based Small and Medium Enterprises
- Attract inflow of Foreign Direct Investment (FDI) in the agriculture sector for advanced technology, investment, market and employment opportunities
- Improve domestic and export market access, as well as market information infrastructure
- Develop activities of pure and applied research in the agriculture sector
- Reduce transaction costs along the value chain as much as possible

86. The National Export Strategy (NES) was prepared in year xx by the Ministry of Commerce, with support from the UN International Trade Centre and the German government. It 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.

87. The main points of the Foreign Investment Law (FIL) prepared in 2011 are:

- 5-year tax holiday with various tax and customs duty relief
- Non-nationalization and non-suspension of the business
- Land use allowed up to 70 years (50+10+10)
- Right to repatriation of profits and capital brought in

88. The government has approved a bill in September 2016 on the Myanmar Investment Law (MIL), which is aimed at promoting foreign investment. The bill is expected to take effect with the new fiscal year in April 2017, according to a Myanmar Investment Commission-MIC's announcement. The new investment law, which combines the Foreign Investment Law drafted in 2012 and Citizens' Investment Law drafted in 2013, includes tax breaks which are different from those stipulated under the former. By-laws and related safeguards on the implementation of the law are currently being prepared. The ADS will align agribusiness investment with the safeguards under the MIL.

89. The National Water Policy (NWP) of Myanmar is the first integrated water policy for the watersheds, rivers, lakes and reservoirs, groundwater aquifers and coastal and marine waters, was approved in March 2014. The NWP should result in a framework for creating a system of laws and institutions and a plan of action including the Myanmar Water Framework Directive (MWFD). This MWFD is to be an umbrella statement of general principles governing the exercise of legislative and executive powers. In Myanmar no single institution is responsible for the management of water resources.

90. Several agricultural related strategies and plans have been formulated in the last couple of years and include the following documents:

- Five Year Plan 2016/17 to 2020/21
- Myanmar National Action Plan for Food and Nutrition Security (MNAPFNS)
- Myanmar Climate Smart Agricultural Strategy
- Myanmar Rice Sector Development Strategy
- White Paper From Rice Bowl to Food Basket
- White Paper Vegetables
- Food Value Chain Road Map
- Agricultural Policy (October 2016)

91. A review of these documents indicates three main conclusions:

92. **They share similar general views.** They have a similar vision of the agricultural sector with an emphasis on the key role of the sector in contributing to food security, farmer income, and exports. They believe that priority should be given to smallholder farmers focus and land issues resolution. The documents stress market linkages and value chains and want to move towards a more diversified agriculture (including livestock and fisheries) and away from a rice-centric agriculture. The documents hold a common view on the need of modernizing the system, accelerating mechanization, and achieving recognition in global markets through growth of exports of Myanmar products. All these documents express the intention of collaborating with the private sector and agree about the need of coordinating agricultural with other sectors such as trade and industry.

93. **They have different approaches towards specific issues.** For example, it is not clear what the agricultural development strategies should do to address the problems of marginal and landless farmers. In some cases, it seems that the growth of the agricultural sector might be able to absorb rural labor; in other cases, the rural non-farm sector is viewed as the one to generate employment while the farm employment will decline.

94. Similarly, when talking about inclusive growth and pro-poor agricultural development, it is not clear whether that includes distribution of land, inputs such as fertilizer, seeds, and credit at subsidized prices, or the establishment of safety nets. In the case of agroindustrial policy, it is not clear whether the promotion of industrial crops implies an industrial policy that ensure that downstream industry is protected from foreign competition. The overall issue of credit to farmers seems to consist in shaping a future for MADB to become a reputable bank for agriculture; however, it is not clear who will fill the gap in providing affordable seasonal loans to finance annual crop production.

95. Each of these documents is **missing parts essential** to the preparation of an Agricultural Development Strategy and Action Plan. In some cases, the Investment Plan is missing; in other cases the missing parts include a responsibility matrix, the sequencing of policy and investments, the monitoring and evaluation framework including targets and indicators, an assessment of institutional capacity, and a risk management section.

96. The formulation of the ADS and Investment Plan builds on all this previous work and tries to address the gaps and integrate the contributions into a consolidated document. The formulation is undertaken with the guidance of the MOALI and the participation of stakeholders including the private sector, civil society, and development partners.

4.1. Agricultural Policy

97. MOALI has prepared an Agricultural Policy to guide the implementation of the Second Five-Year Plan. The policy has various objectives and programs of work. The objectives include the following:

- To improve **food security and safety**, and balanced diets intake during the period of the second five year plan.
- To ensure that farmers are **enjoying their rights** fully and experiencing the emerging economic benefits in person.
- Small scale farmers, livestock keepers and fisher folks gathered into **groups or cooperatives** aiming to modernize and improve performance of the entire sector based on the newly gained knowledge and experience and in which women participation is incorporated.
- Planning and implementing programmes of **rural road construction, rural infrastructures development, land use management and small scale production industry with the intension to sustain the development of existing farmers' socioeconomic situation.**
- To assist in securing needed **technologies and financial** assistance from local and external sources for further improvement and development of crop, livestock and fish production sector as well as cooperative sector.
- To assist the enhancement of producing **high quality** grain, meat and fish products for external markets.
- To assist the improvement and development programme of **agro-based industry**, small scale

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industries, and vocational education.

- To assist in getting increased **access to local and external investment** sources for agriculture sector.
- To actively support the **coordination** work to ensure full participation all stakeholders involved in poverty alleviation programme, agriculture sector development programme, and sustainable rural development programme.

5. ONGOING AND PIPELINE DEVELOPMENT PARTNERS PROGRAMS

5.1. Investment in Core Agriculture, Livestock and Fisheries

98. Table 2 contains an analysis of development partners funded projects during the 2010-2105 planning period and anticipated donor funded projects during the following planning period of 2016-2022, covering all the Department mandates of MOALI, excepting the Department of Rural Development and the Department of Cooperatives. There are four categories of development of investment under which programmes are placed, namely: 1) Infrastructure, 2) Production Enhancement, 3) Capacity Development of Education, Extension and Farm Organizations, and 4) Policy, Regulations, and Governance.

99. Excepting Rural Development and Cooperatives, it is anticipated the overall investment by development partners in the agricultural sector will increase by 280% from US\$ 131.352 million in 2010-2015 to US\$ 499.609 million in 2016-2022. In 2010-2015, the Infrastructure category dominated investments in the sector, accounting for \$63.463 million or 48.3% of all investment. Within infrastructure, during 2010-2015, Irrigation Rehabilitation and Maintenance amounted to US\$ 60.212 million or 45.7% of total investment in the sector. During this period, Capacity Development of Institutions amounted to almost 30% of total investment, while the remainder was taken up by Policy, Regulations and Governance and Production Enhancement in almost equal share. Infrastructure's dominance is expected to continue at slightly increased levels during 2016-2022, with infrastructure investment rising to US\$ 269.091 million or 53.9% of total investment. Of this increase, US\$ 248.934 million will be devoted to Irrigation Rehabilitation and Maintenance in 2016-2022.

100. During 2016-2022, investment in the remaining three categories is also expected to rise dramatically. However, starting from significantly lower absolute amounts, respective dollar amounts of investments will be nowhere near those in the irrigation sector. Respectively, during 2016-2022, investment in Production Enhancement is anticipated to rise by 313% from US\$ 18.630 million to US\$77.050 million; investment in Capacity development of education, extension and farm organizations is anticipated to rise by 202% to US\$89.401 million; and investments in Policy, Regulations and Governance is anticipated rise by 230% to US\$64.064.

101. 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 there was the following distribution: nation-wide – 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 development projects, whether by big or small partners, in the Central Dry Zone, one of the most populated area with still high poverty ratio and food insecurity.

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	5.6%
Rehab/upgrade of existing irrigation	60,212,790	248,933,737	92.5%

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Investment Category and Programme	2010-15 (\$m)	2016-22 (\$m)	% - 2016-2022 only
Agro processing	1,031,577	1,132,163	0.4%
Other investments	1,258,152	3,939,217	1.5%
SUB-TOTAL	63,463,023	269,091,922	100.0%
Sub-total as percentage of Grand Total	48.3%	53.9%	--
2) Production enhancement	2010-15	2016-22	
Seeds	2,555,131	8,120,384	10.5%
Soil nutrient management/fertilizers	2,888,546	7,879,871	10.2%
Plant protection	-	1,004,608	1.3%
Agricultural mechanization	4,222,917	9,919,671	12.9%
Access and use of new agricultural practices	5,533,323	10,785,912	14.0%
Water management practices	2,446,734	5,132,985	6.7%
Other Climate Smart Agriculture	113,469	20,249,969	26.3%
Other programs	870,204	13,957,042	18.1%
SUB-TOTAL	18,630,324	77,050,443	100.0%
Sub-total as percentage of Grand Total	14.4%	15.4%	--
3) Capacity development of education, extension and farm organizations	2010-15	2016-22	
Ag Extension	8,492,952	25,749,982	28.8%
Veterinary services	499,088	12,928,521	14.5%
Fisheries/aquaculture extension	3,397,459	16,545,984	18.5%
University curriculum development	725,000	3,355,913	3.7%
Agricultural producer cooperatives	1,553,170	2,644,690	3.0%
Water user groups	701,552	9,581,144	10.7%
Sector associations/trade associations/interest groups	1,509,059	1,478,437	1.6%
Other programs	12,727,810	17,117,261	19.2%
SUB-TOTAL	29,606,091	89,401,930	100.0%
Sub-total as percentage of Grand Total	22.5%	17.9%	--
4) Policy, Regulations, and Governance	2010-15	2016-22	
Land access and management	8,414,595	2,675,299	4.2%
Water management	740,561	661,947	1.0%
Fishery resource management	746,382	51,074,074	79.7%
Sanitary and phytosanitary issues	705,207	948,957	1.5%
Food safety and traceability	705,207	948,957	1.5%
Gender related	648,860	646,370	1.0%
Agricultural policy, value chains, ag inputs, and others	7,691,872	7,108,674	11.1%
SUB-TOTAL	19,652,684	64,064,278	100.5%
Sub-total as percentage of Grand Total	15.0%	12.8%	--
GRAND-TOTAL	131,352,122	499,608,573	

Source: World Bank, Donor Coordination Unit – Excel files made available to members of ADS and GAFSP preparation team.

5.2. Investment in Rural Development

102. Rural development and agricultural production or farming (i.e. crop, livestock and fisheries husbandry) are complementary to each other. Rural development can secure infrastructure, services, markets, incomes and environmental factors that are critical to the enhancement of agricultural production. At the same time, agricultural development also contributes to rural development in terms of supporting employment, ancillary businesses, and environmental services. In peripheral regions, farming may be the most important factor that may be necessary to support the economic and social infrastructure. Rural development and farming hence 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 the Ministry of Agriculture, Livestock, and Irrigation.

103. The Government of Myanmar, with the support of development partners, has committed a considerable amount of resources to rural development. It has not been possible to analyse the Rural Development Programme by the same time periods as those used for the agriculture, livestock and fisheries sector. Nevertheless, the Department of Rural Development (DRD) has made a comprehensive compilation of rural development projects taking place in Myanmar. The earliest starting date among the compiled projects is 2014, while the latest end-date is 2022. The total budget of the compiled rural development projects is US\$ 783.907 million. This figure exceeds the total budget of all the agriculture, livestock and fisheries projects by some US\$ 284. The largest three items in the portfolio are: a US\$ 400 million infrastructure project (mainly roads) from the World Bank; a US\$ 90 million electrification project from ADB; and a US\$ 80 million infrastructure project from the World Bank. The remainder of the projects range from a US\$ 25 million water supply from JICA to a US\$ 0.120 million rural research project from the Social Policy & Poverty Research Group, an NGO.

5.3. Investment in Cooperative

104. The cooperative sector has two on-going projects: a US\$ 400 million nation-wide loan project from China EXIM Bank for Micro-finance for rural development and poverty reduction; and a US\$ 100 million nation-wide loan project for Hire purchase for mechanization. It is estimated that only about 20 percent of operations of the Department of Cooperatives are devoted to farming operations.

6. PRINCIPLES OF THE ADS

105. Before defining the vision, impacts, outcomes, outputs, and activities for achieving the vision, we define the principles that underlie the formulation of the strategy.

- (i) **Clear definition of roles of private and public sector.** Government provides the policies, institutions, and public infrastructure needed to enable farmers and the private sector along supply chains 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 needs to identify concrete measures to give voice to smallholder farmers.
- (iii) **Emphasis on smallholder farmers and SMEs.** 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.
- (iv) **Food and Nutrition Security.** The Vision for the agricultural sector includes food and nutrition security. The contribution of agricultural development to food and nutrition security is through different channels including increasing income of farmers and rural households; extension work to smallholder farmers on nutrition programs and initiatives such as home economics and backyard gardening, and agricultural diversification; inclusion of women in all extension programs, social mobilization, and group formation activities.
- (v) **Inclusion.** Poverty, social and geographic exclusion, women's inequality and massive youth outmigration have multiple and complex links with agricultural development. The high differentiation of Myanmar society has led in the past to polarization and social conflict. The benefits of agricultural development should be shared by different groups, including the farmers, the land owners, the farm workers, and the 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 this sector is affected importantly 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 agroecological approaches are currently piloted in Myanmar including SRI, green water management, nitrogen use efficiency, conservation agriculture, agroforestry, and organic agriculture. The ADS will promote the adoption of sustainable practices and approaches that enhance farmers' income.

- (viii) **Linkages among agricultural subsectors and between the agricultural sector and the agrifood sector.** Agricultural and food sector modernization should encompass not only crop agriculture, livestock, and irrigation, but also fisheries and forestry/agro-forestry. The agriculture ministry 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. Success in one area requires balanced attention to the other two.
- (ix) **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 development partners. Coordination is difficult because it requires sharing information and finding solutions together in the absence of a clear line of authority. The ADS should make effective coordination observable and results-oriented.
- (x) **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.
- (xi) **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 agrifood 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.
- (xii) **Regional planning.** As the 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 expenditures where regions and states will play new and more important roles.

7. VISION

106. The Agricultural Policy has the following vision that the ADS takes as the starting point for the formulation of its own activities.

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

107. To be operationally meaningful, the vision needs to be measurable, which implies establishing a target time, a baseline, and indicators with means of verification.

108. The vision contains several elements as detailed in the following table which also contains the indicators to assess progress towards the achievement of the vision.

Table 3 Vision Elements and Indicators

Vision Elements	Indicators	Baseline 2016/17	Target 5 Years 2017-18 to 2021-22
Inclusion	<ul style="list-style-type: none"> • Marginal and landless male farmers' income • Marginal and landless female farmers' income • Rural poverty rate 	<ul style="list-style-type: none"> • X1 • X2 • 20% 	<ul style="list-style-type: none"> • Increase 40% • Increase 45% • 15%
Competitiveness	<ul style="list-style-type: none"> • Investment in agrifood sector • Value of Agricultural exports • Value added in agriculture • Share of Myanmar agricultural exports in world agricultural exports 	<ul style="list-style-type: none"> • \$530 mil • \$2000 mil • 50% of Ag GDP • X3 	<ul style="list-style-type: none"> • Increase 40% • Increase 40% • 80% of Ag GDP • Increase 30%
Food and Nutrition Security	<ul style="list-style-type: none"> • Stunting (height for age) among children under 5 • Underweight (weight for age) among children under 5 • Wasting (weight for height) among children under 5 • Women in reproductive age with chronic energy deficiency (measured as low BMI) 	<ul style="list-style-type: none"> • 29.2% • 18.9% • 7% • X4 	<ul style="list-style-type: none"> • 20% • 10% • 2% • Decrease by 50%
Sustainable	<ul style="list-style-type: none"> • Land productivity (ag GDP/harvested area) • Labor productivity (ag GDP/ag labor) • Adoption of GAP • Water use efficiency • Soil fertility 	<ul style="list-style-type: none"> • \$1,200/ha • \$1,600/labor • Less than 2% • X5 • X6 	<ul style="list-style-type: none"> • Increase by 50% • Increase by 50% • At least 10% • Improve by 30% • Improve by 30%
Well-being	<ul style="list-style-type: none"> • Smallholder male farmers' income • Smallholder female farmers' income 	<ul style="list-style-type: none"> • X7 (male) • X8 (female) 	<ul style="list-style-type: none"> • Improve by 50% • Improve by 60%

8. STRATEGIC FRAMEWORK

109. The Agriculture Development Strategy (ADS) aims at developing the policies, the physical and institutional infrastructure, and the human resources capacities needed to generate a more productive, sustainable, inclusive, and competitive agriculture and food sector able to provide food and nutrition security of Myanmar people. Implementation of this strategy will increase rural incomes and savings, generate jobs, stimulate investments in farms, rural SMEs, and people that will spur growth and pull millions out of poverty.

8.1. The ADS Framework: Impacts, Outcomes, Outputs, and Activities

110. In order to achieve its vision the ADS will accelerate agricultural sector growth through the three strategic pillars of governance, productivity, and competitiveness while promoting inclusiveness (both social and geographic), sustainability and resilience to climate change, development of private sector and farmer organizations, and connectivity to market infrastructure (eg agricultural roads, collection centers, packing houses, market centers), information infrastructure and ICT, and power infrastructure (eg rural electrification, renewable and alternative energy sources). The three strategic pillars are based on a solid foundation of collaborative relationships among government, farmers, and enterprises.

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

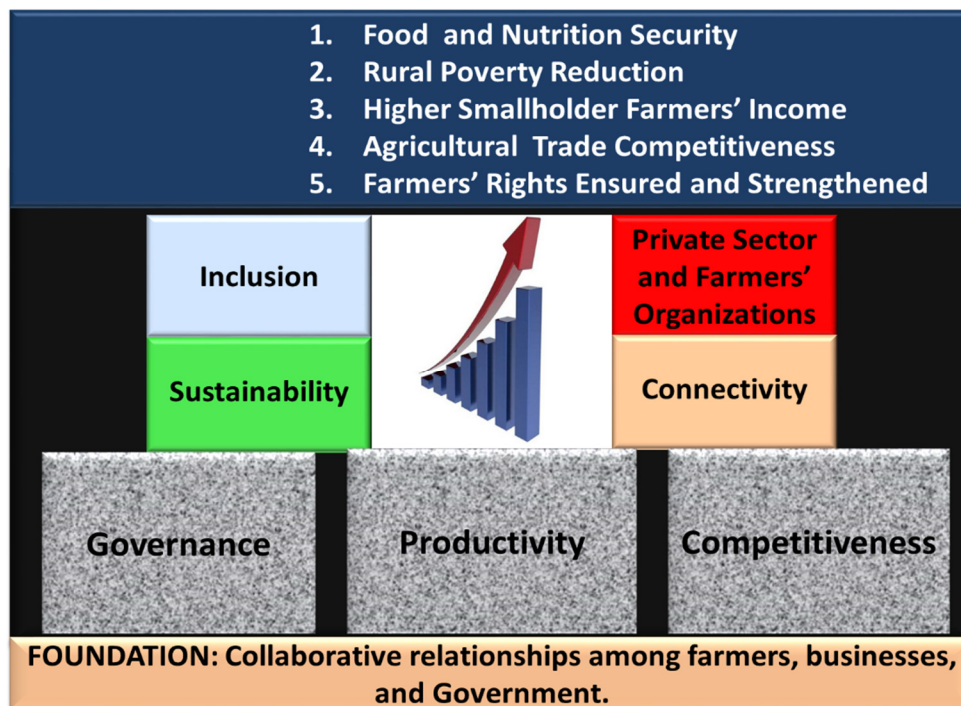


Figure 4 Strategic Framework of the Agricultural Development Strategy

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

113. 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. (reference)

114. 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.

8.2. Impacts of the ADS

115. The overall impacts of the ADS consist of the five dimensions of increased food and nutrition security, poverty reduction, competitiveness, higher and more equitable income of rural households, and strengthened farmers' rights. Indicators of impacts are reported in Table 4.

Table 4 Indicators of ADS Impact

Impacts	Indicators	Baseline	Target
Food and Nutrition Security	<ul style="list-style-type: none"> Stunting (height for age) among children under 5 Underweight (weight for age) among children under 5 Wasting (weight for height) among children under 5 Women in reproductive age with chronic energy deficiency (measured as low BMI) Anemia prevalence Vitamin A deficiency Obesity prevalence 	<ul style="list-style-type: none"> 29.2% 18.9% 7% X4 Y1 Y2 Y3 	<ul style="list-style-type: none"> 20% 10% 2% X4*(1-50%) Y1*(1-50%) Y2*(1-50%) Y3*(1-50%)
Rural Poverty Reduction	<ul style="list-style-type: none"> Landless male farmers' Income Landless female farmers' Income Rural poverty share 	<ul style="list-style-type: none"> X1 X2 20% 	<ul style="list-style-type: none"> Increase 40% Increase 45% 15%
Agricultural Trade Competitiveness	<ul style="list-style-type: none"> Investment in agrifood sector Value and Growth of Agricultural exports Value added in agriculture Share of Myanmar agricultural exports in world agricultural exports 	<ul style="list-style-type: none"> \$530 mil \$2000 mil 50% of Ag GDP X3 	<ul style="list-style-type: none"> Increase 40% Increase 40% 80% of Ag GDP Increase 30%
Higher Smallholder Farmers' Income	<ul style="list-style-type: none"> Smallholder male farmers' income Smallholder female farmers' income 	<ul style="list-style-type: none"> X7 (male) X8 (female) 	<ul style="list-style-type: none"> Improve by 50% Improve by 60%
Farmers' rights Ensured and Strengthened	<ul style="list-style-type: none"> Legislation on Farmers' Rights Comprehensive land policy safeguarding male and female smallholder farmers' rights to land Farmers' Representation in the key ADS Consultative Bodies 	<ul style="list-style-type: none"> NA NA NA 	<ul style="list-style-type: none"> Bill passed Bill passed Permanent farmer reps in ADS consultative bodies

8.3. The Outcomes of the ADS

116. The ADS has three main outcomes corresponding to the three strategic pillars of governance, productivity, and competitiveness:

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

117. Selected targets for each outcome of the strategy are presented in Table 5.

Table 5 Targets for the Strategic Components of the ADS

Outcome	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, Food and nutrition security 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%
	Stunting (height for age) among children under 5	29.2%	20%
	Underweight (weight for age) among children under 5	18.9%	10%
	Water use efficiency	Crop yield in Kg/liter of water used ¹¹	Improve by 10%
	Soil organic matter	3%	4% organic matter
	Organic production	Less than 1% of total production	3% of total production
Enhanced Market Linkages and Competitiveness	Agribusiness GDP	xx% of GDP	2xx% of Agricultural GDP
	Agri-food exports	\$ 2,400 million	\$ 3,865 million

118. The following chapters will introduce the outputs and activities.

¹¹ In the agronomic approach, the concept of crop use water efficiency (WUE) refers to final yield and to total water consumed by crops, under field conditions. They are key data to manage the crop production. Crop WUE is easy to quantify from field measurements, but it is a complex indicator because of its intrinsic variability. The major causes of WUE variability are: crop, environment and agro-techniques. If the causes of such variability are known and taken in the right consideration, the concept of WUE can represent an interesting tool for studying how to value the water in agriculture.

9. OUTCOMES AND OUTPUTS

119. The ADS outcomes related to governance, productivity, and competitiveness will be achieved through the pursuit of the outputs listed in Table 6. The outputs vary in terms of complexity, resources needed, and time needed to implement. The outputs include a mix of policy, institutional, and investment measures that will be detailed in the list of activities, tasks, and investment plans. Specific targets and indicators will be provided in the Monitoring and Evaluation Framework.

120. In most cases, the achievement of the outputs is under the control of MOALI. In some cases, closed 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 6 Outcomes and Outputs of the ADS

Outcome 1	Outcome 2	Outcome 3
Enhanced Governance and Capacity of Institutions Responsible for Agricultural Development	Increased Productivity and Farmers' Income	Enhanced Market Linkages and Competitiveness
Outputs		
1.1. 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	3.1. Improved business environment along the supply chain.
1.2. Improved capacity for policy formulation and analysis	2.2. Agricultural extension – Transformed agricultural extension system delivering improved (crop, livestock, fisheries) products and technology for adoption and adaptation	3.2. Improved investment regulations for agrifood investors.
1.3. Timely and Effective Monitoring and Evaluation processes	2.3. Research-extension coordination - Improved research-extension coordination systems with participation of farmers and private sectors	3.3. Protected intellectual property rights for the agricultural and food sector.
1.4. Sound statistical systems for evidence based decisions	2.4. Develop (or revive) effective education and training to build “human capital” in the	3.4. Developed a reliable quality system that will help farmers and food

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Outcome 1 Enhanced Governance and Capacity of Institutions Responsible for Agricultural Development	Outcome 2 Increased Productivity and Farmers' Income	Outcome 3 Enhanced Market Linkages and Competitiveness
Outputs		
	agricultural and food sector responding to the evolving needs of farmers and the private sector in rural areas.	processors to get higher prices for higher quality goods, incentivizing quality upgrading.
1.5. Strong farmer and industry associations and federations	2.5. Irrigation and water management - More responsive and reliable irrigation and drainage services and more efficient and sustainable water management systems	3.5. Enhanced institutional framework for planning and implementation of rural development programmes
1.6. Strengthened farmers' land rights and enhanced capacity of institutions involved in agricultural land.	2.6. Crop inputs - Increased use of improved farm production inputs and technologies by crop growers	3.6. Rural communities empowered and enabled to initiate locally-generated development initiatives
1.7. Enhanced capacity of key institutions involved in ADS coordination and implementation	2.7. Mechanization - Increased application of appropriate mechanisation in the agricultural value chain	3.7. Expanded and improved rural road network integrated with national transport plans.
1.8. Mechanisms established for participation of civil society in the planning, implementation, and monitoring of the ADS	2.8. Animal breeding - More productive and profitable genetic composition of animals	3.8. Improved access to rural electrification and renewable energies
1.9. Improved food and nutrition security of most disadvantaged groups	2.9. Animal health - More healthy and productive animals	3.9. Enhanced access to potable water by rural households
1.10. A Restructuring of MOALI to better integrate	2.10. Animal nutrition – Better fed and productive animals	3.10. Market and logistics infrastructure developed

Outcome 1 Enhanced Governance and Capacity of Institutions Responsible for Agricultural Development	Outcome 2 Increased Productivity and Farmers' Income	Outcome 3 Enhanced Market Linkages and Competitiveness
Outputs		
existing units and become more responsive to farmers, enterprises, and civil society.	<p>2.11. Strengthened Capacity of Animal and Dairy small-scale producers</p> <p>2.12. Expansion and increased importance of apiculture (bee honey) industry as primary and additional source of income generation for small-scale producers</p> <p>2.13. Fisheries and aquaculture inputs and services - Maximum output and profit from fishing and aquaculture industries using sustainable practices</p> <p>2.14. Sustainable Farming, Good Agricultural Practices (GAP), Good Veterinary Husbandry Practices (GVAHP) are established and adopted</p> <p>2.15. Improved Resilience of Farmers to Climate Change and Disasters</p>	<p>and managed</p> <p>3.11. Increased competitiveness in prioritized agricultural value chains</p> <p>3.12. Enhanced food quality and safety</p> <p>3.13. Improved access to a range of financial services for farmers and agribusiness enterprises</p> <p>3.14. Improved access to market information and market intelligence</p> <p>3.15. Growth of small and medium agro-enterprises</p> <p>3.16. Facilitated agrifood Trade</p> <p>3.17. Growth of food and agricultural products</p>

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Outcome 1

Enhanced Governance and
Capacity of Institutions
Responsible for Agricultural
Development

Outcome 2

Increased Productivity and
Farmers' Income

Outcome 3

Enhanced Market Linkages
and Competitiveness

Outputs

exports

10. OUTPUTS AND ACTIVITIES

10.1. Pillar 1 on Governance

121. Governance in the ADS refers to¹² “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 include¹³: accountability, participation, predictability, and transparency.

122. Successful implementation of the ADS requires the government to carry out several critical functions with the participation of farmers, private sector, civil society, and development partners. These functions include effective and integrated planning both at the central level (Union) and at the local level (states/regions, districts, townships, and village tracts); policy analysis, formulation, and review; monitoring and evaluation; and a solid statistics and data gathering system for evidence-based decisions.

123. The ADS recognizes the complexity of the agricultural sector requiring coordination between different agencies, different levels (union and states/regions), and different stakeholders (government, farmers, enterprises, civil society, development partners).

124. At the same time, the inclusion aspects of the ADS (gender, marginal and landless farmers, geographically disadvantaged) should be considered through appropriate mechanisms that ensure participation and accountability in the planning, implementation, and monitoring of the ADS. Capacity of human resources both within the government and selected organizations in civil society (e.g. farmer organizations and cooperative organizations) will contribute to the overall strengthening of the governance of the ADS.

125. One of the most important tests for governance and success of the ADS is addressing land issues effectively. This requires several measures including the creation of an inter-sector national Land Use Council or equivalent, the formulation of an Umbrella land law and comprehensive but specific land legislation and regulations based on the recently approved National Land Use Policy; 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; modernizing data management systems; issuance of new land use certificates for updated and new parcel data information ; reclassification of land and land uses; resolution of land disputes including cases of land confiscation; land restitution and redistribution. These numerous and complex tasks can be carried out only through strengthening capacity of the institutions responsible for land administration

126. 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.

127.

¹² World Bank 1992, “Governance and Development”, the World Bank

¹³ ADB 1995, “Governance: Sound Development Management”, Asian Development Bank, October 1995

128. In addition to addressing land issues, ensuring food and nutrition security is one of the fundamental governance tests 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 hardly any 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. This is a long-term goal towards which all the components of the ADS contribute. However, 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.

10.1.1. Output 1.1 on Planning

129. 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, little resources are allocated to these critical functions of the Ministry. Visible enhancement of capacity in these areas has to occur within the first two years of implementation of the ADS. This will require some reorganization and human resources development.

130. 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 has to be prepared and shared with all the relevant departments.

131. 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. However, region/state 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.

132. Preparing the plans is important; however, plans 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 Evaluation Units (see below section 10.1.3) can track and report periodically.

133. 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 taken into accounts during the formulation of plans. The National Planning Commission tries to coordinate the plans of different ministries. Perhaps an Agricultural Planning Commission might be considered in the future as an institutional mechanism to ensure that the key stakeholders (farmers and agro-enterprises) provide needed input to the government agencies responsible for national and region/state plans. An evaluation of the establishment of the Agricultural Planning Commission (APC) should be made. The idea of APC is that of a body comprising representatives of Government (e.g. MOALI), farmers organizations, and private sector organizations who meet regularly (say quarterly) to prepare, review, and assess plans and policies needed to ensure effective implementation of the ADS.

134. 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 made available to everybody through internet. A physical copy of the plans will also be available in every village.

135. MOALI will also plan to move towards e-government system to improve access to information, collaboration among agencies and improved coordination.

10.1.2. Output 1.2 on Policy

136. MOALI will establish a policy division within the Department of Planning. 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 priorities of MOALI. A key activity of the division will be to organize independent policy reviews which will be one important input into MOALI decision process.

10.1.3. Output 1.3 on Monitoring and Evaluation

137. Currently, MOALI does not have dedicated units to Monitoring and Evaluation (M&E). It is essential that both in the Department of Planning and other Departments, both at the union and at the state/region level, M&E units are established and staffed with dedicated human resources.

138. 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, Farmers, Private Sector, and Development Partners should be organized periodically, particularly in the review of major programs and projects implemented under the ADS.

139. As in the case of planning, transparency and access to information is needed in Monitoring and Evaluation. The Department of Planning will be responsible for producing overall M&E report that will be made available online.

10.1.4. Output 1.4 on Statistics

140. A sound statistics system is the basis upon which informed decision making can be built. Current statistics on agriculture are primarily limited to production, with little emphasis on several key variables such as assets, 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 the improved system of collection, using modern and more efficient systems (e.g. remote sensing) which are largely based on information and communication technology (ICT). The new Census of Agriculture should include not only crops, but also livestock and fisheries, and detailed information about land use and tenure. The statistics division at MOALI should also be responsible for organize periodic surveys to assess specific situations relevant to the formulation of new policies. For example, if a new policy or regulation on enforcing adulteration of fertilizers is under study, then the policy division might require a survey on adulteration of fertilizers in the country.

10.1.5. Output 1.5 on Associations and Groups

141. Effective implementation of the ADS requires strong partnership with farmers and agrifood industry. Government, farmers, and private sector need to collaborate in the formulation of policies, plans, and in monitoring and evaluation.

142. Currently there is an asymmetry between farmers and private sector. While private sector organizations are relatively well developed, and have a voice, including through the Myanmar Union of Chamber of Commerce and Industry and other associations/federations, in the case of farmers, their organizations are still at a nascent stage and they 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. However, the ADS will support the formation of farmer organization through capacity building.

143. Regular meetings of government with farmer organizations and industry organizations will be conducted. In the case of prioritized value chains (see Pillar 3, Output 3.9) 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.

144. Meetings will be conducted both with all stakeholders (government-farmers-industry) at the same time or separately with each stakeholder (e.g. meeting government-farmers, government-industry, industry-farmers).

10.1.6. Output 1.6 on Land Rights

145. The main objective of this set of activities is to ensure that land issues are adequately addressed and progress is made 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, 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 solutions are not possible. However, 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, 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.

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

- 1) Create a National Land Use Council or equivalent to take forward the land reform process as an inter-sector institution under neutral chairmanship. The intersector character of this institution is required to prevent and mitigate possible sector specific competition and decision making over the land base.
- 2) Develop 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. Although at first institutional development and comprehensive law reform might look like a

time-consuming process, it is in fact the best assurance that the process will be stable and socially acceptable. It is noted however that during this longer-term process ad hoc law amendment interim measures must be considered, but these must be streamlined with the spirit and guiding principles of the NLUP. This approach only will secure a future harmonization of existing law with new law.

- 3) Remove restrictions that condition securing tenure through land titling over land held by smallholders. This is achieved by:
 - a. extending the land use categories over which tenure can be secured by simplifying the land use classification system (extending the narrow concept of farmlands under the Farmland law to lands that are used for any agricultural activity including aquaculture and industrial crops; limiting classification to only three broad categories: agricultural, forest, and other lands).
 - b. extending the areas over which currently tenure can be secured by making lands under agro-forestry production systems and shifting cultivation eligible for tenure securisation, albeit considering alternatives to individual household landholding certification as currently practiced; there is a specific need to develop methods for securing community land rights;
 - 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, including paddy rice. This will have implications for the MADB (see below at xx) 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.
- 4) Securing the holding and use of agricultural land of smallholders once these have been titled. This is achieved by a series of measures 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 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
- 5) Prioritize the enforcement of the Vacant, Fallow, and Virgin Land Law. 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)
 - 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; iii) the creation of social land concessions.
- 6) Update existing cadastral information of landholdings that were already certified. Extend tenure security through land titling to these areas that were not yet covered for one or the other reason (no base maps available, lands not eligible for land titling, no services available). Develop cadastral information management systems relying on modern technology. Gradually convert the paper based cadastral system into a digitized system. Train land administrators in the use of new technologies and principles (such as the use of the general boundary principle).

- 7) Development of a clear legal and institutional framework to spell out how different mechanisms to address land conflicts can be used and possibly interact 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.
- 8) Recognize, document, register and protect Customary Tenure rights. This is crucial to protect 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 highly vulnerable to legal land confiscation, especially under the VFV 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. Recognizing these systems is essential as part of a much broader national reconciliation and peace building process.
- 9) 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 DALMS and GAD, and are complemented by the functioning of several special committees and commissions. MONREC (hosting the survey department) and DALU are supporting institutions. It will also be required to look at the institutional set up of land administration services. .
- 10) 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 did not qualify for such registration. These new categories of land mainly include:
 - a. 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/shifting cultivation systems which are managed under customary norms and regulations; for the latter it is essential to develop alternative land securisation methods to the current individual landholding Land Use Certification; pilots are going on develop appropriate approaches to secure the rights of communities;
 - b. VFV land that is restituted/allocated to smallholders and the landless farmers; this is however more complicated as this VFV land will need to be converted first into "farmland" before a LUC can be issues, under the current Farmland law.
- 11) 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, lodging appeals to decisions which may be contested.
- 12) 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 and lower) 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.

- 13) 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, allow farms under 10 acres greater flexibility to use paddy land for aquaculture and other cash crops.
 - b. interim measures to secure customary land rights, including these of communities
- 14) 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 IIASA/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 of 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, overall fertilizer packages. Such information is helpful to support the planning agricultural extension services and private input providers

10.1.7. Output 1.7 on Coordination

147. ADS implementation requires coordination at different levels: within MOALI, between MOALI and other government agencies, between union and region/states, and between MOALI and farmers and private sector. Specific implementation arrangements will be proposed in section 11 to improve coordination at several levels.

148. In this pillar, 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.

149. MOALI will also make a number of provisions to coordinate effectively with international organizations, including resources for travel, events, and meetings.

10.1.8. Output 1.8 on Participation

150. A visible change in the image of MOALI as a Ministry that is moving towards higher level of governance will be to ensure that the Ministry has an ongoing dialogue with civil society. This can be accomplished through a number of 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.

10.1.9. Output 1.9 on Food and Nutrition Security

151. Even though all ADS measures contribute directly or indirectly to food and nutrition security, MOALI takes the right to food very seriously and makes it an essential component of pillar 1 on Government. Without assuring the right to food, there could not be good governance in the ADS. Despite the best-intentioned programs and interventions, at each point in time, there are too many households and individuals, particularly in rural Myanmar, who remain food and nutrition insecure. They include the poor, the vulnerable, the landless, and other marginalized groups. The ADS addresses their food and nutrition insecurity through productivity enhancement measures (such as those under Pillar 2) and improved access to finance and non-farm employment (such as the measure under Pillar 3).

152. Yet, additional measures are needed to help the disadvantaged groups to enhance their food and nutrition security. This output 1.10 will identify the measures (e.g. food for work programs, food or input vouchers) 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. This will be done in coordination with other multisector initiatives on nutrition and poverty alleviation. These measures will try to build sustainable impact through enhancement of productivity. A good example is the ongoing GAFSP proposal that targets the poorest and addresses their nutrition and food security issues through improvement in productivity and income diversification.

10.1.10. Output 1.10 on MOALI Restructuring

153. The ADS accelerates the process of modernization of the Myanmar agricultural sector. For MOALI to support this process, several functions currently carried out need to be better integrated and new functions must be carried. This requires an institutional structure that is responsive to farmers, enterprises, and civil society.

154. At the macro level, organizations such as MADB and YAU might require a complete reorganization, making them independent of MOALI and responsible to other ministries such as MOPF or MOE. Within the ministries new units have to be created and institutions to improve coordination of research and extension might need to be established after satisfactory evaluation. In the case of DOA, a department that has emerged from the merging of two former departments (MAS and DICD), there are serious problems that require addressing such as: duplication of efforts, distribution of workloads, decentralization, balance between commodity issues and cross-cutting issues, transparency.

Table 7 Outputs and Activities under Pillar 1 on Governance

No.	Pillar 1 Governance - OUTPUTS	Activities
1.1	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 workplans 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

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No.	Pillar 1 Governance - OUTPUTS	Activities
		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.
1.2	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
1.3	Timely and Effective Monitoring and Evaluation processes	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
1.4	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
1.5	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. Organize annual meetings of MOALI with both farmer and industry associations
1.6	Strengthened farmers' land rights and enhanced capacity of institutions involved in	1.6.1. Create a National Land Use Council or equivalent to take forward the land reform process. 1.6.2. Develop an Umbrella land law and specific land legislation using an inclusive, multi-stakeholder public consultation process based on

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No.	Pillar 1 Governance - OUTPUTS	Activities
	agricultural land.	<p>the guiding principles of the National Land Use Policy.</p> <p>1.6.3. Remove restrictions that condition securing tenure through land titling over land held by smallholders.</p> <p>1.6.4. Securing the holding and use of agricultural land of smallholders once these have been titled.</p> <p>1.6.5. Prioritize enforcement of the Vacant, Fallow, and Virgin Land Law.</p> <p>1.6.6. Update existing cadastral information of landholdings that were already certified.</p> <p>1.6.7. Develop a clear legal and institutional framework to spell out different mechanisms to address land conflicts.</p> <p>1.6.8. Recognize, Protect and Register Customary Tenure rights.</p> <p>1.6.9. Strengthen the capacity of land administration services.</p> <p>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.</p> <p>1.6.11. Ensure that the public has easy access to information.</p> <p>1.6.12. Improve service delivery of land administration to the public, including to women and the poorest.</p> <p>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.</p> <p>1.6.14. Develop an Agro-ecological Zoning for the country based on the principle of Global Agroecological Zones</p>
1.7	Enhanced capacity of key institutions involved in ADS coordination and implementation	<p>1.7.1. Establish coordination unit for implementation of the ADS under the Planning Department</p> <p>1.7.2. Provide TA to the coordination unit</p> <p>1.7.3. Make provisions for cooperation with international partners including:</p> <ul style="list-style-type: none"> ○ Minister level meetings with ASEAN countries and development partners ○ Cooperation, coordination, negotiation with international loan/grant/grant assistance projects of MOALI ○ Outfit and travel for international training and meeting
1.8	Mechanisms established	1.8.1. Establish and maintain an ADS website both in Myanmar

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No.	Pillar 1 Governance - OUTPUTS	Activities
	for participation of civil society in the planning, implementation, and monitoring of the ADS	language and English 1.8.2. Establish an ADS Information Desk under the Planning Department both at Union and at State/Region level 1.8.3. Periodic presentation of ADS Monitoring and Evaluation Reports to civil society
1.9	Improved food and nutrition security of most disadvantaged groups	1.9.1. Design targeted food and nutrition security program 1.9.2. Implement targeted food and nutrition security program 1.9.3. Coordinate with ongoing food and nutrition security and multisector initiatives on nutrition and poverty alleviation
1.10	A Restructuring of MOALI to better integrate existing units and become more responsive to farmers, enterprises, and civil society.	1.10.1. Evaluate alternative options for MOALI restructuring, including moving MADB and YAU outside of the Ministry control, consolidating three Permanent Secretaries into one position, creating undersecretaries. 1.10.2. Establish unit for Policy, unit for Monitoring and Evaluations, and unit for ADS Coordination under DOP 1.10.3. Establish Monitoring and Evaluation units under each Department of MOALI 1.10.4. Coordinate with other restructuring options suggested under Pillar 2 (eg NARC and NARES) and under Pillar 3 (eg Department of Agribusiness) 1.10.5. Implement the selected restructuring options

10.2. Pillar 2 on Productivity

155. 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 efficiency and sustainability of agricultural production consistently 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.

156. In the ADS, the government sector will be one among other actors including private sector, cooperative sector, NGOs, leading farmers, and farmer field schools 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.

157. The ADS recognizes that already several actors (e.g. NGOs, private sector) are involved in agricultural extension and over time their presence will become more important. Rather than advocating a massive 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 service providers.

158. Increase in productivity requires innovation and dissemination of knowledge. Researchers and extension staff must change their top-down approach and ensure their work is responsive to the needs of farmers and market demand.

159. 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 the access and adoption to improved technology and effective management of natural resources and other inputs to achieve total factor productivity increase.

160. 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.

161. Water and soil management need to be improved considerably. Considerable investments have already occurred in Myanmar on irrigation systems; given the disrepair status of these investments, their impact and effectiveness are limited. Maintenance and operations of irrigation systems is not working; the design and construction of irrigation system has often been limited to the main canal and the secondary canals, with scant attention to the tertiary canals which are the main place where farmers operate. 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, sprinklers, ...), alternative water use management system (AWD, SRI), and close integration with agronomic practices and the opportunity of diversifying away from rice.

162. About 84% of agricultural land is not irrigated. Much attention and research is needed on the development and introduction of rainfed agricultural farm systems and soil and water technologies. Extension officers need to be familiarized with alternative water management practices and trained in providing advice and guidance to water user groups.

163. There appears to be a huge amount of 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 an equally amazing diffusion of small tubewell digging enterprises. Given the opportunity of groundwater to reach out a larger number of farmers 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.

164. The output and activities under Pillar 2 are summarized in Table 8.

10.2.1. Output 2.1 on Research

165. The agricultural research system in Myanmar is underfunded and 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. It is currently conducted in a sporadic manner under the Department of Livestock and the Department of Fisheries. 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. 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.

166. Currently, most agricultural research is based on natural sciences. In addition to natural science based research, 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 will also promote having socio-economic researchers (especially agricultural economics, agribusiness and rural sociology/anthropology scientists) working alongside biological scientists in the research stations – i.e. establishing socio-economic research programmes directly complementing the more biological/physical research. Would help to mitigate “fragmentation” problem mentioned later.

167. In addition to basic and applied research, the ADS will support Action Research¹⁴ to facilitate participation of private sector, farmer’s community-based organizations (CBOs) and individual farmers in research activities and integrate research and extension activities.

168. Under the ADS, research activities will be benefiting from a system of knowledge sharing among researchers and other stakeholders including the private sector. In addition to research on production

¹⁴ 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.

issues, the ADS will support research on postharvest issues, farming systems, and socioeconomic research, including value chain studies.

169. The ADS will review the system of agricultural research stations currently managed by various organizations; seek their integration and rationalize them; expand their capacity; and ensure coverage of all major agroecological areas in the country.

170. In step with the establishment of the National Agricultural Research Council and other reforms, an agricultural research human resources development plan will be prepared and implemented to ensure adequate human resources to support the innovation system in agriculture. In addition to capacity building a system for performance appraisal of researchers and research organizations will be established.

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

10.2.2. Output 2.2 on Extension

172. While the key issues in research are underfunding and fragmentation, in extension the main issues are underfunding and approaches. Most extension work in the past has been oriented 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 has been transferred to the private sector to a certain extent. The result is a system of extension workers who are not well equipped with the type of extension work needed for the challenges of Myanmar agriculture including: a more diversified system, higher value added, collaboration with private sector and NGOs, responsiveness to the needs of farmers and market demand, and closer links with research. Change process is required in different dimensions: from supply driven to demand driven; from top down to bottom up; from commodity oriented to farmer focus; from problem stating to problem solving.

173. The ADS will promote formulation of an Extension Policy that aims at transforming the current approaches in the direction of participatory approaches, promotion of farmer organizations, use of farmer field schools, and diversification of the production system, taking into account agroecological suitability, market demand, and farmer needs and constraints, including water constraints in an agricultural system which is primarily rainfed.

174. ICT technologies have the opportunity of facilitating communication with farmers and making knowledge available to farmers on a range of topics hitherto not possible. The ADS will promote knowledge system and integration with ICT to facilitate the task of extension workers in accessing relevant knowledge and making available to farmers.

10.2.3. Output 2.3 on Research-Extension Coordination

175. The ADS will 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.

10.2.4. Output 2.4 on Education

176. Like the research system, the agricultural education system is underfunded and fragmented. The ADS promotes 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. That requires several measures.

177. First, the university system will be consolidated and include colleges for agriculture, livestock and aquaculture. Second, the consolidated universities will include different disciplines in addition to the traditional natural sciences, such as agricultural economics, agricultural business and marketing, agriculture engineering, water management, food technology, and agricultural extension and communications. Third, the ADS will ensure that 3-year diploma curriculums of State Agricultural Institutes (SAI) cover all states and regions to provide training on all key sectoral disciplines. Forth, the ADS will revive high school level agricultural training and other vocational training institutions, both public and private.

10.2.5. Output 2.5 on Irrigation and Water Management

178. Irrigation and water utilization department absorbs a large part of the infrastructure investment of MOALI. Despite considerable investment in this area however, the availability of water throughout the year is limited both for the main crop (paddy) and for other crops. Most of the current irrigation systems are designed for paddy and the institutional and infrastructure needed for a more diversified agriculture are not in place. Irrigation systems are not maintained and the benefit cost ratio of investment is low.

179. Moreover, in spite of 84% of the agricultural land not being irrigated, rainfed agricultural farm system and soil and water practices and technologies are not sufficiently researched, demonstrated, and disseminated. Rainfed system are often ignored; yet there is a large rainfed area in the Ayeyarwaddy, Bago, and Sittaung deltas that requires only drainage and should be addressed. Other rainfed areas need also to be included.

180. Given the goal of the National Integrated Water Resources Management Policy, the ADS will support further investment in the irrigation and water management sector, and it will support a reorientation of the irrigation systems to ensure higher efficiency and impact. The ADS will emphasize on-farm water use management both for paddy and other crops. Second, it will provide support to the capacity building of strong WUA able to carry out not only basic O&M functions, but progressively to manage entire irrigation systems. Third, it will adopt a perspective 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. Fourth, in addition to the efficient use of water and availability of water during dry season, the ADS will 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. Fifth, a program to explore the opportunities for groundwater utilization will be established including promotion of groundwater utilization wherever appropriate.

10.2.6. Output 2.6 on Crop Inputs

181. 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 availability of quality seed on time. Private and cooperative sector and community based seed production will be promoted. 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 biodiversity and genetic resources.

182. The ADS will adopt measures to improve productive and fertilizer use efficiency and will promote a greater role of the private sectors in demonstrations and awareness campaigns, organic and bio-fertilizer. The Government will establish a fertilizer use and distribution information system including imports and stock. It will also enforce quality assurance and strengthen the fertilizer inspection system, through capacity building and strengthening of the soil fertility division.

183. IPM practices will be promoted and quality assurance systems for pesticides including improved pesticide laboratories will be strengthened. Consumers at large, not only farmers, need to be educated to counterbalance the advertising of agro-chemical companies that might not always be educational.

184. On the regulatory side the law on Fertilizer and the Law on Pesticides will be enforced; and a new Law on Trademarks will be formulated to ensure proper testing and enforcement process to prevent circulation of counterfeit, adulterated, or mislabeled products.

10.2.7. Output 2.7 on Mechanization

185. 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. The private sector will be encouraged to provide the actual mechanized services, including repair and maintenance, and spare parts.

186. The existing Department of Agricultural Mechanization will need to gradually transfer its capital stock and agricultural mechanization stations to the private sector, so as to assure development of private sector in rural areas and to contribute to higher productivity.

10.2.8. Output 2.8 on Animal Breeding

187. Given the increasing demand for animal products and the current relatively weakly developed animal breeding system, the ADS will make a systemic effort at improving the genetic composition of the animal stock. The ADS will develop a National Strategy and Action Plan for Animal Genetic Resources (AnGR), with supporting legislation, regulations, and guidelines. In addition to developing capacity and infrastructure for animal breeding, the ADS will implement a nation-wide Artificial Insemination (AI) program and support pure breed production farms while promoting the private and cooperative sector to produce improved breeds with proper recording of progeny, productivity, and efficiency.

10.2.9. Output 2.9 on Animal Health

188. The ADS will strengthen animal health information system, including the National Animal Health and Disease Surveillance Plan. It will facilitate production and distribution of vaccines, including cold chain management. The ADS will help establish Community Animal Health Workers programmes and activities.

It will develop contingency planning and action for emerging animal disease threats, and strengthen Veterinary and Animal Health Services to assure their accessibility to farmers.

10.2.10. Output 2.10 on Animal Nutrition

189. The ADS will support applied research in animal nutrition and improve pasture, fodder and grazing and feeding practices. It will also support the capacity of Feed Testing Laboratory and develop high quality fodder and feed planting material including the establishment of fodder/feed production plots and on-farm demonstration. Currently, the country is not looking at fodder as crop. Fodder is not part of the activities of any department (DOA, YAU, or Livestock Department). As a result it is neglected.

10.2.11. Output 2.11 on Animal and Dairy Production

190. This output is focused on small-scale producers of livestock and dairy products. The output emphasizes capacity building for livestock income generation in rural areas, including vocational, entrepreneurship and enterprise training, with special attention to women

10.2.12. Output 2.12 on Apiculture

191. 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

10.2.13. Output 2.13 on Fisheries and Aquaculture

192. The ADS will support the restructuring and expansion of the seedling infrastructure for aquaculture industry and production and distribution of fish and shrimp seeds. It will establish a network of Aquaculture Technology centers, with supporting laboratory facilities. It will facilitate development of a legal and regulatory framework for fisheries and other aquatic livelihoods and promote initiatives for aquaculture optimization, land development, and cage and pen technology.

10.2.14. Output 2.14 on GAP

193. 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 agroecological 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 Pillar 3 output 3.4).

10.2.15. Output 2.15 on Resilience

194. 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.

195. 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, and flood. Preparedness system at the community or region/state level might include food and seed reserves. Crop and livestock insurance might also be developed to provide further protection to farmers (see also Pillar 3 output on access to financial services). This requires the strengthening and expansion of weather records station.

Table 8 Outputs and Activities under Pillar 2 on Productivity

No.	Pillar 2 Productivity - OUTPUTS	Activities
2.1	Agricultural research - Improved research system for crop, livestock, and fisheries	2.1.1. Establish National Agricultural Research Council (NARC) to coordinate and provide overall guidance to research on crops, livestock, and fisheries 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: <ul style="list-style-type: none"> - 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. - Provide sufficient resources to increase the number of researchers and technical staff through short, medium, and long term training both in Myanmar and abroad. <ul style="list-style-type: none"> o Agriculture/Crops Research Service o Livestock Research Service (new) o Fisheries and Aquaculture Research Service (new) - Establish a performance assessment system for agricultural research - Establish a new international agricultural research partnership programme through CGIAR, with a special role for ISNAR (International Service for National

No.	Pillar 2 Productivity - OUTPUTS	Activities
		Agricultural Research).
2.2	Agricultural extension – Transformed agricultural extension system delivering improved products (crop, livestock, fisheries) and technology for adoption and adaptation	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>2.2.8. Strengthen farmer organizations (groups, associations, cooperatives, federations) to become facilitators for change (FUNDING ALLOCATED UNDER PILLAR 1 – OUTPUT 1.5)</p> <ul style="list-style-type: none"> ○ 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. <p>2.2.9. Establish information and knowledge system to provide advisory services to farmers:</p> <ul style="list-style-type: none"> ☑ Address farmers’ and other stakeholders’ demand for information and knowledge through facilitating direct contact with subject matter specialists. ☑ Prepare and disseminate simple farmer-friendly technical documents, including manuals on crop, livestock, apiculture, fisheries and agri-business enterprises and activities and other tools. ☑ Promote and use ICT to interactively link 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 centres.

No.	Pillar 2 Productivity - OUTPUTS	Activities
		2.2.10. Pilot voucher system for extension and advisory services to allow farmers to select extension service providers. 2.2.11. Introduce farmer marketing schools. 2.2.12. Train field personnel to be sensitized to Gender and Social Inclusion (GESI) and nutrition. 2.2.13. Build and strengthen capacity of agricultural, livestock, and fisheries extension services institutions and staff through adequate training (long-term and in-service with competency testing), mobility, connectivity. 2.2.14. Evaluate extension activities (training, demonstrations, farmer field schools, advisory services) based on feedback from farmers and independent monitoring and evaluation system.
2.3	Research-extension coordination - Improved research-extension coordination systems with participation of farmers and private sectors	2.3.1. Conduct in-depth study of agricultural, livestock, and fisheries extension and research systems with view to improve coordination 2.3.2. Establish the National Agricultural Research and Extension System (NARES) to facilitate coordination between research and extension. 2.3.3. Implement Annual Research - Extension Liaison Meetings for sharing of experience and information and decisions on approaches to crop, livestock, and fisheries development 2.3.4. Establish farmers' training and adaptive research centers to jointly demonstrate research results and extension recommendations on modernized farming 2.3.5. Jointly package, promote and disseminate knowledge on improved production technologies for adoption by farmers, including preparation of Commodity Manuals
2.4	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.	2.4.1. Upgrade and rationalize the current Yezin Agriculture Universities into one consolidated university with colleges for agriculture, livestock and aquaculture with both undergraduate and graduate degrees. Upgrade key sectoral disciplines in Yezin and other universities, including agricultural economics, agricultural business and marketing, agriculture engineering, water management, food technology, and agricultural extension and communications. 2.4.2. Expand the 3-year diploma curriculums of State Agricultural Institutes (SAI) in all states and regions to provide training on all key sectoral disciplines, including agriculture, livestock, fisheries, machinery, food technology, farm management, agribusiness and marketing. Expand these institutes' offerings to include short-term certificate training as well. 2.4.3. Revive high school level agricultural training and other vocational training institutions, both public and private.
2.5	Irrigation and water management - More responsive and reliable irrigation and drainage services and more efficient and sustainable	2.5.1. Develop Regulations for the Myanmar National Water Policy. a. Develop bylaws and regulations to implement the National Water Policy including regulations for rainfed agriculture, drainage, groundwater, WUA, and ISF b. Develop bylaws and regulations related to research, studies, demonstration, training, and extension of water use management practices. 2.5.2. Develop appropriate Measures for Water Management in Rainfed Agriculture a. Conduct research and training on water use management in rainfed systems b. Conduct demonstrations and extension programs on water use management in rainfed systems c. Conduct feasibility of drainage investment in rainfed area, particularly in delta

No.	Pillar 2 Productivity - OUTPUTS	Activities
	water management systems	<p>areas</p> <p>d. Carry out drainage work in delta areas</p> <p>2.5.3. Establish program on groundwater development</p> <p>a. Conduct hydrological studies to establish resources for groundwater utilization</p> <p>b. Develop program to promote use of sustainable groundwater use</p> <p>2.5.4. Rehabilitate system and modestly expand command arrange in Village Irrigated (VI) dam and Village Embankment systems (VE) of less than 200 acres command areas</p> <p>a. Village Irrigated system rehabilitation (XXX acres) and new construction (XXX acres)</p> <p>b. Village Embankment rehabilitation (XXX acres) and new construction (XXX acres)</p> <p>2.5.5. Rehabilitate Small Dam irrigation systems (500 – 1,000 acres): Rehabilitation of XXX acres.</p> <p>2.5.6. Establish Medium pond/recharge basins (basins that store water and recharge groundwater, for use by both irrigation and water supply).</p> <p>a. Pilot construction of schemes, including linkage with surface or non-conventional irrigation (e.g. sprinklers, drip systems) under Public-Private Partnership arrangements.</p> <p>2.5.7. 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. [Work undertaken by DOI and community, also DRD]</p> <p>2.5.8. 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)</p> <p>a. 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 DOI and community]</p> <p>b. 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.</p> <p>c. Support canal network expansion to increase the irrigable area served by an existing irrigation system.</p> <p>d. 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.</p> <p>e. Construct permanent headworks and improve main canals on farmer-managed irrigation systems (FMIS).</p> <p>f. Improve catchment area management and restoration catchment.</p>

No.	Pillar 2 Productivity - OUTPUTS	Activities
		<p>g. 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.</p> <p>2.5.9. Improve management of irrigation systems and on-farm water, including:</p> <p>a. Prepare the Integrated Water Resources Management (IWRM) policy within the Framework of the National Water Policy.</p> <p>b. Build capacity of WUAs and provide advice and possibly funding to farmers to improve their irrigation systems and practices.</p> <p>c. Continue to implement on-going irrigation management transfer (IMT), include: transfer of management form DOI to WUA, for example in relation to employment of gatekeepers.</p> <p>d. Transfer of full responsibility and ownership to WUA or a federation of WUAs for medium schemes (5,000 to 10,000ha).</p> <p>e. Prepare and implement an Irrigation Management Transfer pilot project for two medium-to-large irrigation systems.</p> <p>f. Set up a model on-farm water management system in a feasible irrigation tract.</p> <p>g. 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.</p> <p>h. Harmonizing and streamlining legal structures required for ownership transfer to WUAs.</p> <p>2.5.10. Establish funding system and guidelines for Operation and Maintenance (O&M), encompassing:</p> <p>a. Build incentives into scheme,</p> <p>b. Develop legislation to require a receipt for ISF payment to be attached to land tax payment;</p> <p>c. Enforce existing requirement that ISF payments be brought up to date before a land sale can be registered;</p> <p>d. Define and charge ISFs – per crop in the short-term, and per volume of water in the long term on schemes with volumetric metering.</p>
2.6	<p>Crop inputs - Increased use of improved farm production inputs and technologies by crop growers</p>	<p>Seed and planting material:</p> <p>2.6.1. 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.</p> <p>2.6.2. 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.</p> <p>2.6.3. Strengthen certification of multiplied seed, including improved seed laboratories capacity</p> <p>2.6.4. Build-up capacity of seed research stations to produce breeder and foundation seeds.</p> <p>☑ Increase funding to enhance capacity of public research institutions and research stations, universities, and private sector industry.</p> <p>☑ Maintaining good quality land races and open pollinated varieties (OPVs) of different crops in the remote areas that are dominated by subsistence agriculture.</p> <p>☑ Establish good linkages with international agencies.</p> <p>2.6.5. Promote private and cooperative sector and community based seed production.</p>

No.	Pillar 2 Productivity - OUTPUTS	Activities
		<p>This will involve:</p> <ul style="list-style-type: none"> ☑ Participate in partnerships with relevant private and cooperative organizations, farms and nurseries for production of quality seed and planting materials ☑ Facilitate private sector to produce breeder, foundation and hybrid seeds, especially by providing breeder and foundation seed to private and cooperative seed growers. ☑ Promoting seed enterprise as an industry catering to the national needs and for export. ☑ 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. <p>2.6.6. Enforce quality assurance systems, involving:</p> <ul style="list-style-type: none"> ☑ Improved capacity of concerned government certification bodies and laboratories to undertake planting materials certification processes. ☑ Enforcing compliance of nurseries with farm inputs quality standards. ☑ 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. ☑ Enforce legislation that compensates farmers when purchasing poor quality seed not complying with existing standards ☑ 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. <p>2.6.7. 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.</p> <p>2.6.8. 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.</p> <p>2.6.9. 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 Centres; (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 GMO having negative impact on bio-diversity, genetic resources, and human health.</p> <p>2.6.10. Pilot voucher system for seeds whereby targeted farmers are provided with a voucher that empowers them to purchase the input (in this case seeds) of their preference. First pilot the system and on the basis of a positive review of the pilot, replicate the system and upscale.</p> <p>Soil fertility management:</p> <p>2.6.11. Measures to improve productivity and fertilizer use efficiency will involve promoting a greater private sector role, and include:</p> <p><i>(a) Soil survey and mapping - to cover all Myanmar in greater detail than done in 1960s</i></p>

No.	Pillar 2 Productivity - OUTPUTS	Activities
		<p>(b) Promotion and demonstration of soil conservation techniques (c) Promotion and demonstration of soil amelioration techniques with involvement of private sector (d) Strengthen laboratory facilities to ensure that farmers can get access to timely and affordable soil testing and other services (d) Enforce quality assurance systems, including fertilizer inspection (e) Capacity building of Soil Division staff, Units and facilities (f) Promote domestic fertiliser production and trade with involvement of private sector, including: - Feasibility studies on domestic production - Establishment of commercial bio-fertilizer production enterprises based on municipal biomass and agro-processing waste (g) Establish a fertilizer buffer stock under PPP arrangement. (h) Establish database and monitoring system on fertilizer use and distribution, including both official and informal import (the latter to be obtained through survey data).</p> <p>Plant Disease and Pest Management:</p> <p>2.6.12. Develop and promote integrated pest management (IPM) and bio-control of weeds</p> <p>2.6.13. Strengthen pesticide and herbicide laboratories (\$2.000 m)</p> <p>2.6.14. Establish quality assurance for pesticides and other plant protection products. This will involve: i) Strengthening pesticides, herbicides, and other products inspection through improved capacity of concerned public organizations ii. Enforcing compliance of importers and dealers with quality standards, comprising: - Enforce the law on Fertilizer - Enforce Law on pesticides and herbicides - Approve and implement a modern Law on Trademarks - Ensure proper testing and enforcement processes to prevent circulation of counterfeit, adulterated or mislabelled products iii. Encouraging provision of quality control and certification from private sector as well as government</p> <p>2.6.15. Plant and animal quarantine – border and inland control facilities, including laboratories, storage, and replication/testing plots i. Encouraging provision of quality control and certification from private sector as well as government</p> <p>2.6.16. 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 mislabeled products.</p>
2.7	Mechanization - Increased application of appropriate mechanisation in the agricultural value chain	<p>2.7.1. 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.</p> <p>2.7.2. 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.</p>

No.	Pillar 2 Productivity - OUTPUTS	Activities
		2.7.3. Ensure a gradual handover or privatization of mechanization stations currently under the AMD to private sector or farmer organizations. 2.7.4. Train and demonstrate machine use, repair, and maintenance on farm. 2.7.5. Promote emergence of rural workshop for agricultural machinery repair and maintenance. 2.7.6. In collaboration with private sector, ensure timely availability of spare parts. 2.7.7. Provide financial analysis for use of alternative machinery to guide investment decision of farmers under different agroecological conditions.
2.8	Animal breeding - More productive and profitable genetic composition of animals	2.8.1. Develop and maintain Myanmar Animal Genetic Resources Information System 2.8.2. Develop National Strategy and Action Plan for Animal Genetic Resources (AnGR) - with legislation, regulations and guidelines 2.8.3. Strengthen physical, human resources and financial capacity for animal breeding 2.8.4. Participate in applied research in animal breeding in line with Livestock Research Programme 2.8.5. Implement nation-wide Artificial Insemination (AI) Programme <ul style="list-style-type: none"> - Develop and maintain Semen Production Unit - Develop and maintain Liquid Nitrogen plant together with Liquid Distribution Nitrogen programme - Develop and maintain National Training Center for AI and AI Service Centers – strategically located in different regions - Support specialized Mithun cattle production programme - Provide farmer support for Artificial Insemination (AI) 2.8.6. Support pure breeds production farms. 2.8.7. Promote private sector and cooperatives to produce improved breeds with proper recording of progeny, productivity, and efficiency. 2.8.8. Expansion of artificial insemination laboratories and service for the promotion of breeding programs for breeds improvement. 2.8.9. Support private sector to establish grandparent stocks of poultry. 2.8.10. Support production of improved breeds to private sector. 2.8.11. Support recording and improvement of quality, health status, productivity of improved herds. 2.8.12. Support implementation of livestock insurance schemes. 2.8.13. Reliable, efficient and continuous supply of Liquid Nitrogen (LN2) for the AI program. One of the effective approaches could be the establishment of LN2 plant on PPP model.
2.9	Animal health - More healthy and productive animals	2.9.1. Strengthen animal health information systems, including strengthened National Animal Health and Disease Surveillance Plan and actual surveillance and reporting activities 2.9.2. Facilitate production and distribution of vaccines, including cold-chain management 2.9.3. Establish and manage Community Animal Health Workers (CAHW) programme and activities 2.9.4. Implement contingency planning and action for emerging animal disease threats 2.9.5. Strengthen Veterinary and Animal Health Services to ensure their accessibility to farmers 2.9.6. Conduct animal population baseline survey
2.10	Animal nutrition	2.10.1. Support improved pasture, fodder and grazing and feeding practices

No.	Pillar 2 Productivity - OUTPUTS	Activities
	– Better fed and productive animals	2.10.2. Compile and maintain national information, inventory and data base on animal pastures, fodder and feed systems - with specific breakdown of situation and conditions by area 2.10.3. Strengthen physical, human resource and financial capacity of Feed Testing Laboratory of Livestock Breeding and Veterinary Department (LBVD) 2.10.4. Develop and/or import high-quality fodder and feed planting materials - including establishment of forage/fodder production plots and on-farm demonstration 2.10.5. Scale-up on-going pilot activities on development of animal feeding strategies on cover the whole country 2.10.6. Support applied research in animal nutrition in conjunction with Livestock Research Programme
2.11	Strengthened Capacity of Animal and Dairy small-scale producers	2.11.1. Train and provide information to build capacity of livestock producers on different technical, economic and marketing aspects 2.11.2. Implement small-holder dairy development programme (including building strategically located medium size milk processing plants, cold storage, transport and other facilities; and support to Myanmar Dairy Excellence Project) 2.11.3. Support small-scale beef cattle production and distribution 2.11.4. Support small animal (pigs, goats, sheep, etc) production 2.11.5. Develop, establish, and promote adoption adopt and compliance to national standards on sustainable livestock production 2.11.6. Capacity building for livestock income generation in rural areas - vocational, entrepreneurship and enterprise training, with special attention to women
2.12	Expansion and increased importance of apiculture (bee honey) industry as primary and additional source of income generation for small-scale producers	2.12.1. Carry out surveys, field trials to assess biological and ecological potential and capacity of apiculture as a source of income 2.12.2. Study of major constraints, opportunities and value chain of bee honey in Myanmar 2.12.3. Establish and operate apiculture laboratory for research and for quality control of bee honey 2.12.4. Train staff, bee keeper, processors and handlers on best practices and market responses 2.12.5. Promotion Myanmar bee honey in major including domestic and overseas markets
2.13	Fisheries and aquaculture inputs and services - Maximum output and profit from fishing and aquaculture industries using sustainable practices	2.13.1. Support restructuring and expansion of seedling infrastructure (hatcheries & breeding ponds) for aquaculture industry and production and distribution of fish and shrimp seeds 2.13.2. Identification, inventory and resource conservation of adaptable fish species (for cold upland areas, dryland areas, etc.) 2.13.3. Establish network of Aquaculture Technology Centers (Koica Research Center - Marine Biology Departments of Universities of Mawlamaine, Patheingyi, Meiktila and Yangon), with supporting laboratory facilities 2.13.4. Facilitate provision and availability of fishing infrastructure 2.13.5. Facilitate legal and regulatory framework for fisheries and other aquatic livelihoods, demarcating open fisheries, law enforcement for closed season and closed areas for fishing and banning destructive fishing gears 2.13.6. Promote aquaculture optimisation initiatives such as land development, cage

No.	Pillar 2 Productivity - OUTPUTS	Activities
		<p>and pen technology integrated with existing dams or reservoirs (exclusion of dams serve for domestic water delivery), under the proper legal frame work</p> <p>2.13.7. Provide technical support to fish and aquaculture processing industry to increase supply of good quality fish for domestic and export markets</p> <p>2.13.8. Promote the production of aqua feed by strengthening the link between the soybean production in Shan State, soybean cultivar improvement of Department of Agricultural Research and set up of the soybean mills and aqua feed mills of the private sector</p>
2.14	Sustainable Farming, Good Agricultural Practices (GAP), Good Veterinary Husbandry Practices (GVAHP) are established and adopted	<p>2.14.1. Coordinate, formulate, elaborate, document, and promote concepts, principles, guidelines, laws, regulations and protocols for GAP (including GVAHP, GFP and OA) in Myanmar.</p> <ul style="list-style-type: none"> ○ Establish GAP Unit or Focal Point within MOALI to coordinate and spearhead development and implementation of GAP, GVAP, GFP, 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, GVAHP, GFP 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, GVAHP, GFP and OA certification and facilitate incentives for certification ○ Promote connections, harmonize standards and protocols within ASEAN <p>2.14.2. Increase production, value-addition, sale and consumption of GAP and OA rice, pulses, vegetables, fruits, meat, dairy, honey, cash crops, and other products</p> <ul style="list-style-type: none"> ○ 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 Livestock 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 ○ Organise GAP competitions, fairs and ceremonies <p>2.14.3. Establishment and exploitation of “Myanmar Brand” of GAP and OA products in domestic and international markets</p> <ul style="list-style-type: none"> ○ Build market information base on GAP and OA

No.	Pillar 2 Productivity - OUTPUTS	Activities
		<ul style="list-style-type: none"> ○ 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
2.15	Improved Resilience of Farmers to Climate Change and Disasters	<p>2.15.1. 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.</p> <p>2.15.2. Establish an early warning system and adopt early warning information for managing climate change risks in agriculture and food and nutrition security.</p> <p>2.15.3. 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.</p> <p>2.15.4. Strengthen the food reserve system to cope with emergency and food safety distribution to targeted farm households.</p> <p>2.15.5. Strengthen the seed and feed/fodder reserve system to cope with natural disasters such as flood and drought.</p> <p>2.15.6. Improve capacity of extension staff and farmers in climate smart agricultural practices through training, FFS, and demonstrations.</p> <p>2.15.7. Implement programme to in-build mitigation factors and resilience of livestock farmers to climate change, natural disasters and other uncertainties</p> <p>2.15.8. Increased climate smart and conservation-oriented livestock utilization practices and conservation farming</p> <p>2.15.9. Establish a fund for preparedness and response to droughts, flood, epidemics and emergencies affecting rural areas and farmers not covered by agricultural insurance.</p> <p>2.15.10. Carry out Community Based Disaster Risk Management (CBDRM) capacity building.</p>

10.3. Pillar 3 on Market Linkages and Competitiveness

196. The outcome of the strategic pillar on Market Linkages and Competitiveness is: farmers and agro-enterprises in Myanmar are integrated into 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.

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

198. Profitable commercialization requires the combination of several measures such as an enabling business and investment climate, reforms to strengthen contractual arrangements and financial services to promote an efficient commercial agriculture, and physical and virtual infrastructure.

199. 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, packhouses, collection centers, markets, logistics centers). The ADS supports the improvement of knowledge infrastructure to promote commercial agriculture through effective market information and intelligence services.

200. This strategic pillar emphasizes the need of prioritizing a limited number of value chains to ensure they achieve scale economies and therefore have sectoral income and employment impact.

201. This pillar of the ADS has placed its focus on *competitiveness*. Competitiveness is founded on: a competent, hard-working and efficient work force; a clear understanding of what makes Myanmar unique in the global market place; and the determination and entrepreneurship to maximize productivity and innovate with new products and processes based on the country's natural endowments.

202. 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 supply 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.

203. 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.

204. 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 point of view it affords the opportunity to leverage its funds and channelize outcomes while for the private and farming sector the addition of public funds reduces the perceived exposure to investing in high-risk high-potential projects.

10.3.1. Output 3.1 on Business Environment

205. 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 more difficult across the country. 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 implementation.

10.3.2. Output 3.2 on Investment Regulations

206. The Government is working on a new draft of the Investment law to encourage responsible investors, both domestic and foreign to expand business. The ADS will support the preparation and implementation of an investment promotion strategy for the agriculture and food sector.

10.3.3. Output 3.3 on Intellectual Property Rights

207. 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 IPR protection against counterfeit agricultural inputs, especially for pesticides, including stronger border control measures to reduce the import of counterfeit products.

10.3.4. Output 3.4 on Quality System

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

209. 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 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).

10.3.5. Output 3.5 on Planning for Rural Development

210. The integration of agriculture and rural development in the new MOALI requires enhanced institutional framework for planning and implementation of rural development programmes. Consequently, the ADS will establish a new Research and Development Division within DRD and a new Design Division for Rural Infrastructure.

10.3.6. Output 3.6 on Planning for Empowerment of Local Communities

211. The ADS promotes several initiatives for village level community development, township community development, and community capacity building in preparing and drafting action plans and rural entrepreneurship.

10.3.7. Output 3.7 on Rural Roads

212. Rural roads are the first step in linking farmers to markets. The ADS will improve rural road infrastructure consistently with Master Plan for Transportation, provide separate funding 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 will review policy 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.

10.3.8. Output 3.8 on Energy

213. The ADS will support current efforts by the Government to improve access of rural households to electricity and internet. The Department of Rural Development is actively involved in several renewable energy activities including solar energy. More generally, depending on the farming systems and agroecology, the ADS will try to promote other renewable energies (e.g. micro hydro, biogas, biomass gasifiers) that could be affordable. One important approach in this respect is the use of PPP for power development and distribution to farming communities.

10.3.9. Output 3.9 on Potable Water

214. 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.

10.3.10. Output 3.10 on Markets and Logistics Infrastructure

215. Competitive value chains rely upon efficient market 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) as follows: North-South Corridor, East-West Corridor, Northeast-Southwest Corridor, and Yangon-Myawaddy Corridor.

216. The four economic corridors – north-south, east-west, northeast-southwest and Yangon-Myawaddy – 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 percent of Myanmar’s population and provides 55 percent of GDP. The corridor also includes a special economic zone at Thilawa, 24 industrial zones and seven sub-industrial zones.

217. The industrial policy also discloses the government’s plan to build two new deep-sea ports, at Patheingyi in Ayeyarwady Region and Ye in Mon State. The Patheingyi 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.

218. 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 Agroindustrial Economic Zones (SAEZ) in Sagaing, Bago, Magwe, Ayeyarwady and Tanintharyi regions.

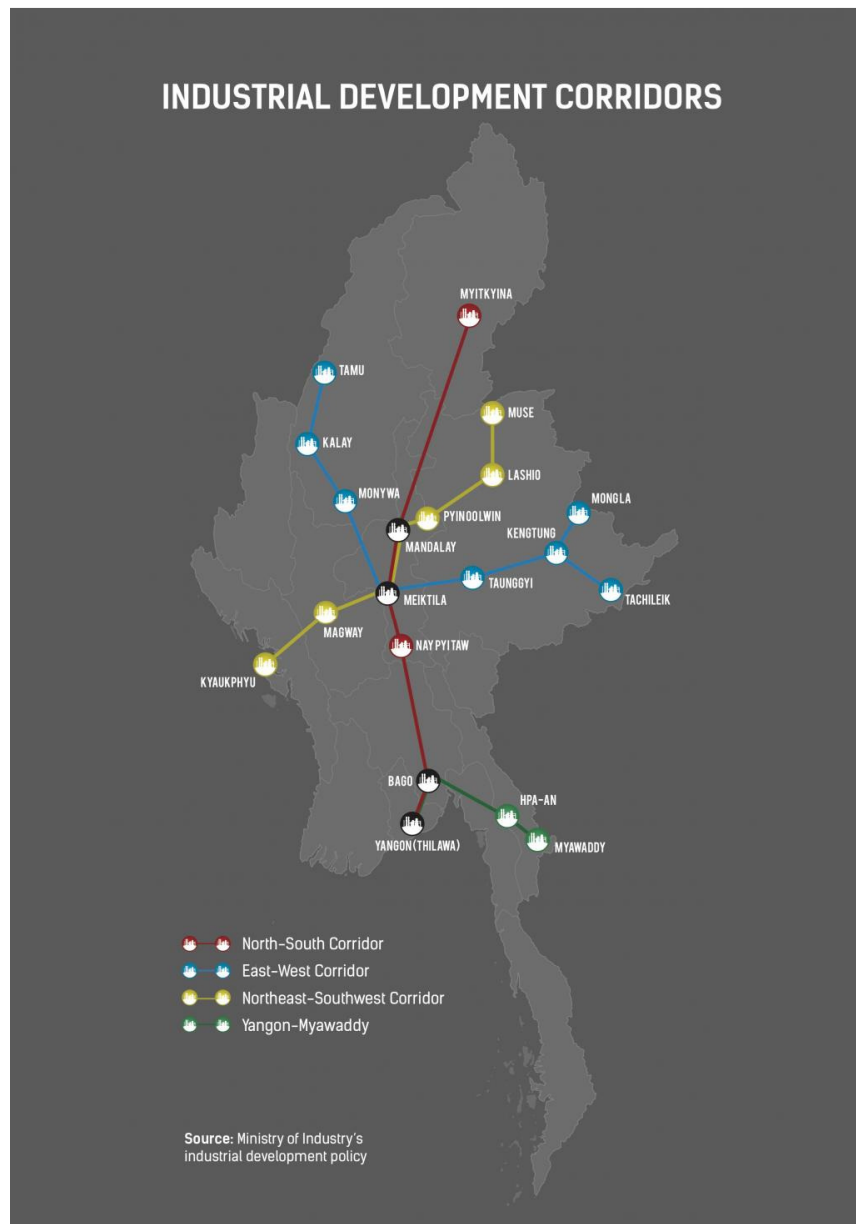


Figure 5 Industrial Development Corridors

219. 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 SOP for improved market infrastructure management, and capacity building programs for market infrastructure management, particularly in farmer markets or collection centers.

10.3.11. Output 3.11 on Prioritized Value Chains

220. Value chain are organized systems of linkages aimed at increasing value and competitiveness. Smallholder farmers can benefit from value chain by engaging into productive partnerships with agroenterprises. These partnerships usually require effective farmer organizations able to mobilize large numbers of farmers and protect their interest. Farmers and their leaders will need to build their capacity in organizing, planning, accounting, negotiating, and marketing. In order to gain competitiveness in agrifood value chain, farmers, private sector, and government have to form strategic alliances aimed at integrating the efforts towards the solution of bottlenecks at different stages in the value chain.

221. It is therefore realistic to expect that this collaborative effort can best realize its potential if it is focused on an initial limited number of value chain. The prioritized value chains are selected through a process that takes into account the following criteria: (i) Poverty reduction potential; (ii) Growth potential; (iii) Export potential; and (iv) Cross-cutting issues (social inclusion and gender, environmental sustainability, matching with national and regional strategic priorities, and geographical spread). The prioritized value chains include: rice, pulses, vegetables, oilseeds, sugarcane, cattle, and aquaculture.

222. For each prioritized value chain, there will be measures that are common to all value chains and measures that are specific to each value chain. The common measures include formation of industry associations and regular dialogues among the key stakeholders in the value chain, preparation of policies and strategy, support of value chain funds to accelerate innovations in the value chain and productive partnerships between smallholder farmers and agroenterprises, organization of annual events.

10.3.12. Output 3.12 on Food Quality and Safety

223. 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:

- 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.
- Develop sanitary and phytosanitary regulations in line with international practices to protect crop and animal health in Myanmar.
- Formulation and promulgation of food safety and quality standards, starting from the standards for the prioritized value chains
- Adopt legislation on accreditation of standards certification bodies and national laboratories for foods safety and quality certification
- Strengthen and upgrade laboratories to international accreditation standards
- Establish regional laboratories and district offices for a number of food safety tests (soil testing, Maximum Residue Levels, water testing, pesticides, fertilizers, etc.)

- Establish capacity for risk assessment (for both plant and animals), SPS management and surveillance
- Conduct awareness campaign on food safety
- Adopt One *Health Approach* and strengthen animal health surveillance, diagnostic, and response capacity
- Negotiate SPS protocols with key trading partners to facilitate exports.
- Apply legitimate policy objectives based on international standards wherever possible with minimum compliance costs and unnecessary impacts on trade.
- 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.
- 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.

10.3.13. Output 3.13 on Financial Services

224. The ADS support 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 Myanmar Central Bank and Ministry of Planning and Finance.

225. The ADS support 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.

226. Additional measures are summarized in Table 9.

10.3.14. Output 3.14 on Market Information

227. The ADS will promote the strengthening of public and private services providing market information to farmers and agroenterprises. 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.

10.3.15. Output 3.15 on Small and Medium Agroenterprises

228. The ADS promotes the growth of innovative small and medium agroenterprises through several measures including the establishment of Agribusiness Incubators, matching grant fund to promote SME innovation in agribusiness and Innovation Competition Fund for agroenterprises and Cooperatives.

Moreover, the ADS will promote specific agro-entrepreneurship programs for youth, women, and disadvantaged groups and disadvantaged region.

10.3.16. Output 3.16 on Trade Facilitation

229. The improvement in competitiveness of agricultural and food products from Myanmar depends on trade measure that facilitate trade through improvement in import and export procedures and trade negotiation. Specific measure promoted by the ADS are summarized in Table 9.

10.3.17. Output 3.17 on Export Growth

230. Given its export orientation, the ADS will promote exports through programs and trade diplomacy. The specific measures include:

- 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.
- 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 WTO and ASEAN Economic Community.
- In particular, build capacities to negotiate more effectively with neighboring countries to reduce situations where Myanmar exports are restricted.

Table 9 Outputs and Activities under Pillar 3 on Competitiveness

No.	Pillar 3	Activities
	Competitiveness - OUTPUTS	
3.1	Improved business environment along the supply chain.	<p>3.1.1. Improve the institutional, legal, regulatory and procedural framework commercial and business operations and contracts, and make recommendations and implement reforms, including:</p> <ul style="list-style-type: none"> - Streamlining of commercial and labor contracts, including various kinds of contract farming systems, business. - Elimination of unnecessary internal taxes, road and bridge tolls, and permits to make it easier to move goods within the country. - Reduction of “transaction costs” by eliminating “red tape” (that is, overly complex procedures) related to starting and running businesses. <p>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.</p> <p>3.1.3. Identify models, lessons, and guidelines for effective contract farming and implement standard operating procedures for contract farming</p>

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No.	Pillar 3 Competitiveness - OUTPUTS	Activities
3.2	Improved investment regulations for agrifood investors.	<p>3.2.1. Design and implement an investment promotion strategy for the agricultural and food sector</p> <p>3.2.2. Strengthen the capacity of Myanmar Investment Commission to expedite investment applications in the agriculture sector while effectively taking into account environmental and social impact assessment.</p> <p>3.2.3. Approve the draft Investment Law, develop implementing regulations that encourage responsible investors, both domestic and foreign (including 100% foreign owned firms) and assure following:</p> <ul style="list-style-type: none">- Provision of domestic investors with the same rights and incentives as foreign investors;- Reduce sectoral restrictions that prevent entry of private investors through a transparent and short negative list of restricted investment sectors.
3.3	Protected intellectual property rights for the agricultural and food sector.	<p>3.3.1. 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.</p> <p>3.3.2. Approve the draft Trademark Law and implementing regulations to enable protection for geographical indications, certification marks, and trademarks for agricultural/food products.</p> <p>3.3.3. Strengthen IPR protection against counterfeit agricultural inputs, especially for pesticides, including stronger border control measures to reduce the import of counterfeit products.</p> <p>3.3.4. Approve the Patent Law to protect domestic research and innovators in the agriculture and food sector.</p>
3.4	Developed a reliable quality system that will help farmers and food processors to get higher prices for higher quality goods, incentivizing quality upgrading.	<p>3.4.1. Develop product standards and certifications, quality grading, quality control measures, and reliable conformity assessment (testing) procedures.</p> <p>3.4.2. Revise the Law on Standardization to introduce key international best practices and transparency requirements for the development of standards, conformity assessment processes, and technical regulations</p> <p>3.4.3. Enable the establishment of a National Accreditation Bureau for testing processes and a National Metrology Institute for measurements.</p> <p>3.4.4. Support the National Standards Council to expedite the passage of key national standards related to agriculture (including</p>

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No.	Pillar 3 Competitiveness - OUTPUTS	Activities
		<p>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).</p> <p>3.4.5. 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.</p> <p>3.4.6. Approve 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.</p> <p>3.4.7. Support the development of public and private calibration capacities to ensure the use of accurate testing/measurement equipment.</p>
3.5	Enhanced institutional framework for planning and implementation of rural development programmes	<p>3.5.1 Establish new Research and Development Division within DRD</p> <p>3.5.2 Establish new Design Division for rural infrastructure</p>
3.6	Rural communities empowered and enabled to initiate locally-generated development initiatives	<p>3.6.1. Village level community development initiatives (DRD Green Village Project example)</p> <p>3.6.2. Township level community development initiative (DRD Community based project example)</p> <p>3.6.3. Community capacity building in preparation and drafting of action plan projects</p> <p>3.6.4. Training on rural entrepreneurship and enterprise development (e.g. rural livestock raising)</p>
3.7	Expanded and improved rural road network integrated with national transport plans.	<p>3.7.1. Improve rural road infrastructure consistently with mater plan for transportation</p> <ul style="list-style-type: none"> - Rural road construction - Rural bridges construction <p>3.7.2. Remove all restriction on internal movement of agricultural goods, incl. taxes and fees, within and between states and regions (Min of Trade / MOALI)</p>

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No.	Pillar 3 Competitiveness - OUTPUTS	Activities
		<ul style="list-style-type: none">- Review existing transport regulatory system and suggest improved system (Min of Trade MOALI)- Enact necessary legislation and regulations and by-laws on agricultural goods transportation (Min of Trade / MOALI)
		3.7.3. Monitor transport costs and times and share information widely
3.8	Improved access to rural electrification and renewable energies	3.7.1. Rural electricity projects <ul style="list-style-type: none">- Connect rural communities and households to national grid- Promote renewable energies (micro-hydro, solar, micro, biomass, biogas)- Promote public-private partnerships (PPP) for development and distribution of power to rural farming communities
3.9	Enhanced access to potable water by rural households	3.9.1. Construction of rural water supply infrastructure 3.9.2. Knowledge sharing on access to clean drinking water technology program
3.10	Market and logistics infrastructure developed and managed	3.10.1. Establish a dedicated Agribusiness and Marketing Division/Unit in MAF to work with corresponding entity within Ministry of Trade (MOT), and streamline respective MOALI and MOT institutional set-up and modus operando, and coordinate arrangements between the two Ministries 3.10.2. Identify strategic locations for agricultural market development and undertake feasibility studies. 3.10.3. 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. 3.10.4. Implement PPP financing support mechanisms 3.10.5. Develop rules and regulations and SOP for improved market infrastructure management. 3.10.6. Capacity building programs for market infrastructure management
3.11	Increased competitiveness in prioritized agricultural	3.11.1. Establish 7 prioritized National Value Chain Programs (including crops, livestock, and aquaculture). Example: rice, vegetables, pulses, oilseeds,

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No.	Pillar 3	Activities
	Competitiveness - OUTPUTS	
	value chains	cotton, sugarcane, poultry, cattle, aquaculture
		3.11.2. Conduct value chain study and identify bottlenecks and opportunities for respective prioritized enterprises
		3.11.3. Prepare a value chain policy, strategy and development programme
		3.11.4. Establish value chain information desks to monitor cost of production, market information and analysis
		3.11.5. Support formation of farmer organizations dedicated to specific value chain development
		3.11.6. Support formation of trade associations dedicated to specific value chain development
		3.11.7. Support the formation of industry associations including farmers, processors, logistics operators, and service providers dedicated to specific value chain development
		3.11.8. Conduct regular (quarterly) meetings of value chain industry with Government
		3.11.9. 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
		3.11.10. Establish value chain development funds to promote farmer-enterprises partnerships
		3.11.11. Establish a value chain innovation fund to fund an annual value chain innovation competition
		3.11.12. Organize annual value chain fairs, exhibits, seminars, workshops, conferences, and training both in Myanmar and abroad aimed to have access to markets for agrifood products from Myanmar
		3.11.13. Promote the formation of PPP for value chain development
		3.11.14. Training of Trainers (ToT) on Climate Friendly Agribusiness Value Chains
3.12	Enhanced food quality and safety	3.12.1. 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.
		3.12.2. Develop sanitary and phytosanitary regulations in line with international practices to protect crop and animal health in Myanmar.

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No.	Pillar 3 Competitiveness - OUTPUTS	Activities
		<p>3.12.3. Formulation and promulgation of food safety and quality standards, starting from the standards for the prioritized value chains</p> <p>3.12.4. Adopt legislation on accreditation of standards certification bodies and national laboratories for foods safety and quality certification</p> <p>3.12.5. Strengthen and upgrade laboratories to international accreditation standards</p> <p>3.12.6. Establish regional laboratories and district offices for a number of food safety tests (soil testing, Maximum Residue Levels, water testing, pesticides, fertilizers, etc.)</p> <p>3.12.7. Establish capacity for risk assessment (for both plant and animals), SPS management and surveillance</p> <p>3.12.8. Conduct awareness campaign on food safety</p> <p>3.12.9. Adopt One Health Approach and strengthen animal health surveillance, diagnostic, and response capacity</p> <p>3.12.10. Negotiate SPS protocols with key trading partners to facilitate exports.</p> <p>3.12.11. Apply legitimate policy objectives based on international standards wherever possible with minimum compliance costs and unnecessary impacts on trade.</p> <p>3.12.12. 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.</p> <p>3.12.13. 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.</p>
3.13	Improved access to a range of financial services for farmers and agribusiness enterprises	<p>3.13.1. 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.</p> <p>3.13.2. 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</p>

No.	Pillar 3 Competitiveness - OUTPUTS	Activities
		<p>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.</p>
		<p>3.13.3. Over time revise the Law on Microfinance, but in the short-run implement a number of 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.</p>
		<p>3.13.4. 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.</p>
		<p>3.13.5. Develop creditworthiness information systems that make it easier to provide credit to viable farmers and SMEs without full collateral backing.</p>
		<p>3.13.6. Return control of the Myanmar Agricultural Development Bank (MADB) to the Ministry of Planning and Finance or to Central Bank</p>
		<p>3.13.7. Allow the MADB to perform as a development bank as provided for under the Myanmar Agricultural and Rural Development Bank Law (1990).</p>
		<p>3.13.8. 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.</p>
		<p>3.13.9. Consider options for privatizing or dramatically changing the MADB's corporate governance, including establishing an autonomous Board of Directors.</p>
		<p>3.13.10. Allow MADB to offer longer term loans and allow loans beyond seasonal credit for specific crops.</p>
		<p>3.13.11. Provide training in financial management for farmers</p>
		<p>3.13.12. On-going capitalization of MADB MOALI budget, including development support to MOALI</p>
		<p>3.13.13. Microfinance for cooperative using finance from Japan and Korea Banks</p>

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No.	Pillar 3 Competitiveness - OUTPUTS	Activities
		<p>3.13.14. Formulate policy, law, and regulations for agricultural insurance</p> <p>3.13.15. Promotion campaign for agricultural insurance to farmers</p> <p>3.13.16. Pilot a local-level weather indexed insurance scheme (WIIS)</p> <p>3.13.17. Strengthen technical capacity for crop forecasting</p> <p>3.13.18. Pilot scheme of Livestock insurance</p>
3.14	Improved access to market information and market intelligence	<p>3.14.1. Promote development of a suite of products for market information and market intelligence</p> <p>3.14.2. Provide financial, logistical and other support to facilitate training and technical assistance for MOALI and staff of other relevant agencies like MOT in market intelligence and information systems and policy analysis, including provisions for international training and meeting</p> <p>3.14.3. 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</p> <ul style="list-style-type: none">- MOALI/Met Dept/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; agric technology and knowledge like fertilisation and pesticide use; soil and land use maps; etc etc- Private sector info providers to set up networks for info distribution through cell phones, Internet, info kiosks; etc- Ensure that research and extension services and personnel are linked into and contribute to and use ICT networks
3.15	Growth of small and medium agro-enterprises	<p>3.15.1. Adopt tax incentives to stimulate investment in agro-based enterprises</p> <p>3.15.2. Promote establishment of Agribusiness Incubators</p> <p>3.15.3. Establish matching grants to promote agro-enterprise innovation</p> <p>3.15.4. Innovation Competition Fund for Agro-enterprises and Coops</p> <p>3.15.5. Agro-Entrepreneurship Programs for youth, women,</p>

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No.	Pillar 3 Competitiveness - OUTPUTS	Activities
		disadvantaged groups and disadvantaged regions
3.16	Facilitated agrifood Trade	<p>3.16.1. Greatly 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.</p> <p>3.16.2. 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.</p> <p>3.16.3. Upgrade customs clearance processes and logistics facilities for key land border crossings.</p> <p>3.16.4. Negotiate with neighboring countries to improve the trading regime at land-border</p> <p>3.16.5. Improve processes for transiting products through Myanmar, especially from Yangon to Muse by implementing the ASEAN Customs Transit System.</p> <p>3.16.6. 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 Chinese markets.</p>
3.17	Growth of food and agricultural products exports	<p>3.17.1. Prepare and implement National Export Strategy and Agricultural Export Promotion Program</p> <p>3.17.2. Develop the national capacity for more effective trade diplomacy in government including private and public sector</p> <p>3.17.3. Cooperation, coordination, negotiation with international loan/grant/grant assistance projects of MOALI</p> <p>3.17.4. Document and provide guidance to enterprises that are not in line with Trade Related Investment Management</p>

11. IMPLEMENTATION OF THE ADS

11.1. Institutional Mechanisms for Implementation and Coordination

231. The implementation of the ADS requires the concerted effort of various organizations from the state, civil society, and development partners. The National Planning Commission (NPC) will provide overall policy and planning coordination and MOALI will lead implementation.

232. In general, the ADS will be implemented through existing Government structures. 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.

233. Coordination of policies and programs will be achieved through the National ADS Coordination Committee (NADSCC) which is based on existing coordination mechanisms (such as National Planning Commission, State Planning Commissions, District Planning Commissions, Township Planning Commissions); overall implementation of programs and projects will be undertaken under the overall guidance of the National ADS Implementation Committee (NADSIC). The NADSIC will serve as the Steering Committee for the ADS Implementation Support Unit (ADSISU) which will be established under MOALI and act as the unit responsible to support implementation of the ADS during the initial 5 years.

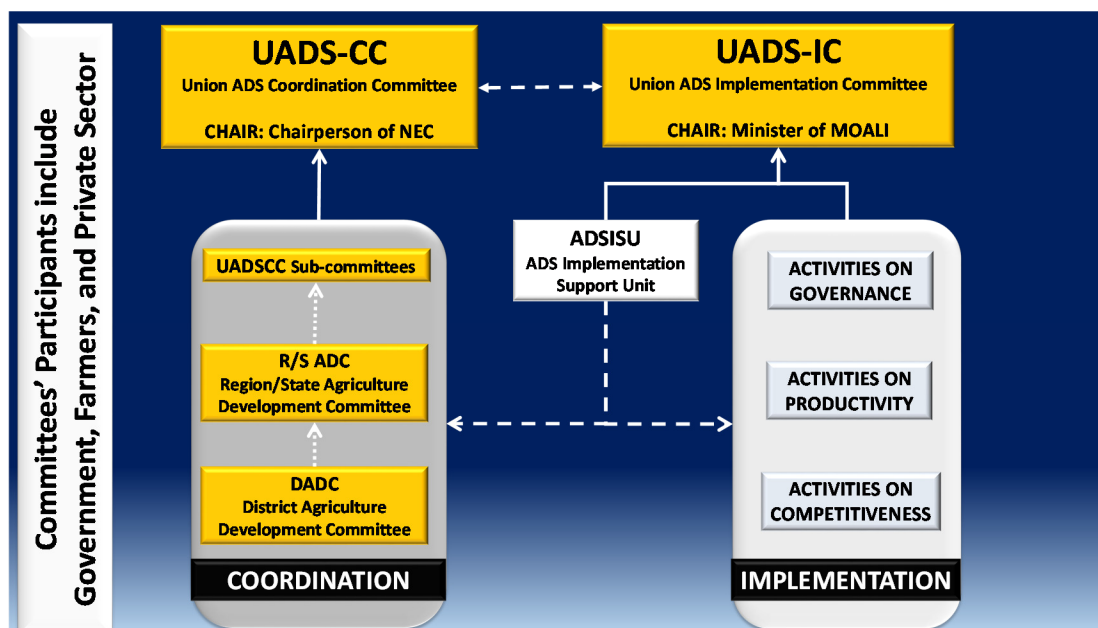


Figure 6 Implementation Arrangements for ADS

11.1.1. The National ADS Coordination Committee (NADSCC) and its Subcommittees

234. The National ADS Coordination Committee (NADSCC) will coordinate the ADS at the national level through periodic meetings. The NADSCC will be established as a subcommittee of the National Economic Committee (NEC) and its composition will include representatives of farmer organizations, private organizations, and cooperative organizations. The NADSCC is the national coordination committee of institutions involved in the ADS and will be under the chairmanship of NEC. NADSCC will be strengthened through secretariat service provided by the ADS Implementation Support Unit (ADSISU)

and will be enhanced with the establishment of the following NADSCC sub committees charged with improving the coordination of ADS on relevant issues such as:

- a. **Coordination Subcommittee with Private Sector.** Coordination among public sector, private sector (e.g. Federation of Chambers of Commerce and Industry, Trade/Industry Associations), cooperative sector (e.g. National Union of Cooperatives), and farmer organizations.
- b. **Coordination Subcommittee with Non-Government Sector.** Coordination between government sector and non-governmental organizations/international non-governmental organizations (NGOs/INGOs)
- c. **Coordination Subcommittee with development partners.** This subcommittee might overlap with the already existing working Group for Agriculture.
- d. **Coordination Subcommittee on Food Nutrition Security.** This subcommittee might overlap with the already existing Technical Working Group on Food and Nutrition Security.
- 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.

11.1.2. The National ADS Implementation Committee (NADSIC) and its Subcommittees

235. A National ADS Implementation Committee (NADSIC) will be established, which will be chaired by Hon. Minister of MOALI, and include representatives of farmers' organizations and private sector. The ADS implementation committee will be responsible to ensure the Implementation of ADS and should meet regularly (eg quarterly). The TOR of the Committee will include the following:

- 1) Promote the implementation of ADS by promoting policy, administrative and legislative changes in responsible institutions.
- 2) Promote resource mobilization both from internal (public and private) and external sources.
- 3) Provide guidance to MOALI and the 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 TA which supports ADS implementation,
- 5) Together with NADSCC, organize periodic assessment of the ADS and recommend adjustments.

236. The National Committee will be enhanced with the establishment of the following NADSIC sub committees charged with improving the implementation of ADS on relevant issues such as:

- a. **Implementation Subcommittee on Reorganization of MOALI.** The subcommittee will address issues such as establishment of units related to Monitoring and Evaluation, Policy Formulation and Review, Agribusiness, National Agricultural Research Council, National Agricultural Research and Extension Coordination Committee, Restructuring of MADB, reorganization of agricultural university system including livestock and fisheries institutes.
- b. **Implementation Subcommittee on Land.** The subcommittee will address issues involved in the implementation of the measures on land, including land survey, reclassification of land, reissue of land use certificates, and land confiscation dispute resolution.
- c. **Implementation Subcommittee on Privatization Issue.** The subcommittee will address issues related to policy options for privatization of some of the functions currently carried out by MOALI, including agricultural mechanization stations and seed multiplication stations.

- d. **Implementation Subcommittee on Prioritized Value Chain Programs.** The subcommittee will address issues related to the implementation of value chain programs. Given the multi-dimensional nature of value chain, the implementation of value chain programs will cut across various departments.
- e. **Implementation Subcommittee on Farmer Organizations.** This subcommittee will address issues related to the promotion of farmer organizations from the village to the national level, and the implications for the departments of MOALI involved in extension, rural development, and cooperatives.

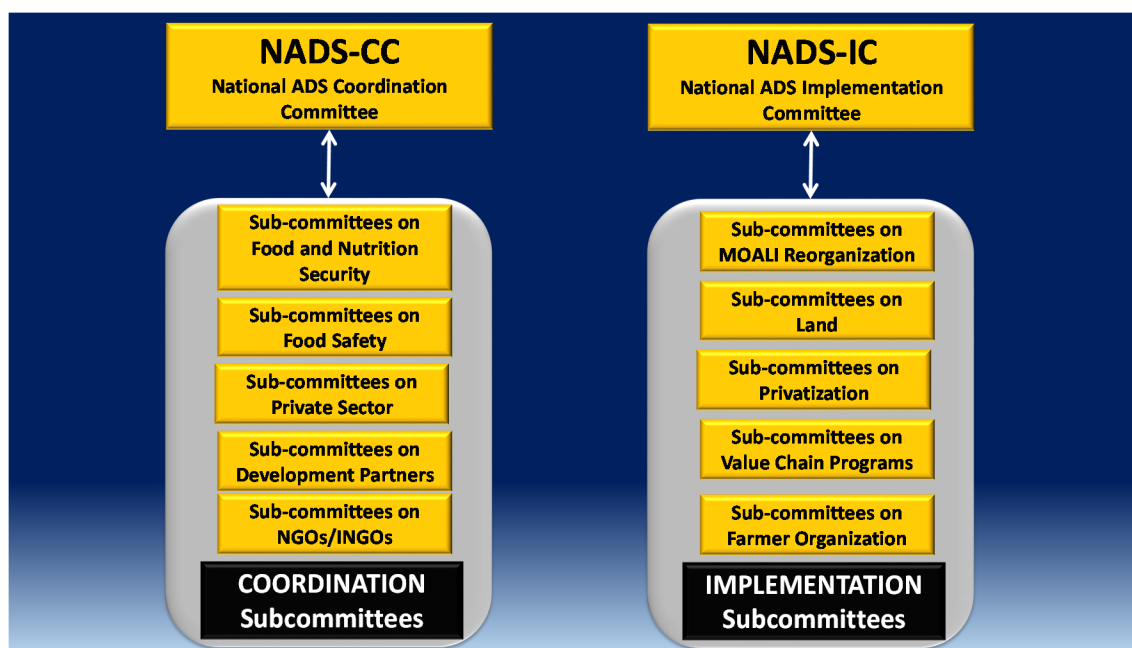


Figure 7 Committees and Sub-committees for Coordination and Implementation

11.1.3. The ADS Implementation Support Unit (ADSISU)

237. 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.

238. 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.

239. The unit will be established at MOALI and will support the ADS implementation and capacity building of related stakeholders and the agencies involved in ADS implementation and coordination.

240. Functions of the ADSISU include:

- i. Provide capacity building in policy analysis and policy monitoring and integrated planning to relevant implementation agencies;
- ii. Support to development of a system and database for ADS monitoring;

- iii. Support formulation and amendment of policies and regulations for implementation of the ADS;
- iv. Support formulation of integrated periodic plans (annual and 5-year plans, and revisions /updates of ADS plans);
- v. Support NADSCC and its subcommittee with analytical capacity and logistics;
- vi. Support monitoring of the ADS implementation and institutionalization, including monitoring of related policies;
- vii. Facilitate implementation of national programs such as the ADS Value Chain programs through advisory services to the Program Managers;
- viii. Support harmonization of Sector Policies with international commitments and guidelines;
- ix. Collect and analyze data of strategic importance to ADS implementation as needed and in synergy with existing data collection systems;
- x. Coordinate development partner investments and programs to be in line with implementation of the ADS.

11.2. Key Results by Strategic Pillar

241. The implementation of the Agricultural Development Strategy involves a complex set of activities under each pillar. In order to guide the implementation and focus the effort of implementation agencies and coordination committees, it might be expedient to identify Key Results under each strategic pillar.

242. **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.

243. The following table identifies the Key Results.

Table 10 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	Effective integrated planning based on participatory processes both at the union and at the state/region level.	Agricultural research - Improved research system for crop, livestock, and fisheries	Increased competitiveness in 7 prioritized value chains
2	Timely and Effective Monitoring and Evaluation processes	Agricultural extension – Transformed agricultural extension system delivering improved (crop, livestock, fisheries) products and technology for adoption and adaptation	Enhanced food quality and safety
3	Strengthened farmers’ land rights and enhanced capacity	Irrigation and water use - More efficient and	Expanded and improved rural road network integrated with

of institutions involved in agricultural land.

sustainable irrigation and water use systems

national transport plants

11.3. Responsibilities of Different Agencies

244. The ADS matrix reported in ANNEX 1¹⁵ indicates the actors responsible (primary and additional) for each activity. This will facilitate the monitoring of the ADS and identify bottlenecks and solutions during implementation.

¹⁵ ANNEX 1 only reports the agency for primary responsibility. In several cases, other agencies share responsibilities. These should be indicated clearly in the next draft of the ADS.

12. INVESTMENT PLAN

12.1. Introduction

245. The Agricultural Development Strategy (ADS) provides the vision, the framework and the long-term development goals and strategic priorities of the Union of the Republic of Myanmar for the sustainable development of the agricultural sector during the medium to long term period up to 2030. The assurance of food and nutrition security as well as livelihood and income enhancement are key objectives of the ADS. The Investment Plan (IP) has been prepared as integral component of the Agricultural Development Strategy (ADS). It is for the five-year period 2017/18 to 2021/22. The Investment Plan is based on the ADS's vision, objectives, outcomes, outputs and suggested activities, the ADS's recommendations for policy formulation and action, and the ADS's suggestions for the coordination, implementation, and other medium and long term considerations.

246. The ADS and its constituent Investment Plan were developed through a process of consultation with a wide range of stakeholders. The Draft 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 preparation of the ADS also included unstructured and plenary consultations with the staff of the various Departments of MOALI and with other stakeholders such as farmers, private sector operators, industry and trade groups, development partners, civil society organizations and the Agriculture and Food Sector Working Group.

247. Based on these reviews, analyses and consultations, the ADS undertakes and presents an evaluation of the socio-economic, agro-technological, agro-ecological, institutional and other conditions in and around the Myanmar agriculture sector. It then uses the programme approach to structure the various measures and interventions that are required to achieve the goals, objectives and vision of the sector through several specific outcomes, outputs and activities. This programme approach also has the distinct advantage of facilitating a relatively easy clarification of implementation responsibilities among the respective MOALI departments, including annual work plans and budgetary allocations. The programme approach also facilitates cooperative division of responsibilities among the Government, farmers, the private sector and development partners for funding and implementation of various recommended planned programmes, projects and activities under the respective outputs, outcomes and Pillars of the ADS, as well as those that will be identified and planned at later stages.

248. This Section contains a summary presentation of the Investment Plan 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, a statement of priorities of the Investment Plan, and then an outline of the Investment Plan for the ADS for the period 2017/18 – 2021/22.

249. Detailed data and budget calculations of investment requirements are presented in Annex 2 for each the Pillars of the ADS and their respective outcomes, outputs and activities. The present version of the Investment Plan is a draft. Even after it is approved it will continue to be a living document that is bound to see several modifications as stakeholders respond to it. The Department of Planning in MOALI will maintain and update the set of Excel calculation tables which are the basis for Annex 2 as need arises.

If any changes are made to the Investment Plan, they should first be entered in DOP's set Excel calculation tables.

12.2. Current Budgets and Plans

250. This sections reviews the existing allocation of public expenditures in the current budget for 2016-2017, the allocation over the past five years (2011-12 to 2015-16), and in the five-year plan 2016-17 to 2020-21.

12.2.1. Existing Budget 2016-2017

251. Table 11 outlines the Revised Budget for MOALI for Fiscal Year 2016/2017. This also is the first full-year budget of the consolidated Ministry of Agriculture, Livestock and Irrigation. The 2016/2017 Revised Budget has a Capital (that is, Investment) component of Kyat 666,713 million (around US\$ 510 million). In comparison, the budget for the first year of the ADS Investment Plan would be Ky 450,885 million (about US\$ 346 million), as shown in a later section.

252. Around 91% of MOALI capital budget for 2016/2017 is allocated to three Departments: Department of Rural Development (DRD) – 48%; Department of Irrigation and Water Management (DIWM) – 32%; Department of Agricultural Mechanization (AMD)– 11%; remaining Departments – 9%. The overwhelming majority of the DRD and DIWM allocations are devoted to infrastructure building and acquisition that are funded by multilateral and bilateral lending institutions – respectively roads, bridges, electrification and water for DRD, irrigation structures for DIWM and acquisition of machinery for AMD. Only around Ky 60,000 million (about US\$ 45 million is devoted to research, extension, specific production programmes, education, planning, coordination, land issues, statistics and information, and other matters under MOALI.

Table 11 Budget of MOALI Year 2016 - 2017

Departments/Organization	Revised Capital Budget Estimation (14.10.2016)		Revised Recurrent Budget Estimation (14.10.2016)		Revised Total Budget - Capital and Recurrent (14.10.2016)	
	Amount (Kyat mil)	% of Total	Amount (Kyat mil)	% of Total	Amount (Kyat mil)	% of Total
1 Minister's Office	284	0.0	1,552	0.4	1,836	0.2
2 Department of Irrigation and Water resources	212,561	31.9	121,337	34.4	333,898	32.8
3 Department of Land Management and Statistics	1,343	0.2	30,795	8.7	32,138	3.2
4 Agriculture Mechanization Department	71,046	10.7	41,323	11.7	112,369	11.0
5 Department of Planning	212	0.0	552	0.2	764	0.1
6 Yezin Agricultural University	2,944	0.4	2,744	0.8	5,688	0.6
7 Department of Agricultural Research	4,533	0.7	5,540	1.6	10,072	1.0
8 Department of Agriculture	43,886	6.6	39,876	11.3	83,761	8.2

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9	Department of Fishery	1,660	0.2	2,852	0.8	4,512	0.4
10	Livestock Breeding and Veterinary Department	6,122	0.9	12,590	3.6	18,712	1.8
11	University of Veterinary Science	1,082	0.2	1,023	0.3	2,105	0.2
12	Department of Rural Development	320,299	48.0	23,140	6.6	343,440	33.7
13	Department of Cooperatives	503	0.1	3,474	1.0	3,977	0.4
14	Small-Scale Industry Department	220	0.0	1,105	0.3	1,325	0.1
15	Myanma Agriculture Development Bank	20	0.0	64,408	18.3	64,428	6.3
	Total	666,713	100.0	352,312	100.0	1,019,024	100.0

Source: MOALI

253. In general, the allocation of budget funds is made to itemized lines that are not necessarily linked to pre-stated outputs, outcomes or programmes. There is little evidence of systematic or rigorous ex-ante or ex-post evaluation of investment and monitoring and evaluation of implementation and results.

12.2.2. Medium Term Outlook Based on Current Level and Structures of MOALI's Budget

254. Just prior to the commencement of the ADS preparation exercise, each individual Department in MOALI had been requested to prepare a "Five Years Development Plan for the Period 2016/2017 – 2021/2022". This would have been useful for looking at a scenario of expected MOALI investments without the adoption of the ADS and its Investment Plan. However, only three Departments have so far been able to make such plans available. Partly due to on-going interaction with the ADS preparation exercise, some of the plans developed so far look like they have been influenced by ADS. As such, they may not present a viable alternative scenario to the ADS Investment Plan. It was, therefore, decided to simulate two scenarios of growth of MOALI's capital expenditure in the medium period (2017/2018 – 2021/2011) that do not take the ADS into account:

- Scenario 1 assumes that there no changes in internal structure of budget allocations from the 2017/2018 Fiscal Year, and allows each Department to expand its capital budgets by a factor of 2% per year.
- Scenario 2 assumes that will be some modest changes in the internal structure of MOALI's budget in the medium term. Under this scenario, the capital budgets of the three infrastructure-intensive Departments decline at the following annual rates: DRD (-0.7%); AMD (-0.8%); DIWM (-0.5%); at the same time the capital budgets of all other Departments increase by factor of 2% per year.

255. Under Scenario 1 (Table 12), the allocation capital/investment budget for the respective fiscal years would increase from Ky 680,047 million (about US\$518) in 2017/2018 to Ky 736,105 million (about US\$ 560 million) in 2021/2022. The average fiscal year budget for 2017/2018 – 2021 – 2022 would be about Ky 707,800 (about US\$ 540 million). The total capita/investment budget of MOALI for 2017/208 – 2021/2022 would amount to Ky 3,538,990 (about US\$ 2,695 million). Under this scenario, there would be negligible changes in the other Departments' respective shares of MOALI's capital budget.

Table 12 Scenario 1: Projected Capital Expenditure of MOALI (2017/18 - 2021/22)

DEPARTMENT		Projected Capital Expenditure - Kyat million					Total	As % of Whole Investment Plan
		2017-18	2018-19	2019-20	2020-21	2021-22		
1	Minister's Office	290	295	301	307	313	1,507	0.0
2	Department of Irrigation and Water resources	216,812	221,148	225,571	230,083	234,685	1,128,300	31.9
3	Department of Land Management and Statistics	1,369	1,397	1,425	1,453	1,482	7,126	0.2
4	Agriculture Mechanization Department	72,467	73,917	75,395	76,903	78,441	377,123	10.7
5	Department of Planning	216	220	225	229	234	1,123	0.0
6	Yezin Agricultural University	3,003	3,063	3,124	3,187	3,251	15,628	0.4
7	Department of Agricultural Research	4,623	4,716	4,810	4,906	5,004	24,060	0.7
8	Department of Agriculture	44,763	45,658	46,572	47,503	48,453	232,950	6.6
9	Department of Fishery	1,693	1,727	1,761	1,797	1,833	8,810	0.2
10	Livestock Breeding and Veterinary Department	6,244	6,369	6,496	6,626	6,759	32,495	0.9
11	University of Veterinary Science	1,104	1,126	1,148	1,171	1,195	5,744	0.2
12	Department of Rural Development	326,705	333,240	339,904	346,702	353,636	1,700,188	48.0
13	Department of Cooperatives	513	523	533	544	555	2,668	0.1
14	Small-Scale Industry Department	224	228	233	238	242	1,165	0.0
15	Myanmar Agriculture Development Bank	20	21	21	22	22	106	0.0

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Total	680,047	693,648	707,521	721,671	736,105	3,538,991	100.0
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Note. Scenario 1 is Using 2016/2027 Base Year and Growth Rate of 2% per Year for All Departments

256. Under Scenario 2 (Table 13), capital/investment budget for the individual would decline from Ky 629,236 million (about US\$ 479 million) in 2017/2018 to Ky 503,472 million (about US\$ 560 million) in 2021/2022. The total capital or investment budget of MOLAI for 2017/2018 to 2021/2022 would be Ky 2,820,620 million (about US\$ 2,150 million). This would translate into an average capital/investment expenditure of around Ky 564,120 (about US\$ 429 million) per year. Under this scenario, there would be some minor, but not remarkable changes in the relative share of the capital/investment budget of the various Departments: for example, DRD – 2% decline to 45.9%; DIWM – 0.5% decline to 32.4%; AMD – 1% decline to 9.9%; DOA – >% increase to 8.3%; DAR – 0.5% increase to 1.2%; DOL – 0.3% increase to 1.2%.

Table 13 – Scenario 2: Projected Allocation of MOALI Revised Capital Budget (2017/2018 – 2021-2022)

DEPARTMENT		Projected Capital Expenditure - Kyat million					Total	As % of Whole Investment Plan
		2017-18	2018-19	2019-20	2020-21	2021-22		
1	Minister's Office	290	295	301	307	313	1,507	0.1
2	Department of Irrigation and Water resources	201,933	191,836	182,244	173,132	164,476	913,622	32.4
3	Department of Land Management and Statistics	1,369	1,397	1,425	1,453	1,482	7,126	0.3
4	Agriculture Mechanization Department	65,363	60,134	55,323	50,897	46,825	278,542	9.9
5	Department of Planning	216	220	225	229	234	1,123	0.0
6	Yezin Agricultural University	3,003	3,063	3,124	3,187	3,251	15,628	0.6
7	Department of Agricultural Research	4,623	4,716	4,810	4,906	5,004	24,060	0.9
8	Department of Agriculture	44,763	45,658	46,572	47,503	48,453	232,950	8.3
9	Department of Fishery	1,693	1,727	1,761	1,797	1,833	8,810	0.3
10	Livestock Breeding and Veterinary Department	6,244	6,369	6,496	6,626	6,759	32,495	1.2
11	University of Veterinary Science	1,104	1,126	1,148	1,171	1,195	5,744	0.2
12	Department of Rural Development	297,878	277,027	257,635	239,601	222,829	1,294,970	45.9
13	Department of Cooperatives	513	523	533	544	555	2,668	0.1
14	Small-Scale Industry Department	224	228	233	238	242	1,165	0.0
15	Myanmar Agriculture Development Bank	20	21	21	22	22	106	0.0
Total		629,236	594,340	561,853	531,613	503,472	2,820,514	100.0

Note: Growth rate: DRD -0.7%; AMD -0.8%; DIWM -0.5%; Rest +0.2%; Using 2016/2027 Base Year and varying growth rates for selected Departments

12.3. Five Year Investment Plan for the ADS

257. The investment plan to support the ADS has been formulated considering the currently on-going planning and budget allocation initiatives of MOALI. To ensure that the proposed measures of the ADS are implemented, the Investment Plan proposes adjustments within the policy framework, institutional setting, administrative structuring, and professional and technical capabilities of the sector. The ADS entailed consultations with all the Departments to understand their views and recommendations related to the resources needed for implementing the activities planned in the ADS. The period of the preparation

of the Investment Plan proved to be the most intensive part of the whole ADS preparation exercise. The recommendations from these consultations are summarized in the Pillar-wise Investment Plan provided in Table 14, and in the Department-wise Investment Plan allocations provided in Table 15.

258. There are at least two major differences between the ADS Investment Plan and the medium-term scenarios outlined in Section 12.2. Firstly, it is apparent that under the ADS Investment Plan, there is a major re-structuring of the sub-sectoral or Departmental share or composition of the investments. In the ADS Investment Plan, for the 2017/2018 and 2021/2022 fiscal years, the respective shares of the funding by two infrastructure-intensive Departments (i.e. DRD and DIWM) are reduced as follows: DRD – from 48% to 26%; and DWIM – from 32% to 17%. This restructuring has been matched by increases in the relative shares of the annual investments of the non-infrastructure oriented Departments. For example, for 2017/2018 and 2021/2022 fiscal years: DOA – from 7% to 13%; DOL - from 1% to 8%; DAR - from 0.7% to 3%; DALM, DOF and DOP – from almost negligible to about 2% each. (Table 15).

Table 14 Summary of ADS Investment Plan by Pillar

Outcomes	Investment - Kyat million						Total	Percentage
	2017-18	2018-19	2019-20	2020-21	2021-22			
OUTCOME 1 - Enhanced reputation of MOALI capacity of government to design, formulate and implement policies and plans and discharge functions.	21,892	27,839	31,152	28,467	26,582	135,932	5.9%	
OUTCOME 2 - Increased agricultural productivity and income of smallholder farmers	166,189	284,127	267,413	262,285	261,874	1,241,886	54.2%	
OUTCOME 3 - Enhanced market linkages and competitiveness of Myanmar farmers and agro-enterprises	262,804	167,379	177,302	177,277	127,847	912,610	39.8%	
Total - Investment Plan	450,885	479,345	475,866	468,029	416,303	2,290,428	100.0%	

Table 15 Investment Plan 2017/2018 – 2021/2022 – Breakdown by Department

Department	2017-18	2018-19	2019-20	2020-21	2021-22	Total	Percent
Minister's Office	530	761	599	610	660	3,160	0%

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Department	2017-18	2018-19	2019-20	2020-21	2021-22	Total	Percent
Department of Irrigation and Water resources	35,300	61,200	92,350	102,600	107,850	399,300	17%
Department of Land Management and Statistics	4,355	8,400	11,820	9,370	7,310	41,255	2%
Agriculture Mechanization Department	50,630	91,729	38,235	33,469	32,579	246,640	11%
Department of Planning	8,846	15,870	15,375	13,589	12,649	66,209	3%
Yezin Agricultural University	750	1,865	1,750	1,500	500	6,365	0%
Department of Agricultural Research	7,325	14,530	15,905	11,775	8,925	58,460	3%
Department of Agriculture	40,525	59,710	65,121	72,234	68,718	306,307	13%
Department of Fishery	5,450	12,550	15,500	10,400	7,200	51,100	2%
Livestock Breeding and Veterinary Department	27,827	46,086	43,112	34,277	38,937	190,239	8%
University of Veterinary Science	-	600	-	-	-	600	0%
Department of Rural Development	203,480	92,110	95,848	98,022	101,573	591,033	26%
Department of Cooperatives	62,141	62,306	62,461	62,626	14,343	263,877	12%
Small-Scale Industry Department	1,707	6,309	9,511	9,512	8,014	35,053	2%
Myanmar Agriculture Development Bank	2,095	5,420	8,355	8,095	7,095	31,060	1%
TOTAL	450,960	479,445	475,941	468,079	416,353	2,290,658	100%

259. The second set of differences between the ADS Investment Plan and the two medium-term scenarios outlined in Section 12.2 is in terms of the size of the annual and the total 5-years investment (Table 16). In this regard, at Ky 2,108,911, the Investment Plan's total cost is less than those of Scenarios 1 and 2 by 35% and 19% respectively. This is not unexpected for several reasons. Under the ADS, construction in the irrigation reservoir areas has been restricted to only rehabilitation of the extensively and severely debilitated existing systems. In addition, there is no allowance made for the construction of new dams and irrigation works. Also, during the ADS Investment Plan period (2017/2028 – 2021-2022)

DIWM aims to undertake major irrigation rehabilitation works in only one-half (that is 40,000 acres) of the total command area that needs rehabilitation.

260. With regard to rural development infrastructure, DRD has prioritized and scaled back on the amount of rural roads and bridges, electrification, water and other projects that it will undertake during the ADS Investment Plan period. Another contribution to the streamlining of the Investment Plan has come from the undertaking by AMD to cut-back on and start the process of privatization of programme that are rationalized for privatization. At the moment, the expected cut-back by AMD has not materialized in terms of the Department's share of the ADS Investment Plan. This is because for a lot of the ADS Investment Plan period, AMD will still be dealing with the loans from Japan and India for financing of machinery imports and service provision. This especially so in Fiscal Year 2017/2018 and 2018/2019 when the budget figures associated with these loans are really huge. However, it is expected that by the end of the Plan period, AMD will have restructured enough show substantial decline of its share of the MOALI budget in subsequent planning periods.

261. There is a very significant increase in the share of the Department of Cooperatives (DOC) in the ADS Investment Plan. It rises from an almost negligible level in the 2017/2018 capital budget to 12% of the Investment Plan. This is due to the two loans from Japan and Korea, to the cooperatives sub-sector that are going to be implemented during ADS Investment Plan period. About 20% of the proceeds of those loans will be devoted to agriculture sector activities. This will mainly be to support funding of activities under Output 1.5 - Strong farmer and small-scale industry institutions, including associations, cooperatives and federations, and Output 3.13 - Improved access to a range of financial services for farmers and agribusiness enterprises.

Table 16 Comparison of two Investment Scenarios with ADS Investment Plan

DEPARTMENT	Investment - Kyat million					
	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Scenario 1 – Increasing 2017/2018 MOALI Departments' capital budgets by uniform rate of 2% per year	680,067	693,669	707,542	721,693	736,127	3,539,097
Scenario 2 -- Increasing 2017/2018 MOALI Departments' capital budgets by varying negative and positive amounts	629,236	594,340	561,853	531,613	503,472	2,820,514
Investment Plan	450,960	479,445	475,941	468,079	416,353	2,290,658

12.4. Funding Needs and Sources

262. It is anticipated that 34% of the Investment Plan (totaling around Ky 772,000 million or US\$ 593 million, at an average of US\$ 118 million per year) will be funded through budgetary provisions of the GORUM. The private sector will contribute about 3%. Some of this private sector contribution will be in-kind and some by way of public-private-partnerships that were anticipated during plan preparation. Farmers and farmers' organizations are expected to contribute around 2% of the Investment Plan outlay. Virtually all of farmers' contribution will be through in-kind outlays. The rest of the funding for the ADS Investment Plan (around Ky 1,405,750 million or US\$ 1,081 million, at an average of \$216 million per year) is expected to be from support provided by development partners.

263. The GORUM is committed to undertaking the budgetary outlay that it has outlined for itself in the ADS Investment Plan, while the private sector and farmer contributions are both expected to for activities that are fully funded and operational. The investment gap for the ADS Investment Plan is, hence, identified in terms of the difference between investments that are needed from the development partners (US\$ 1,081 million) and the estimated level of existing commitment by development partners to assist the Myanmar agriculture sector over the coming five years. This level of existing commitment by the development partners has been estimated based on the World Bank's calculation of anticipated development partner funding for the agricultural sector between 2016 – 2022 (Table 2). The latter has been estimated by the World Bank at around US\$ 500 million or Ky 658,500 million. Assuming that this level of commitment will be the same over the 2017/2028 – 2021/2022 period, the ADS Investment Plan has an estimated funding gap of around US\$ 581 million.

Table 17 ADS Investment Plan – Sources of Funding

Outcomes	Source of Funding				
	Govt	Private	Farmers	Donors	Total
OUTCOME 1 - Enhanced reputation of MOALI capacity of government to design, formulate and implement policies and plans and discharge functions.	58,260	500	11,930	59,882	135,812
OUTCOME 2 - Increased agricultural productivity and income of smallholder farmers	453,597	51,529	29,370	707,390	1,241,886
OUTCOME 3 - Enhanced market linkages and competitiveness of Myanmar farmers and agro-enterprises	259,718	13,075	1,340	638,478	912,611

Total - Investment Plan	771,575	65,104	42,640	1,405,750	2,290,308
	34%	3%	2%	61%	100%

12.5. Priorities for the ADS Investment Plan

264. The ADS is a major acknowledgement that agriculture remains the key priority sector in the economic growth, poverty reduction and food and nutrition security agenda of the Government of the Republic of the Union of the Republic of Myanmar (GORUM). The Investment Plan recognizes that both GORUM and its development partners have limited financial resources, and that these resources must be deployed in ways that create the most optimal impact in terms of the vision and goals and objectives of the ADS and Agricultural Policy.

265. The majority of investments (52%) will be made under Pillar 2 – Productivity. The main aim of prioritizing Pillar 2 in this way is to maximize poverty reduction and the enhancement food and nutrition security. These are primary requirements of GORUM from for investments that are made the agriculture sector. In addition, Pillar 2 is comparatively well-funded, so that farmers are given the tools to adapt to an ecological and biological environment that is, due to climate change and other factors, changing at a fast rate and becoming more challenging to live in. Good results from Pillar 2 are also required in order to be able to take advantage of the fundamental development in the markets that are anticipated to be attained under Pillar 3.

266. Pillar 3, then, receives next largest share of investments (42%). The Pillar is expected to play an important role in the move towards the development of the concept and practice of value-addition and of the development of commercial production in Myanmar. The majority of Pillar 3’s programmes and their impact depend on the productivity and production increases that will be stimulated by Pillar 2 and facilitated by Pillar 1.

267. Pillar 1 has the smallest percentage Investment Plan’s resource allocations (6%). In spite of its relatively minuscule size, Pillar 1 is recognized as playing a catalytical role in the ADS. Pillar 1 recognizes that a strong policy, institutional and administrative environment is critical for the successful undertaking of primary production as well secondary and tertiary activities in the agriculture sector. Without funding Pillar 1’s modest requirements well and implementing its activities to the full, there would be little chance of achieving the anticipated outputs and outcomes of Pillars 1 and 2.

268. Going forward, the following priorities 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 in particular and in the country as whole.
- 2) Balance investment in various agro-ecological zones and geographical regions of the country. (See Box 1 for a further explanation of this priority.)

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- 3) Ensure that investments promote social inclusion, especially the upliftment women in particular and of smallholders in general.
- 4) Promote and support private sector initiatives by supporting trade improving policies, value addition and support to public private partnerships.

Pillar 1:

- 1) Assure sufficient budget for addressing land issues.
- 2) Dedicate resources to policy, M&E, coordination, and participation.
- 3) Food and nutrition interventions.

Pillar 2:

- 1) Restructure agricultural mechanization to rationalize public and private sector activities, including privatization of mechanization stations Increase investment in REE (Research, Extension, Education).
- 2) Rationalize research and extension towards prioritized value chains.
- 3) Assure O&M for irrigation infrastructure.
- 4) Technology creation, adaptation and transfer by investing in research and skills development to respond to both the needs of farmers and the private sector.

Pillar 3:

- 1) Assure sufficient resources for prioritized value chains.
- 2) Establish innovation, competition, and matching grants funds for SME.
- 3) Ensure sufficient funds to quality and safety assurance systems.
- 4) Support restoration, preservation and enhancement of ecosystems related to agriculture.
- 5) Assure support for operation and management of rural road and other infrastructure.

Box 1 - Agro-ecological and Regional Balance Criteria

The Investment Plan will try to balance investment in different regions/states and in different agro-ecological zones.

In terms of agro-ecological zones, **Error! Reference source not found.** shows the distribution of the most important production zones in the country. This gives an indication of where most of the value chain investment will take places, if the processing and logistics is also organized around these production zones.

As already mentioned in section 10.3.10, the four economic corridors – north-south, east-west, northeast-southwest and Yangon-Myawaddy – are the foundation of the industrial policy. Special Agro-industrial Economic Zones (SAIZ) infrastructure will be developed in each of these economic corridors. The investment related to competitiveness, particularly those in rural roads, logistics, and value chain will be developed to maximize the linkages with the industrial policy.

		Agroecological Zones				
No.	Value Chain	Hilly	CDZ	Delta	Coastal	Yangon-Bago
1	Rice		Yellow	Red		Orange
2	Pulses		Red	Yellow		Orange
3	Vegetables	Orange	Red	Yellow		
4	Sugarcane	Orange	Red			
5	Oilseeds		Red			
6	Ruminants (cattle, buffalo, goats)	Orange	Red			Yellow
7	Aquaculture			Orange	Red	Yellow
Most Important in Production		Red				
Second Most Important		Orange				
Third Most Important		Yellow				

Figure 8 Agro-ecological Zones and Prioritized Value Chains

13. RISKS AND MITIGATION

#	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 losses and damage	Output 2.15 under Pillar 2 is focused on improving resilience of farmers and communities to climate change and disasters.	Medium
2.	Pests and diseases	Output 2.6 provides improve plant disease and pest management; Output 2.9 addresses animal health issues; Output 2.12 introduces good practices in crops and animal husbandry.	Low
3.	Disharmony between regional and national plans due to lack of coordination between different levels of government	ADS introduces National Coordination Committee and State/Region/Township Coordination Committee to minimize the disharmony and achieve improved coordinated plans.	Medium
4.	Disruptions from informal border trade causing excessive price volatility	Output 3.14 provides market information and intelligence that will help to identify market demand trends. Output 3.11 on prioritized value chain 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	Output 3.12 on food quality and safety and Output 3.4 on quality system will strengthen inspection systems.	Low
6.	Persistence of land grabbing and little progress in compensation for confiscated lands	Output 1.6 on land rights is expected to face head on land grabbing issues.	High

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7.	Corruption	Several measures under monitoring and evaluation (Output 1.3), industry associations (Output 1.5), participation of civil society (Output 1.8) promotes transparency and accountability.	Medium
8.	Lack of funding for O&M	Output 2.5 on water and irrigation and Output 3.5 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 Output 1.6 to minimize this risk	High

14. MONITORING AND EVALUATION

14.1. Introduction

269. The ADS framework includes a Vision, Outcomes, Outputs, and Activities. Progress towards the vision can be monitored by considering the Vision targets and indicators presented in Table 3. Similarly, targets and indicators for the Outcomes are presented in Table 5. Several indicators for the Outputs will be presented in this chapters.

270. Monitoring and evaluation is one of the main outputs of the Governance component (Output 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.

14.2. Monitoring and Evaluation of the ADS

271. 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 ADS Implementation Support Unit.

272. 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.

14.3. Monitoring Vision, Outcomes, and Outputs

273. The ADS Vision and its targets are reported in Table 3, the **impacts** and its indicators are reported in Table 4; targets for the **outcomes** are reported in **Table 5**, and preliminary indicators for the **outputs** are provided in the following **Table 18**.

Table 18 Output Indicators for Outcome 1 on Improved Governance

Output	Indicators	Baseline	Target
1.1. Effective integrated planning based on participatory processes both at the union and at the state/region level.	<ul style="list-style-type: none"> Annual plans 5-year plans available 	<ul style="list-style-type: none"> No plan online 	<ul style="list-style-type: none"> Union and State/Regional Plans available online
1.2. Improved capacity for policy formulation and analysis	<ul style="list-style-type: none"> Policy division operational Policy reviews Independent ADS policy review 	<ul style="list-style-type: none"> No policy division No policy review No ADS Policy review 	<ul style="list-style-type: none"> Policy division established At least 3 policy reviews per year 1 independent ADS policy review per year
1.3. Timely and Effective	<ul style="list-style-type: none"> M&E reports 	<ul style="list-style-type: none"> No M&E reports 	<ul style="list-style-type: none"> Quarterly M&E

Output	Indicators	Baseline	Target
Monitoring and Evaluation processes			Reports available online in Myanmar and English language
1.4. Sound statistical systems for evidence based decisions	•	•	•
1.5. Strong farmer and industry associations and federations	•	•	•
1.6. Strengthened farmers' land rights and enhanced capacity of institutions involved in agricultural land.	•	•	•
1.7. Enhanced capacity of key institutions involved in ADS coordination and implementation	•	•	•
1.8. Mechanisms established for participation of civil society in the planning, implementation, and monitoring of the ADS	•	•	•
1.9. Improved food and nutrition security of most disadvantaged groups	•	•	•
1.10. A Restructuring of MOALI to better integrate existing units and become more responsive to farmers, enterprises, and civil society.	•	•	•

Table 19 Output Indicators for Outcome 2 on Productivity

Output	Indicators	Baseline	Target
2.1. Agricultural research - Improved research system for crop, livestock, and fisheries			
2.2. Agricultural extension – Transformed agricultural extension system delivering improved (crop, livestock, fisheries) products and technology for adoption and			

Output	Indicators	Baseline	Target
adaptation			
2.3. Research-extension coordination - Improved research-extension coordination systems with participation of farmers and private sectors			
2.4. 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.			
2.5. Irrigation and water use - More efficient and sustainable irrigation and water use systems			
2.6. Crop inputs - Increased use of improved farm production inputs and technologies by crop growers			
2.7. Mechanization - Increased application of appropriate mechanisation in the agricultural value chain			
2.8. Animal breeding - More productive and profitable genetic composition of animals			
2.9. Animal health - More healthy and productive animals			
2.10. Animal nutrition – Better fed and productive animals			
2.11. Small scale livestock and dairy production - Strengthened capacity of small-scale animal producers			
2.12. Apiculture – Expansion and increased importance of apiculture (bee honey) industry as			

Output	Indicators	Baseline	Target
primary and additional source of income generation for small-scale producers			
2.13. Fisheries and aquaculture inputs and services - Maximum output and profit from fishing and aquaculture industries using sustainable practices			
2.14. Sustainable Farming, Good Agricultural Practices (GAP), Good Veterinary Husbandry Practices (GVAHP) are established and adopted			
2.15. Improved Resilience of Farmers to Climate Change and Disasters			

Table 20 Output Indicators for Outcome 3 on Competitiveness

Output	Indicators	Baseline	Target
3.1. Improved business environment along the supply chain.			
3.2. Improved investment regulations for agrifood investors.			
3.3. Protected intellectual property rights for the agricultural and food sector.			
3.4. Developed a reliable quality system that will help farmers and food processors to get higher prices for higher quality goods, incentivizing quality upgrading.			
3.5. Enhanced institutional framework for planning and implementation of rural development programmes			
3.6. Rural communities			

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Output	Indicators	Baseline	Target
empowered and enabled to initiate locally-generated development initiatives			
3.7. Expanded and improved rural road network integrated with national transport plans.			
3.8. Improved access to rural electrification and renewable energies			
3.9. Access to potable water in rural areas			
3.10. Market and logistics infrastructure developed and managed			
3.11. Increased competitiveness in prioritized agricultural value chains			
3.12. Enhanced food quality and safety			
3.13. Improved access to a range of financial services for farmers and agribusiness enterprises			
3.14. Improved access to market information and market intelligence			
3.15. Growth of small and medium agro-enterprises			
3.16. Facilitated agrifood Trade			
3.17. Growth of food and agricultural products exports			

15. REFERENCES

ANNEX 1 MATRIX OF RESPONSIBILITIES

OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
OUTCOME 1 - Enhanced reputation of MOALI capacity of government to design, formulate and implement policies and plans and discharge functions.		135,812
1.1 Effective integrated planning based on participatory processes both at the union and at the state/region level.		3,699
1.1.1 Ensure integration of long-term plans with annual workplans and budgets	Department of Planning	14
1.1.2 Introduce participatory planning methodologies during preparation of plans	Department of Planning	120
1.1.3 Ensure integration of state/region and union plans	Department of Planning	180
1.1.4 Monitor plan implementation regularly	Department of Planning	135
1.1.5 Evaluate and make recommendations on establishment and functioning of ADS Coordination mechanisms	Department of Planning	180
1.1.6 Implement e-Governance system	Minister's Office	2,250
1.1.7 Make provisions for Minister level meetings with ASEAN countries and development partners (MOALI 2 #6)	Department of Planning	100
1.1.8 Cooperation, coordination, negotiation with international loan/grant/grant assistance projects of MOALI (MOALI 1.1.3 #5)	Department of Planning	460
1.1.9 Make provisions for outfit and travel for international training and meeting (MOALI 2 #6)	Department of Planning	260
1.2 Improved capacity for policy formulation and analysis		4,650
1.2.1 Establish and operate Policy Unit/Division under Department of Planning/MOAL	Department of Planning	1,400
1.2.2 Conduct regular independent policy reviews, with immediate priority (during first 2 years od ADS) on: - Development of Corporate Social Responsibility (CSR) Guidelines and legalising CSR for the agriculture sector; and - Others to be prioritised	Department of Planning	2,600
1.2.3 Prepare and undertake Myanmar smallholder mapping and characterization study, including the landless	Department of Planning	650
1.3 Timely and Effective Monitoring and Evaluation processes		1,060
1.3.1 Establish and develop capacity of Monitoring and Evaluation units at MOALI and State/Region level through provision of manpower, budgetary, amenities and other needs	Department of Planning	475

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
1.3.2 Provide appropriate training for M&E and establish appropriate methodology and system to carry out systematic ADS monitoring and evaluation	Department of Planning	160
1.3.3 Conduct M&E missions, including including field surveys -- jointly with Government and development partners	Department of Planning	425
1.4 Sound statistical systems for evidence based decisions		2,025
1.4.1 Conduct Agricultural, Livestock, and Fisheries Censuses	Department of Land Management and Statistics	1,350
1.4.2 Improve current system of collection of agricultural statistics with the use of ICT and remote sensing	Department of Land Management and Statistics	600
1.4.3 Conduct selected annual surveys on key issues identified by the Policy Division	Department of Land Management and Statistics	75
1.5 Strong farmer and small-scale industry institutions, including associations, cooperatives and federations		59,455
1.5.1 Promote the formation of farmer associations, cooperatives and their federations to empower farmers in marketing and resource use as well as engagement on government policy and regulatory issues	Department of Planning	1,400
1.5.2 Provide capacity building for effective management of farmer organizations and cooperatives, including enabling famers to produce own seeds, fertilizers, undertake truck hauling, block farming and other functions and initiatives	Department of Cooperatives	43,920
1.5.3 Conduct general meetings with farmer organizations and all cooperatives at the state/region and union level	Department of Planning	11,300
1.5.4 Conduct general meetings with small-scale industry associations, and organize general meetings with both farmer and small-scale industry associations and cooperatives	Department of Planning	2,835
		-
1.6 Strengthened farmers' land rights and enhanced capacity of institutions involved in agricultural land.		39,230
1.6.1 Create and support the functioning of a National Land Use Council or equivalent inter-sector institution to take forward the National Land Use Policy process	Department of Land Management and Statistics	3,860
1.6.2 Develop an Umbrella land law and specific land legislation using inclusive, multi-stakeholder public consultation processes	Department of Land Management and Statistics	1,300
1.6.3 Remove regulatory restrictions that condition securing tenure through titling of agricultural land held by smallholders	Department of Land Management and Statistics	-

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
1.6.4 Remove unnecessary restrictive land use conditions and land use conversions on titled land for smallholder farmers better responding to market and climatic change dynamics	Department of Land Management and Statistics	-
1.6.5 Enforce the Vacant, Fallow, and Virgin Land Law in view of a more effective use of already allocated land	Department of Land Management and Statistics	2,620
1.6.6 Gradually update existing cadastral information of landholdings that were already certified	Department of Land Management and Statistics	6,500
1.6.7 Extend the process of systematic tenure securitisation through land titling and possibly other approaches to these landholdings and land systems that were not yet covered by previous efforts	Department of Land Management and Statistics	6,500
1.6.8 Strengthen the capacity of land administration services and their support institutions	Department of Land Management and Statistics	17,000
1.6.9 Develop a clear legal framework and institutional capacity to address land conflicts considering different methods that can be used and possibly interact under one comprehensive system	Department of Land Management and Statistics	260
1.6.10 Develop an Agro-Ecological Zoning for the country based on the principles of Global Agro-Ecological Zones	Department of Land Management and Statistics	650
1.6.11 Conduct a national level Present Land Use and Resources Survey	Department of Land Management and Statistics	260
1.6.12 Adopt interim measures to expediently respond to urgent needs for land reform actions	Department of Land Management and Statistics	280
		-
1.7 Enhanced capacity of key institutions involved in ADS coordination and implementation		370
1.7.1 Establish coordination unit for implementation of the ADS under the Planning Department	Department of Planning	120
1.7.2 Provide TA to the coordination unit	Department of Planning	250
		-
1.8 Mechanisms established for participation of civil society in the planning, implementation, and monitoring of the ADS		

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
		70
1.8.1 Establish and maintain an ADS website both in Myanmar language and English	Minister's Office	60
1.8.2 Establish an ADS Information Desk under the Planning Department both at Union and at State/Region level	Department of Planning	5
1.8.3 Periodic presentation of ADS Monitoring and Evaluation Reports to civil society	Department of Planning	5
		-
1.9 Improved food and nutrition security of most disadvantaged groups		22,753
1.9.1 Design targeted food and nutrition security program	Department of Rural Development	28
1.9.2 Implement targeted food and nutrition security program	Department of Rural Development	22,500
1.9.3 Coordinate with ongoing food and nutrition security and multisector initiatives on nutrition and poverty alleviation	Department of Rural Development	225
		-
1.10 A Restructuring of MOALI to better integrate existing units and become more responsive to farmers, enterprises, and civil society.		2,500
1.10.1 Evaluate alternative options for MOALI restructuring, including moving MADB and YEU outside of the Ministry control, consolidating three Permanent Secretaries into one position, create Under Secretary positions.	Minister's Office	500
1.10.2 Implement the selected restructuring options	Department of Planning	2,000
OUTCOME 2 - Increased agricultural productivity and income of smallholder farmers		1,241,886
2.1 Agricultural research - Improved research system for crop improvement and production technology development		85,690
2.1.1 Establish National Agricultural Research Council (NARC) to coordinate and provide overall guidance to research on crops, livestock, and fisheries	Department of Agricultural Research	260
2.1.2 Develop an Agricultural Research Policy and prepare a Master Plan to establish research priorities and research programs to be undertaken by different organizations involved in agricultural research	Department of Agricultural Research	295
2.1.3 Establish Institute for Policy Studies in Agricultural Rural Development	Department of Agricultural Research	250
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	Department of Agricultural Research	95
2.1.5 Undertake basic and applied biological, chemical and physical research - with emphasis on new and/or improved varieties of crops,		

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
animals, fisheries and other products suitable to various geo-ecological areas of Myanmar		-
- Crop varietal improvement research	Department of Agricultural Research	2,300
- Animal breeds improvement research	Department of Agricultural Research	1,100
- Fisheries and aquaculture varieties research	Department of Agricultural Research	780
- Cropping systems research encompassing biological and physical aspects of ecological, climate change and other resilience challenges and opportunities	Department of Agricultural Research	950
- Soil and water management and utilisation research	Department of Agricultural Research	1,070
- Biotechnological research, including management of plant, animal and other species resources	Department of Agricultural Research	1,000
- Plant protection research including Integrated Pest Management	Department of Agricultural Research	950
2.1.6 Undertake socio-economic research, cost of production and marketing studies by geographical areas, crops, production techniques, and farming systems.	Department of Agricultural Research	3,500
2.1.7 Undertake research on postharvest technology to improve productivity and competitiveness	Department of Agricultural Research	1,300
2.1.8 Establish a system for collating, publishing and sharing and disseminating data and results of research activities including collaboration with private sector	Department of Agricultural Research	70
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.	Department of Agricultural Research	6,500
2.1.10 Build institutional, human, infrastructure (including ICT) and financial capacity of agricultural research services, namely based on the Agriculture Research Plan, including:	Department of Agricultural Research	-
- 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.	Department of Agricultural Research	3,000
- 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	Department of Agricultural Research	33,800
o Livestock Research Service (new)	Livestock Breeding and Veterinary Department	16,900
o Fisheries and Aquaculture Research Service (new)	Department of Fishery	11,400
- Establish a performance assessment system for agricultural research	Department of Agricultural Research	40

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
- Establish a new international agricultural research partnership programme through CGIAR, with a special role for ISNAR (International Service for National Agricultural Research)	Department of Agricultural Research	130
0		-
2.2 Agricultural extension – Transformed agricultural extension system delivering improved (crop, livestock, fisheries, forest) products and technology for adoption and adaptation		50,885
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.	Department of Agriculture	130
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.	Department of Agriculture	105
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.	Department of Agriculture	1,200
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.	Department of Agriculture	12,550
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.	Department of Agriculture	5,000
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.	Department of Agriculture	600
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.	Department of Agriculture	7,000
2.2.8 Strengthen farmer organizations (groups, associations, cooperatives, federations) to become facilitators for change (FUNDING ALLOCATED UNDER PILLAR 1 – OUTPUT 5)	Department of Agriculture	-
2.2.9 Establish information and knowledge system to provide advisory services to farmers:	Department of Agriculture	4,000
§ Address farmers’ and other stakeholders’ demand for information and knowledge through facilitating direct contact with subject matter specialists.	Department of Agriculture	-
§ Prepare and disseminate simple farmer-friendly technical documents, including manuals on crop, livestock, apiculture, fisheries and agri-business enterprises and activities and other tools.	Department of Agriculture	-
§ Promotes and use ICT to interactively link SBS, extension workers and farmers with Knowledge System, demonstrations, updated crop/animal/fisheries husbandry manuals, and advisory services – include research centres, call centres and knowledge centres.	Department of Agriculture	-
2.2.10 Pilot voucher system for extension and advisory services to allow farmers to select extension service providers.	Department of	

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
	Agriculture	13,000
2.2.11. Introduce farmer marketing schools.	Department of Agriculture	1,400
2.2.12. Train field personnel to be sensitized to Gender and Social Inclusion (GESI) and nutrition.	Department of Agriculture	400
2.2.13. Build and strengthen capacity of agricultural, livestock, and fisheries extension services institutions and staff through adequate training (long-term and in-service with competency testing), mobility, connectivity.	Department of Agriculture	5,000
2.2.14. Evaluate extension activities (training, demonstrations, farmer field schools, advisory services) based on feedback from farmers and independent monitoring and evaluation system.	Department of Agriculture	500
0		-
2.3 Research-extension coordination - Improved research-extension coordination systems with participation of farmers and private sectors		1,070
2.3.1 Conduct in-depth study of agricultural, livestock, fisheries and forest extension and research systems with view to improve coordination	Department of Agricultural Research	130
2.3.3 Implement Annual Research - Extension Liaison Meetings for sharing of experience and information and decisions on approaches to crop, livestock, and fisheries development	Department of Agricultural Research	290
2.3.4 Establish farmers' training and adaptive research centers to jointly demonstrate research results and extension recommendations on modernized farming	Department of Agricultural Research	390
2.3.5 Jointly package, promote and disseminate knowledge on improved production technologies for adoption by farmers, including preparation of Commodity Manuals	Department of Agricultural Research	260
0		-
2.4 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.		6,965
2.4.1 Upgrade and rationalize the current Yezin Agriculture University, University of Veterinary Science and Myanmar Marine University to become Yedin National University		-
- Institutional consolidation feasibility study for establishment of Yezin National University to bring together crops, livestock and fisheries elements into one academic institution	University of Veterinary Science	600
- Feasibility study for re-organisation of linkages between Yedin National University and State Agriculture, Livestock and Fisheries Institutes	Yezin Agricultural University	300
- Facilitate transfer of functioning of Yezin National University and constituent units to Min of Education	Yezin Agricultural University	65
- Upgrade existing Departments and establish new Departments		-
2.4.2 Expand the 3-year diploma curriculums of State Agricultural Institutes (SAI) in all states and regions to provide training on all key sectoral disciplines (Get budget from DOA, DOL, DOF)	Yezin Agricultural University	6,000

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
2.4.3 Revive high school level agricultural training and other vocational training institutions, both public and private.		-
0		-
2.5 Irrigation and water use - More efficient and sustainable irrigation and other water use systems		399,300
2.5.1. Develop Regulations for the Myanmar National Water Policy.		-
a. Develop bylaws and regulations to implement the National Water Policy including regulations for rainfed agriculture, drainage, groundwater, WUA, and ISF	Department of Irrigation and Water resources	600
b. Develop bylaws and regulations related to research, studies, demonstration, training, and extension of water use management practices.	Department of Irrigation and Water resources	600
2.5.2. Develop appropriate Measures for Water Management in Rainfed Agriculture		-
a. Conduct research and training on water use management in rainfed systems	Department of Irrigation and Water resources	2,000
b. Conduct demonstrations and extension programs on water use management in rainfed systems	Department of Irrigation and Water resources	4,000
c. Conduct feasibility of drainage investment in rainfed area, particularly in delta areas	Department of Irrigation and Water resources	2,400
d. Carry out drainage work in delta areas	Department of Irrigation and Water resources	70,000
2.5.3. Establish program on groundwater development		-
a. Conduct hydrological studies to establish resources for groundwater utilization	Department of Irrigation and Water resources	6,000
b. Develop program to promote use of sustainable groundwater use	Department of Irrigation and Water resources	35,000
		-
2.5.4 Village Irrigated (VI) dam and Village Embankment systems (VE) of less than 200 acres command areas: Rehabilitate system and modestly expand total command area.	Department of Irrigation and Water resources	11,000
§ Village Irrigated system rehabilitation (XXX acres) and new construction (XXX acres)		-
§ Village Embankment rehabilitation (XXX acres) and new construction (XXX acres)		-
[Work undertaken by Dep't of Irrigation and Water Management (DIWM) of respective State/Region and community, also DRD]		-

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
2.5.5 Small Dam irrigation systems (500 – 1,000 acres): Rehabilitation of XXX acres.	Department of Irrigation and Water resources	13,000
[Work undertaken by Dept of Irrigation and Water Management (DIWM) of respective State/Region and community, also DRD]		-
2.5.6 Medium pond/recharge basins (basins that store water and recharge groundwater, for use by both irrigation and water supply).	Department of Irrigation and Water resources	6,500
§ Pilot construction of schemes, including linkage with surface or non-conventional irrigation (e.g. sprinklers, drip systems) under Public-Private Partnership arrangements.		-
		-
2.5.7 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.	Department of Irrigation and Water resources	5,200
[Work undertaken by DOI and community, also DRD]		-
		-
2.5.8 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)	Department of Irrigation and Water resources	200,000
§ 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 DOI 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).		-
§ Improve catchment area management and restoration catchment.		-
§ 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		-

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
approval of any IBT.		
2.5.9 Improve management of irrigation systems and on-farm water, including:	Department of Irrigation and Water resources	29,000
§ 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 form DOI 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.		-
2.5.10 Establish funding system and guidelines for Operation and Maintenance (O&M), encompassing: (a) incentives into scheme, (b) legislation to require a receipt for ISF payment to be attached to land tax payment; (c) enforcement of existing requirement that ISF payments be brought up to date before a land sale can be registered; (d) define and charge ISFs – per crop in the short-term, and per volume of water in the long term on schemes with volumetric metering.	Department of Irrigation and Water resources	14,000
		-
2.6 Crop inputs - Increased use of improved farm production inputs and technologies by crop growers	Department of Agriculture	217,017
Seed and planting material:		188,283
2.6.1 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.		38
2.6.2 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.		45
2.6.3 Strengthen certification of multiplied seed, including improved seed laboratories capacity		15,700
2.6.4 Build-up capacity of seed research stations to produce breeder and foundation seeds.		-

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
§ Increase funding to enhance capacity of public research institutions and research stations, universities, and private sector industry.		23,700
§ Maintaining good quality land races and open pollinated varieties (OPVs) of different crops in the remote areas that are dominated by subsistence agriculture.		6,400
§ Establish good linkages with international agencies.		420
2.6.5 Promote private and cooperative sector and community based seed production. This will involve:		-
§ Participate in partnerships with relevant private and cooperative organizations, farms and nurseries for production of quality seed and planting materials		7,100
§ Facilitate private sector to produce breeder, foundation and hybrid seeds, especially by providing breeder and foundation seed to private and cooperative seed growers.		6,000
§ Promoting seed enterprise as an industry catering to the national needs and for export.		7,400
§ 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.		7,700
2.6.6 Enforce quality assurance systems, involving:		-
§ Improved capacity of concerned government certification bodies and laboratories to undertake planting materials certification processes.		42,500
§ Enforcing compliance of nurseries with farm inputs quality standards.		6,400
§ 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.		8,000
§ Enforce legislation that compensates farmers when purchasing poor quality seed not complying with existing standards		950
§ 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.		730
2.6.7 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.		27,500
2.6.8 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.		12,700
2.6.9 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 Centres; (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 GMO having negative impact on bio-diversity, genetic resources, and		15,000

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
human health.		
2.6.10 Pilot voucher system for seeds whereby targeted farmers are provided with a voucher that empowers them to purchase the input (in this case seeds) of their preference. First pilot the system and on the basis of a positive review of the pilot, replicate the system and upscale.		-
0		-
Soil fertility management:		12,764
2.6.11 Measures to improve productivity and fertilizer use efficiency will involve promoting a greater private sector role, and include:		-
(a) Soil survey and mapping - to cover all Myanmar in greater detail than done in 1960s		7,050
(b) Promotion and demonstration of soil conservation techniques		315
(c) Promotion and demonstration of soil amelioration techniques with involvement of private sector		510
(d) Strengthen laboratory facilities to ensure that farmers can get access to timely and affordable soil testing and other services		475
(d) Enforce quality assurance systems, including fertilizer inspection		114
(e) Capacity building of Soil Division staff, Units and facilities		3,550
(f) Promote domestic fertiliser production and trade with involvement of private sector, including: - Feasibility studies on domestic production - Establishment of commercial bio-fertilizer production enterprises based on municipal biomass and agro-processing waste		650
(g) Establish a fertilizer buffer stock under PPP arrangement.		-
(h) Establish database and monitoring system on fertilizer use and distribution, including both official and informal import (the latter to be obtained through survey data).		100
		-
		-
Plant Disease and Pest Management:		15,970
2.6.12 Develop and promote integrated pest management (IPM) and bio-control of weeds		5,500
2.6.13 Strengthen pesticide and herbicide laboratories (\$2.000 m)		

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
		3,000
2.6.14 Establish quality assurance for pesticides and other plant protection products. This will involve:		-
i) Strengthening pesticides, herbicides, and other products inspection through improved capacity of concerned public organizations		1,560
ii. Enforcing compliance of importers and dealers with quality standards, comprising: - Enforce the law on Fertilizer - Enforce Law on pesticides and herbicides - Approve and implement a modern Law on Trademarks - Ensure proper testing and enforcement processes to prevent circulation of counterfeit, adulterated or mislabelled products		780
iii. Encouraging provision of quality control and certification from private sector as well as government		130
2.6.15 Plant and animal quarantine – border and inland control facilities, including laboratories, storage, and replication/testing plots		5,000
		-
2.7 Mechanization - Increased application of appropriate mechanization in the agricultural value chain	Agriculture Mechanization Department	246,640
2.7.1 Encourage farmers to consolidate their fields (including farm roads, drainage, irrigation networks, land levelling) 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.		12,800
2.7.2 Improve utilization of increased number of farm machinery by the public sector and rural farmers		2,070
- Selling the Farm Machinery to farmer by Installment paying system with department's budget		91,240
- Selling the Farm Machinery to farmer by Installment paying system with loan of India EXIM Bank		119,250
2.7.3 Ensure a gradual handover or privatization of mechanization stations currently under the AMD to private sector or farmer organizations.		2,500
2.7.4 Training Program for farmers and private on proper operation and maintenance of farm machinery		-
- Conduct training programs at training centers and mechanization stations with department's budget		1,380
- Conducting on repair and maintenance training course to AMD's staff and farmers support by ADS using World Bank loan		4,400
- Conducting training on repair and maintenance training course to AMD's staff and farmers support by ADS using India EXIM Bank facility		154

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
2.7.5 Promote emergence of rural workshop for agricultural machinery repair and maintenance.		-
- Upgrading mechanization stations with department's budget		740
- Facilitating 14 Mechanization Stations to workshops and upgrading 7 existing workshops with India EXIM Bank loan project		7,770
- Upgrading mechanization stations with JICA project		916
- Upgrading mechanization stations in Central Dry Zone, excepting AMS aided by EXIM Bank and AIPP		2,520
2.7.6 In collaboration with private sector, ensure timely availability of spare parts.		600
2.7.7 Provide financial analysis for use of alternative machinery to guide investment decision of farmers under different agro ecological conditions.		300
		-
2.8 Animal breeding - More productive and profitable genetic composition of animals	Livestock Breeding and Veterinary Department	44,324
2.8.1 Develop and maintain Myanmar Animal Genetic Resources Information System		600
2.8.2 Develop National Strategy and Action Plan for Animal Genetic Resources (AnGR) conservation and protection - with legislation, regulations and guidelines		300
2.8.3 Support technical and operational capacity of LBVD staff and technical taskforces		370
2.8.4 Strengthen physical, human resources and financial capacity for animal breeding		2,500
2.8.5 Participate in applied research in animal breeding in line with Livestock Research Programme		360
2.8.6 Implement nation-wide Artificial Insemination (AI) Programme		-
- Develop and maintain Semen Production Unit		2,580
- Develop and maintain Liquid Nitrogen plant together with Liquid Nitrogen Distribution programme		3,300
- Develop and maintain National Training Center for AI and AI Service Centers – strategically located in different regions		9,270
		-

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
- Provide farmer support for Artificial Insemination (AI)		3,000
Establish and operate new Liquid Nitrogen plant at cattle potential areas (Sagaing, Magwe, Mandalay)		1,860
- Provide the Liquid Nitrogen tank (3/ 5 liter tank)		600
- Develop Embryo Transfer technology, In vitro fertilization and cloning technology		1,280
- Provide technical know-how for frozen semen and frozen embryo		600
2.8.7 Support specialized Mythun cattle development, conservation and production programme		12,400
2.8.8 Promote private sector and cooperatives to produce improved breeds with proper recording of progeny, productivity, and efficiency.		300
2.8.9 Expansion of artificial insemination laboratories and service for the promotion of programs for breeds improvement.		1,200
2.8.10 Support private sector to establish grandparent stocks of livestock, especially local breed for increased food security and market sales, including exports		-
- Poultry		648
- Sheep and goat		216
- Cattle		1,440
2.8.11 Support recording and improvement of quality, health status, productivity of improved herds.		60
2.8.12 Support implementation of livestock insurance schemes.		240
2.8.13 Reliable, efficient and continuous supply of Liquid Nitrogen (LN2) for the AI program. One of the effective approaches could be the establishment of LN2 plant on PPP model.		1,200
		-
2.9 Animal health - More healthy and productive animals	Livestock Breeding and Veterinary Department	77,320
2.9.1 Strengthen animal health information systems, including strengthened National Animal Health and Disease Surveillance Plan and actual surveillance and reporting activities		4,540
2.9.2 Facilitate production and distribution of vaccines, including cold-chain management		25,000

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
2.9.3 Establish and manage Community Animal Health Workers (CAHW) programme and activities		4,380
2.9.4 Implement contingency planning and action for emerging animal disease threats		12,000
2.9.5 Strengthen Veterinary and Animal Health Services to ensure their accessibility to farmers, including developing role of private sector		23,000
2.9.6 Conduct animal population baseline survey		8,400
		-
2.10 Animal nutrition – Better fed and productive animals	Livestock Breeding and Veterinary Department	24,110
2.10.1 Support improved pasture, fodder and grazing and feeding practices		12,000
2.10.2 Compile and maintain national information, inventory and data base on animal pastures, fodder and feed systems - with specific breakdown of situation and conditions by area		850
2.10.3 Strengthen physical, human resource and financial capacity of Feed Testing Laboratory of Livestock Breeding and Veterinary Department (LBVD)		6,200
2.10.4 Develop and/or import high-quality fodder and feed planting materials - including establishment of forage/fodder production plots and on-farm demonstration		2,400
2.10.5 Scale-up on-going pilot activities on development of animal feeding strategies on cover the whole country		1,800
2.10.6 Support applied research in animal nutrition in conjunction with Livestock Research Programme		860
		-
2.11 Animal and dairy production – Strengthened capacity of small-scale animal producers	Livestock Breeding and Veterinary Department	26,540
2.11.1 Train and provide information to build capacity of livestock producers on different technical, economic and marketing aspects		900
2.11.2 Implement small-holder dairy development programme (including building strategically located medium size milk processing plants, cold storage, transport and other facilities; and support to Myanmar Dairy Excellence Project)		5,300
2.11.3 Support small-scale beef cattle production and distribution		3,400
2.11.4 Support small animal (pigs, goats, sheep, etc) production		2,500
2.11.5 Develop, establish, and promote adoption adopt and compliance to national standards on sustainable livestock production		2,440

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
2.11.6 Capacity building for livestock income generation in rural areas - vocational, entrepreneurship and enterprise training, with special attention to women		12,000
		-
2.12 Apiculture -- Expansion and increased importance of apiculture (bee honey) industry as primary and additional source of income generation for small-scale producers	Livestock Breeding and Veterinary Department	1,045
2.12.1 Carry out surveys, field trials to assess biological and ecological potential and capacity of apiculture as a source of income		112
2.12.2 Study of major constraints, opportunities and value chain of bee honey in Myanmar		75
2.12.3 Establish and operate apiculture laboratory for research and for quality control of bee honey		750
2.12.4 Train staff, bee keeper, processors and handlers on best practices and market responses		60
2.12.5 Promotion Myanmar bee honey in major including domestic and overseas markets		48
		-
2.13 Fisheries and aquaculture inputs and services - Maximum output and profit from fishing and aquaculture industries using sustainable practices	Department of Fishery	39,700
2.13.1 Support restructuring and expansion of seedling infrastructure (hatcheries & breeding ponds) for aquaculture industry and production and distribution of fish and shrimp seeds		6,000
2.13.2 Identification, inventory and resource conservation of adaptable fish species (for cold upland areas, dryland areas, etc.)		2,000
2.13.3 Establish network of Aquaculture Technology Centers (Koica Research Center - Marine Biology Departments of Universities of Mawlamaine, Patheingyi, Meiktila and Yangon), with supporting laboratory facilities		10,000
2.13.4 Facilitate provision and availability of fishing infrastructure		5,000
2.13.5 Facilitate legal and regulatory framework for fisheries and other aquatic livelihoods, demarcating open fisheries, law enforcement for closed season and closed areas for fishing and banning destructive fishing gears		600
2.13.6 Promote aquaculture optimisation initiatives such as land development, cage and pen technology integrated with existing dams or reservoirs (exclusion of dams serve for domestic water delivery), under the proper legal frame work		7,000
2.13.7 Provide technical support to fish and aquaculture processing industry to increase supply of good quality fish for domestic and export markets		8,000
2.13.8 Promote the production of aqua feed by strengthening the link between the soybean production in Shan State, soybean cultivar improvement of Department of Agricultural Research and set up of the soybean mills and aqua feed mills of the private sector		1,100
		-

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
2.14 – Good Agricultural Practices (GAP), also incorporating Good Veterinary and Husbandry Practices (GVAHP) and Organic Agriculture (OA) -- Sufficient, safe and good quality food products from environmentally, economically and socially acceptable and sustainable off-farm and off-farm practices by producers.	Department of Agriculture	8,310
2.14.1 – Coordinate, formulate, elaborate, document, and promote concepts, principles, guidelines, laws, regulations and protocols for GAP (including GVAHP, GFP and OA) in Myanmar.		-
§ Establish GAP Unit or Focal Point within MOALI to coordinate and spearhead development and implementation of GAP, GVAP, GFP, OA		200
§ Document, share and promote adoption of principles, guidelines, regulations and protocols for GAP – with attention to Myanmar, ASEAN and global markets		90
§ Build capacity for inspection and certification, including training and establishment of National Laboratory for GAP and other standards and protocols		500
§ Monitor, control, regulate and enforce compliance with GAP, GVAHP, GFP 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		140
§ Undertake GAP, GVAHP, GFP and OA certification and facilitate incentives for certification		55
§ Promote connections, harmonize standards and protocols within ASEAN		40
2.14.2 – 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		800
- Build capacity of MOALI Departments in GAP and OA		400
- Undertake applied research in GAP and OA practices, including private sector support		65
§ Conduct value chain analyses and cost of production studies on GAP and OA		70
§ Conduct tailored extension programmes for transfer of technology on GAP and OA applications and production, including private sector support		100
- Support Good Livestock Husbandry Practices (GAHP) development for small and medium scale animal, dairy and poultry producers		600
- 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		5,000
§ Organise GAP competitions, fairs and ceremonies		85
2.14.3 – Establishment and exploitation of “Myanmar Brand” of GAP and OA products in domestic and international markets		-
§ Build market information base on GAP and OA		

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
		50
§ Obtain at least two accredited management standards		10
§ 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		105
		-
2.15 Improved Resilience of Farmers to Climate Change and Disasters	Department of Agriculture	12,970
2.15.1 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.		6,500
2.15.2 Establish an early warning system and adopt early warning information for managing climate change risks in agriculture and food and nutrition security.		480
2.15.3 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.		150
2.15.4 Strengthen the food reserve system to cope with emergency and food safety distribution to targeted farm households.		-
2.15.5 Strengthen the seed and feed/fodder reserve system to cope with natural disasters such as flood and drought.		-
2.15.6 Improve capacity of extension staff and farmers in climate smart agricultural practices through training, FFS, and demonstrations.		300
2.15.7 Implement programme to in-build mitigation factors and resilience of livestock farmers to climate change, natural disasters and other uncertainties		600
2.15.8 Increased climate smart and conservation-oriented livestock utilization practices and conservation farming		4,600
2.15.9 Establish a fund for preparedness and response to droughts, flood, epidemics and emergencies affecting rural areas and farmers not covered by agricultural insurance.		-
2.15.10 Carry out Community Based Disaster Risk Management (CBDRM) capacity building.		340
OUTCOME 3 - Enhanced market linkages and competitiveness of Myanmar farmers and agro-enterprises		912,611
3.1 Improved business environment along the supply chain		725
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. - Elimination of unnecessary internal taxes, road and bridge tolls, and permits to make it easier to move goods within the country. - Reduction of “transaction costs” by eliminating “red tape” (that is, overly complex procedures) related to starting and running	Department of Planning	300

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
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.	Department of Planning	250
3.1.3 Identify models, lessons, and guidelines for effective contract farming and implement standard operating procedures for contract farming	Department of Planning	175
		-
3.2 Improved investment regulations for agrifood investors to develop and expand businesses throughout the relevant agricultural and food supply chains		1,600
3.2.1 Design and implement an investment promotion strategy for the agricultural and food sector	Department of Planning	200
3.2.2 Strengthen the capacity of Myanmar Investment Commission to expedite investment applications in the agriculture sector while effectively taking into account environmental and social impact assessment.	Department of Planning	950
3.2.3 Approve the draft Investment Law, 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 sectoral restrictions that prevent entry of private investors through a transparent and short negative list of restricted investment sectors.	Department of Planning	450
		-
3.3 Protection of intellectual property rights for agricultural and food sector		1,025
3.3.1 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.	Department of Agriculture	130
3.3.2 Approve the draft Trademark Law and implementing regulations to enable protection for geographical indications, certification marks, and trademarks for agricultural/food products.	Department of Agriculture	130
3.3.3 Strengthen IPR protection against counterfeit agricultural inputs, especially for pesticides, including stronger border control measures to reduce the import of counterfeit products.	Department of Agriculture	700
3.3.4 Approve the Patent Law to protect domestic research and innovators in the agriculture and food sector.	Department of Agriculture	65
		-
3.4 Development of quality-based product standardization and grading system to help farmers and food processors to get higher prices for their goods, incentivising quality upgrading		3,345
3.4.1 Develop product standards and certifications, quality grading, quality control measures, and reliable conformity assessment (testing) procedures.	Department of Agriculture	130
3.4.2 Revise the Law on Standardization to introduce key international best practices and transparency requirements for the development of standards, conformity assessment processes, and technical regulations	Department of Agriculture	130

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
3.4.3 Support the establishment and functioning of a National Accreditation Bureau for testing processes and a National Metrology Institute for measurements.	Department of Agriculture	295
3.4.4 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).	Department of Agriculture	90
3.4.5 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.	Department of Agriculture	1,600
3.4.6 Approve 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.	Department of Agriculture	700
3.4.7 Support the development of public and private calibration capacities to ensure the use of accurate testing/measurement equipment.	Department of Agriculture	400
		-
3.5 Enhanced institutional framework for planning and implementation of rural development programmes		5,220
3.5.1 Establish new Research and Development Division within DRD	Department of Rural Development	1,600
3.5.2 Establish new Design Division for rural infrastructure	Department of Rural Development	3,620
		-
3.6 Rural communities empowered and enabled to initiate locally-generated development initiatives		175,699
3.6.1 Village level community development initiatives (DRD Green Village Project example)	Department of Rural Development	24,732
3.6.2 Township level community development initiative (DRD Community based project example)	Department of Rural Development	150,108
3.6.3 Community capacity building in preparation and drafting of action plan projects	Department of Rural Development	202
3.6.4 Training on rural entrepreneurship and enterprise development (e.g. rural livestock raising)	Department of Rural Development	657
		-
3.7 Expanded and improved rural road network integrated with national transport plans		354,520
3.7.1 Improve rural road infrastructure consistently with mater plan for transportation	Department of Rural Development	-
- Rural road construction	Department of Rural	

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
	Development	283,179
- Rural bridges construction	Department of Rural Development	71,252
3.7.2 Remove all restriction on internal movement of agricultural goods, incl. taxes and fees, within and between states and regions (Min of Trade / MOALI)	Department of Rural Development	-
- Review existing transport regulatory system and suggest improved system (Min of Trade MOALI)	Department of Rural Development	19
- Enact necessary legislation and regulations and by-laws on agricultural goods transportation(Min of Trade / MOALI)	Department of Rural Development	10
3.7.3 Monitor transport costs and times and share information widely	Department of Rural Development	60
		-
3.8 Expansion of rural electrification and use of renewable energies		20,333
3.8.1 Rural electricity projects	Department of Rural Development	-
- Connect rural communities and households to national grid	Department of Rural Development	16,833
- Promote renewable energies (micro-hydro, solar, micro, biomass, biogas)	Department of Rural Development	1,500
- Promote public-private partnerships (PPP) for development and distribution of power to rural farming communities	Department of Rural Development	2,000
		-
3.9 Enhanced access to potable water by rural households		12,510
3.9.1 Construction of rural water supply infrastructure	Department of Rural Development	12,456
3.9.2 Knowledge sharing on access to clean drinking water technology program	Department of Rural Development	53
		-
3.10 Developed and well-managed marketing and market institutions and logistics infrastructure		3,385
3.10.1 Establish a dedicated Agribusiness and Marketing Division/Unit in MAF to work with corresponding entity within Ministry of Trade (MOT), and streamline respective MOALI and MOT institutional set-up and modus operandi, and coordinate arrangements between the two Ministries	Minister's Office	350

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
3.10.2 Identify strategic locations for agricultural market development and undertake feasibility studies.	Department of Planning	140
3.10.3 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.	Department of Planning	1,300
3.10.4 Implement PPP financing support mechanisms	Department of Planning	600
3.10.5 Develop rules and regulations and SOP for improved market infrastructure management.	Department of Planning	45
3.10.6 Capacity building programs for market infrastructure management	Department of Planning	1,300
		-
3.11 Increased competitiveness in a number of prioritized, climate friendly agricultural value chains		13,000
3.11.1 Establish 7 prioritized National Value Chain Programs (including crops, livestock, and aquaculture). Example: rice, vegetables, pulses, oilseeds, cotton, sugarcane, poultry, cattle, aquaculture	Department of Planning	-
3.11.2 Conduct value chain study and identify bottlenecks and opportunities for respective prioritized enterprises	Department of Planning	3,500
3.11. Prepare a value chain policy, strategy and development programme	Department of Planning	300
3.11.3 Establish value chain information desks to monitor cost of production, market information and analysis	Department of Planning	325
3.11.5 Support formation of farmer organizations dedicated to specific value chain development	Department of Planning	350
3.11.6 Support formation of trade associations dedicated to specific value chain development	Department of Planning	60
3.11.7 Support the formation of industry associations including farmers, processors, logistics operators, and service providers dedicated to specific value chain development	Department of Planning	75
3.11.8 Conduct regular (quarterly) meetings of value chain industry with Government	Department of Planning	50
3.11.9 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	Department of Planning	150
3.11.10 Establish value chain development funds to promote farmer-enterprises partnerships	Department of Planning	5,000
3.11.11 Establish a value chain innovation fund to fund an annual value chain innovation competition	Department of Planning	2,500
3.11.12 Organize annual value chain fairs, exhibits, seminars, workshops, conferences, and training both in Myanmar and abroad aimed to have access to markets for agrifood products from Myanmar	Department of Planning	425

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
3.11.13 Promote the formation of PPP for value chain development	Department of Planning	65
3.11.14 Training of Trainers (ToT) on Climate Friendly Agribusiness Value Chains	Department of Planning	200
		-
3.12 Enhanced food quality and safety		12,755
3.12.1 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.	Department of Agriculture	580
3.12.2 Develop sanitary and phytosanitary regulations in line with international practices to protect crop and animal health in Myanmar.	Department of Agriculture	910
3.12.3 Formulation and promulgation of food safety and quality standards, starting from the standards for the prioritized value chains	Department of Agriculture	520
3.12.4 Adopt legislation on accreditation of standards certification bodies and national laboratories for foods safety and quality certification	Department of Agriculture	250
3.12.5 Strengthen and upgrade laboratories to international accreditation standards	Department of Agriculture	1,820
3.12.6 Establish regional laboratories and district offices for a number of food safety tests (soil testing, Maximum Residue Levels, water testing, pesticides, fertilizers, etc.)	Department of Agriculture	2,210
3.12.7 Establish capacity for risk assessment (for both plant and animals), SPS management and surveillance	Department of Agriculture	1,105
3.12.8 Conduct awareness campaign on food safety	Department of Agriculture	270
3.12.9 Adopt One Health Approach and strengthen animal health surveillance, diagnostic, and response capacity	Department of Agriculture	-
3.12.10 Negotiate SPS protocols with key trading partners to facilitate exports.	Department of Agriculture	20
3.12.11 Apply legitimate policy objectives based on international standards wherever possible with minimum compliance costs and unnecessary impacts on trade.	Department of Agriculture	-
3.12.12 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.	Department of Agriculture	2,340
3.12.13 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.	Department of Agriculture	2,730
		-
3.13 Improved access to a range of financial services for farmers and agribusiness enterprises		

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
		251,017
3.13.1 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.	Myanmar Agriculture Development Bank	260
3.13.2 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.	Myanmar Agriculture Development Bank	-
3.13.3 Over time revise the Law on Microfinance, but in the short-run implement a number of 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.	Myanmar Agriculture Development Bank	-
3.13.4 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.	Myanmar Agriculture Development Bank	-
3.13.5 Develop creditworthiness information systems that make it easier to provide credit to viable farmers and SMEs without full collateral backing.	Myanmar Agriculture Development Bank	390
3.13.6 Return control of the Myanmar Agricultural Development Bank (MADB) to the Ministry of Planning and Finance or to Central Bank	Myanmar Agriculture Development Bank	-
3.13.7 Allow the MADB to perform as a development bank as provided for under the Myanmar Agricultural and Rural Development Bank Law (1990).	Myanmar Agriculture Development Bank	-
3.13.8 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.	Myanmar Agriculture Development Bank	260
3.13.9 Consider options for privatizing or dramatically changing the MADB's corporate governance, including establishing an autonomous Board of Directors.	Myanmar Agriculture Development Bank	-
3.13.10 Allow MADB to offer longer term loans and allow loans beyond seasonal credit for specific crops.	Myanmar Agriculture Development Bank	-
3.13.11 Provide training in financial management for farmers	Myanmar Agriculture Development Bank	150
3.13.12 On-going capitalization of MADB MOALI budget, including development support to MOALI	Myanmar Agriculture Development Bank	30,000
3.13.13 Microfinance for cooperative using finance from Japan and Korea Banks	Department of Cooperatives	219,957
3.13.14 Formulate policy, law, and regulations for agricultural insurance	Myanmar Agriculture Development Bank	-
3.13.15 Promotion campaign for agricultural insurance to farmers	Myanmar Agriculture Development Bank	-

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
3.13.16 Pilot a local-level weather indexed insurance scheme (WIIS)	Myanma Agriculture Development Bank	-
3.13.17 Strengthen technical capacity for crop forecasting	Myanma Agriculture Development Bank	-
3.13.18 Pilot scheme of Livestock insurance	Myanma Agriculture Development Bank	-
		-
3.14 Market information available to farmers, farmer's groups, private sector, and public workers		2,485
3.14.1 Promote development of a suite of products for market information and market intelligence	Department of Planning	200
3.14.2 Provide financial, logistical and other support to facilitate training and technical assistance for MOALI and staff of other relevant agencies like MOT in market intelligence and information systems and policy analysis, including provisions for international training and meeting	Department of Planning	90
3.14.3 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	Department of Planning	-
- MOALI/Met Dept/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; agric technology and knowledge like fertilisation and pesticide use; soil and land use maps; etc etc	Department of Planning	170
- Private sector info providers to set up networks for info distribution through cell phones, Internet, info kiosks; etc	Department of Planning	2,000
- Ensure that research and extension services and personnel are linked into and contribute to and use ICT networks	Department of Planning	25
		-
3.15 Growth of small and medium agro-enterprises		35,053
3.15.1 Adopt tax incentives to stimulate investment in agro-based enterprises	Small-Scale Industry Department	-
3.15.2 Promote establishment of Agribusiness Incubators	Small-Scale Industry Department	14,000
Research, development and training activities to promote SMEs (by Dept of SME)	Small-Scale Industry Department	53
3.15.3 Establish matching grants to promote agro-enterprise innovation	Small-Scale Industry Department	7,000
3.15.4 Innovation Competition Fund for Agro-enterprises and Coops	Small-Scale Industry Department	12,000

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OUTCOMES AND OUTPUTS	PRIMARY RESPONSIBILITY	Total Budget (Ky million)
3.15.5 Agro-Entrepreneurship Programs for youth, women, disadvantaged groups and disadvantaged regions	Small-Scale Industry Department	2,000
		-
3.16 Liberalized agrifood exports and imports and upgraded trade diplomacy capabilities to protect Myanmar exporters.		16,670
3.16.1 Greatly 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.	Department of Planning	-
3.16.2 Develop more effective trade facilitation capacities to reduce the cost of clearing goods through customs and border control	Department of Planning	1,100
3.16.3 Upgrade customs clearance processes and logistics facilities for key land border crossings.	Department of Planning	6,500
3.16.4 Negotiate with neighboring countries to improve the trading regime at land-border	Department of Planning	1,170
3.16.5 Improve processes for transiting products through Myanmar, especially from Yangon to Muse by implementing the ASEAN Customs Transit System.	Department of Planning	4,000
3.16.6 Develop and implement 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 Chinese markets.	Department of Planning	3,900
		-
3.17 Improved trade and growth in volume and value of food and agricultural products exports		3,270
3.17.1 Prepare and implement National Export Strategy and Agricultural Export Promotion Program	Department of Planning	2,600
3.17.2 Develop the national capacity for more effective trade diplomacy in government including private and public sector	Department of Planning	520
3.17.3 Cooperation, coordination, negotiation with international loan/grant/grant assistance projects of MOALI	Department of Planning	120
3.17.4 Document and provide guidance to enterprises that are not in line with Trade Related Investment Management	Department of Planning	30

ANNEX 2 INVESTMENT PLAN

OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
OUTCOME 1 - Enhanced reputation of MOALI capacity of government to design, formulate and implement policies and plans and discharge functions.	21,892	27,839	31,152	28,467	26,582	135,812		58,260	500	11,930	59,882	132,977
1.1 Effective integrated planning based on participatory processes both at the union and at the state/region level.	485	746	865	840	885	3,699		1,275	500	0	1,924	3,699
1.1.1 Ensure integration of long-term plans with annual workplans and budgets	3	4	3	3	3	14	Tasks: Prepare guidelines for annual plan and budget; train all units in on guidelines (training 2 times per year @ Ky 0.5 m per training)	5			9	14
1.1.2 Introduce participatory planning methodologies during preparation of plans	15	30	25	25	25	120	Tasks: (1) Stakeholders meetings - 2 @ year at Ky 0.300 m each; (2) Train the staffs from ministerial, regional and township level - 2 @ year at Ky 0.250 m each; (3) Workshops - 3 @ year at Ky 3.00m each	30			90	120

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.1. 3 Ensure integration of state/region and union plans	25	35	45	40	35	180	Tasks: (1) Development of different state/region plans @ year at Ky 0.300m each; (2) Meetings for the development of integration processes - 1 @year at Ky 2.500m each; (3) Workshops - 2@ year at Ky 3.000 m each; (4) Training for staffs from State/Region levels; (5) Consultation workshops (6) Launching different plans for different State/Region	150			30	180
1.1.4 Monitor plan implementation regularly	20	25	30	30	30	135	Tasks: (1) Develop the M & E system and framework; (2) Setting the guidelines for M & E; (3) Regional surveys - Ky 3.00m per year; (4) Report preparation; (4) Training - 2 @ year at Ky1.5 m each;	90			45	135
1.1.5 Evaluate and make recommendations on establishment and functioning of ADS Coordination mechanisms	50	60	70			180	Tasks: (1) Setting up of Working Group; (2) Development and finalisation of group composition and TOR; (3) Preparation of approach documents of commission; (4) Preparation of organization meetings; (5) Regular discussions and meeting - 5 per year @ Ky 0.4 m each; (6) Establishment of office rooms and equipments for commission staffs;	90			90	180

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
							(7) Trained 1-2 staff - 2 @ year at Ky 2.5m each					
1.1.6 Implement e-Governance system	200	400	500	550	600	2,250	Tasks: Electronic document sharing; Internet infrastructure; making plans/documents available on the internet	250	500		1,500	2,250
1.1.7 Make provisions for Minister level meetings with ASEAN countries and development partners (MOALI 2 #6)	20	20	20	20	20	100	Tasks: (1) at least 10 meetings per year	100				100

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.1.8 Cooperation, coordination, negotiation with international loan/grant/grant assistance projects of MOALI (MOALI 1.1.3 #5)	100	120	120	120	120	460	Tasks: (1) Steering committee and working group regular meetings 8 @ year at Ky 2.0 m each; (2) Preparation of different loan/grants projects reports; (3) Conducting the necessary office procedures; (4) Discussion and stakeholders consultation meeting; (5) Workshops for different projects - 2 per year @ Ky 3.0 m each; (6) Capacity building programs for staffs - training - 3@ year at Ky 0.250 m each; (7) Strengthened institutional capacity	300			160	460
1.1.9 Make provisions for outfit and travel for international training and meeting (MOALI 2 #6)	52	52	52	52	52	260	Tasks: (1) Capacity building program (international trainings - 4 @ year at Ky 1.50m each, workshops - 2 @ year at Ky 1.0 m each; and meetings - 2 @ year at Ky 1.00 m each)	260				260
1.2 Improved capacity for policy formulation and analysis	350	1,300	1,150	900	950	4,650		2,250	0	0	2,400	4,650

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.2.1 Establish and operate Policy Unit/Division under Department of Planning/MOAL	200	600	300	150	150	1,400	Tasks: (1) Establishment of new office room and office equipments for PU; (2) Technical assistance and resource persons from well-developed international policy institutions; (3) Providing policy research related materials; (4) Field surveys and research visit to other ministries for necessary data 2 @ year at Ky 2.0m each; (5) Developing the policy framework; (6) Discussions and stakeholders meetings - 2 @ year at Ky 0.300m each; (7) Reporting and feedbacking; (8) Train the personnel skills - 4 @ year at Ky 1.5 m each.	300			1,100	1,400
1.2.2 Conduct regular independent policy reviews, with immediate priority (during first 2 years od ADS) on: - Development of Corporate Social Responsibility (CSR) Guidelines and legalising CSR for the agriculture sector; and - Others to be prioritised	150	400	550	700	800	2,600	Tasks: (1) Collecting the policy related papers, report and reading materials; (2) reviewing the policy from different countries and different organizations; (3) Policy related stakeholders meeting on Ministry and State/Regional levels; (4) Reviewing the feedback from the stakeholders meeting; (5) Conduct policy related workshops and training for different departments of ministry as well as different level; (6) Reviewing, revising	1,800			800	2,600

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
							and reporting the analysis results					
1.2.3 Prepare and undertake Myanmar smallholder mapping and characterization study, including the landless		300	300	50		650		150			500	650
1.3 Timely and Effective Monitoring and Evaluation processes	120	195	280	240	225	1,060		470	0	0	590	1,060
1.3.1 Establish and develop capacity of Monitoring and Evaluation units at MOALI and State/Region level through provision of manpower, budgetary, amenities and other needs	50	100	150	100	75	475	Tasks: (1) Establishment of M & E division; (2) Setting the M & E framework; (3) Develop M & E manuals; (4) Institutional strengthening and capacity building programs	175			300	475

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.3.2 Provide appropriate training for M&E and establish appropriate methodology and system to carry out systematic ADS monitoring and evaluation	20	20	30	40	50	160	Tasks: (1)Conducting trainings - 3 @ year at Ky 2.00 m; (2) Development of appropriate M & E methodology; (3) Field srveys - @ 3 @ year at Ky 2.0 m; (4) Different stakeholders metings - 2 @ year at Ky .300m per yearconsultations meetings	70			90	160
1.3.3 Conduct M&E missions, including including field surveys -- jointly with Government and development partners	50	75	100	100	100	425	Tasks: (1) Field survey on project sites - 16 times per year at Ky32.00 m per year; (2) Development of M & E systems with Government and developments partners; (3) inviting technical assistances from developed M & E organizations;	225			200	425
1.4 Sound statistical systems for evidence based decisions	115	315	515	715	365	2,025		360	0	0	1,665	2,025

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.4.1 Conduct Agricultural, Livestock, and Fisheries Censuses	50	200	300	550	250	1,350	Tasks: (1) Development of Agricultural Statistical Units; (2) Field visits and meetings with township and village level officers; (3) Conducting pilot survey for understanding on ground conditions for all sectors; (4) Preparation and revising the questionnaires; (5) Strengthen the capacity building for the enumerators; (6) Conducting survey; (7) Data processing; (8) Report preparation; (9) Conducting the workshop for the census workshop; (10) Reviewing the existing statistics - Agric census - US\$0.500 m - Livestock census - US\$0.300 m - Fisheries census - US\$0.300 m	200			1,150	1,350

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.4.2 Improve current system of collection of agricultural statistics with the use of ICT and remote sensing	50	100	200	150	100	600	Tasks: (1) Establishment of new GIS and RS units - US\$0.050; (2) Strengthening the infrastructure for GIS and remote sensing - US\$0.050; (3) International consultants for the ICT technology - US\$0.150 m; (4) Capacity building programs - US\$ 0.020; (5) Field survey US\$0.020; (6) Combining survey data with spatial data - US\$0.020 (Total US\$ 0.31m)	100			500	600
1.4.3 Conduct selected annual surveys on key issues identified by the Policy Division	15	15	15	15	15	75	Tasks: (1) Formation of statistical survey team; (2) Capacity building of staffs; (3) Establishment of office room; (4) Review the policy of ministry; (5) Conducting surveys ; (6) Analysing the survey data on current policy	60			15	75
1.5 Strong farmer and small-scale industry institutions, including associations, cooperatives and federations	11,680	11,790	11,890	11,995	12,100	59,455		13,980	0	11,900	30,740	56,620
1.5.1 Promote the formation of farmer associations, cooperatives and their federations to empower farmers in marketing and resource use as well as engagement on government policy and regulatory issues	270	275	280	285	290	1,400	- DOP - Workshop 2 times per year - Ky 3.0 m for each - Dept of Cooperative - 5 years: Ky 779; 794; 809; 824; 839 - Only about 20% of cooperative activities relevant to agriculture - cost figures adjusted accordingly	800		600		1,400

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.5.2 Provide capacity building for effective management of farmer organizations and cooperatives, including enabling farmers to produce own seeds, fertilizers, undertake truck hauling, block farming and other functions and initiatives	8,610	8,700	8,780	8,870	8,960	43,920	'- Training 3 time per year - Ky 1.5 m each '- Dept of Coop - Ky 200, 250, 300, 350, 400	13,180			30,740	43,920
1.5.3 Conduct general meetings with farmer organizations and all cooperatives at the state/region and union level	2,240	2,250	2,260	2,270	2,280	11,300	- DOP - Ky 0.600 m per year - - Only about 20% of cooperatives activities relevant to agriculture - cost figures adjusted accordingly DoCoops - Ky 44,295, 44,845, 43,395, 45,945, 46,495			11,300		11,300
1.5.4 Conduct general meetings with small-scale industry associations, and organize general meetings with both farmer and small-scale industry associations and cooperatives	560	565	570	570	570	2,835				2,835		2,835
1.6 Strengthened farmers' land rights and enhanced capacity of institutions involved in agricultural land.	4,240.000	8,085.000	11,305.000	8,655.000	6,945.000	39,230.000		17,090.000	0.000	30.000	22,110.000	39,230.000

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.6.1 Create and support the functioning of a National Land Use Council or equivalent inter-sector institution to take forward the National Land Use Policy process	260.00 0	900.000	900.000	1,000.0 00	800.000	3,860.00 0	Secretariat, TA, exchange visits, awareness creation and information dissemination, research, etc....Notice the NLUC will be established at an inter-ministerial level; the technical secretariat could be hosted in the MoALI; MoALI investment will mainly focus on support and functioning of the Technical Secretariat - US\$ 3.000 m over 5 years	1,500.000			2,360.0 00	3,860.000
1.6.2 Develop an Umbrella land law and specific land legislation using inclusive, multi-stakeholder public consultation processes	260.00 0	260.000	260.000	260.000	260.000	1,300.00 0	Consultation process at the state and regional level - one umbrella law and 2 specific laws; mainly support to civil society organisations to take the process forward - \$ 1.0 m - 5 years	500.000			800.000	1,300.000
1.6.3 Remove regulatory restrictions that condition securing tenure through titling of agricultural land held by smallholders						0.000	No direct cost					0.000
1.6.4 Remove unnecessary restrictive land use conditions and land use conversions on titled land for smallholder farmers better responding to market and climatic change dynamics						0.000	No direct cost					0.000
1.6.5 Enforce the Vacant, Fallow, and Virgin Land Law in view of a more effective use of already allocated land	520.00 0	800.000	520.000	520.000	260.000	2,620.00 0	Create inventory, audit and allocation of VFV land - US\$ 2.00 m over 5 years	1,000.000			1,620.0 00	2,620.000

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.6.6 Gradually update existing cadastral information of landholdings that were already certified	500.00 0	1,500.00 0	1,750.00 00	1,500.00 00	1,250.00 00	6,500.00 0	Ideally: Correct existing information (over 9 million titles) at US \$ 5 per parcel -- US\$ 45 million (World Bank) Realistically: US\$ 5 m over 5 years, with services on demand basis Activities: Extend land titling over new areas -- satellite imagery purchase, base map production, field verification, objections and corrections, dispute resolution, title issuance at US \$ 15 per holding	2,500.000			4,000.000	6,500.000
1.6.7 Extend the process of systematic tenure securisation through land titling and possibly other approaches to these landholdings and land systems that were not yet covered by previous efforts	1,000.00 00	1,250.00 0	1,750.00 00	1,250.00 00	1,250.00 00	6,500.00 0	50 pilots on customary land documentation including training, methodology consolidation, dissemination - US \$2.5 m over 3 years Titling over new land for 200,000 holdings: US\$ 3m over 5 years	1,000.000			5,500.000	6,500.000
1.6.8 Strengthen the capacity of land administration services and their support institutions	1,000.00 00	3,000.00 0	6,000.00 00	4,000.00 00	3,000.00 00	17,000.00 00	Support to 330 township administrations @ US\$30,000 = US\$9.9m; a combination of grants and competitive challenge fund with inclusion for training Support to 14 regions/states @ US\$300,000 = US\$4.2m; Support to Union level (DALMS) US\$3.3m	10,000.000			7,000.000	17,000.000

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.6.9 Develop a clear legal framework and institutional capacity to address land conflicts considering different methods that can be used and possibly interact under one comprehensive system		65.000	65.000	65.000	65.000	260.000		60.000			200.000	260.000
1.6.10 Develop an Agro-Ecological Zoning for the country based on the principles of Global Agro-Ecological Zones	400.000	250.000				650.000	- \$.500 m over 18 months - FAO project being developed)	150.000			500.000	650.000
1.6.11 Conduct a national level Present Land Use and Resources Survey	260.000					260.000		130.000			130.000	260.000
1.6.12 Adopt interim measures to expediently respond to urgent needs for land reform actions	40.000	60.000	60.000	60.000	60.000	280.000	A number of pilots to test and validate methodologies	250.000		30.000	0.000	280.000
1.7 Enhanced capacity of key institutions involved in ADS coordination and implementation	95.000	95.000	70.000	60.000	50.000	370.000		120.000	0.000	0.000	250.000	370.000
1.7.1 Establish coordination unit for implementation of the ADS under the Planning Department	30.000	30.000	20.000	20.000	20.000	120.000		120.000				120.000
1.7.2 Provide TA to the coordination unit	65.000	65.000	50.000	40.000	30.000	250.000					250.000	250.000
1.8 Mechanisms established for participation of civil society in the planning, implementation, and monitoring of the ADS	7.000	13.000	26.000	12.000	12.000	70.000		70.000	0.000	0.000	0.000	70.000

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.8.1 Establish and maintain an ADS website both in Myanmar language and English	5.000	11.000	24.000	10.000	10.000	60.000	-Website writing - Ky 30.0 m over 5 years '- Website maintenance - Ky 20 m over 5 years '- Webside upgrade - Ky 10 million over 5 years	60.000				60.000
1.8.2 Establish an ADS Information Desk under the Planning Department both at Union and at State/Region level	1.000	1.000	1.000	1.000	1.000	5.000		5.000				5.000
1.8.3 Periodic presentation of ADS Monitoring and Evaluation Reports to civil society	1.000	1.000	1.000	1.000	1.000	5.000	10 meeting per year at KY 1.000 per year	5.000				5.000
1.9 Improved food and nutrition security of most disadvantaged groups	4,550.500	4,550.500	4,550.500	4,550.500	4,550.500	22,752.500		22,550.000	0.000	0.000	202.500	22,752.500
1.9.1 Design targeted food and nutrition security program	5.500	5.500	5.500	5.500	5.500	27.500	Tasks (1) Establishment of food security working group; (2) Office amenities; (3) Incremental staffs; (4)Development of food and nutrition security programs at national, regional and township levels; 3 meeting per year at Ky 5.00 m per year; 3 trainings per year at Ky 0.500 m per year				27.500	27.500
1.9.2 Implement targeted food and nutrition security program	4,500.000	4,500.000	4,500.000	4,500.000	4,500.000	22,500.000		22,500.000				22,500.000

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
1.9.3 Coordinate with ongoing food and nutrition security and multisector initiatives on nutrition and poverty alleviation	45.000	45.000	45.000	45.000	45.000	225.000	Tasks (1) Establishment of food security working group; (2) Office amenities; (3) Incremental staffs; (4) Analyzing the production, stock, consumption, export and surplus of main staple food; (4) Analyzing the current programs on food security by different organizations; (5) Stakeholder consultation meeting; (6) Developing food balance sheet; (7) Invite technical consultants from WFP, FAO etc.; (8) Prepare the program reports	50.000			175.000	225.000
1.10 A Restructuring of MOALI to better integrate existing units and become more responsive to farmers, enterprises, and civil society.	250.000	750.000	500.000	500.000	500.000	2,500.000		95.000	0.000	0.000	0.000	2,500.000
1.10.1 Evaluate alternative options for MOALI restructuring, including moving MADB and YEU outside of the Ministry control, consolidating three Permanent Secretaries into one position, create Under Secretary positions.	250.000	250.000				500.000		500.000				500.000
1.10.2 Implement the selected restructuring options		500.000	500.000	500.000	500.000	2,000.000		2,000.000				2,000.000

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
OUTCOME 2 - Increased agricultural productivity and income of smallholder farmers	166,189	284,127	267,413	262,285	261,874	1,241,886		453,597	51,529	29,370	707,390	1,241,886
2.1 Agricultural research - Improved research system for crop improvement and production technology development	11,030	23,305	24,745	15,380	11,230	85,690		33,640	2,330	1,000	48,720	85,690
2.1.1 Establish National Agricultural Research Council (NARC) to coordinate and provide overall guidance to research on crops, livestock, and fisheries		50	80	80	50	260	Establishment costs (office, equipment, etc) - \$0.100 m Running small office of about 2 professionals for first 5 years - \$0.100 m	260				260
2.1.2 Develop an Agricultural Research Policy and prepare a Master Plan to establish research priorities and research programs to be undertaken by different organizations involved in agricultural research		100	130	65		295	Aim: 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. - Includes review of existing research stations (central farms and satellite farms of DAR, DOA, DoL, DoF) to assess their capacity and ensure integration of activities and avoidance of duplication; and HRD plan for research.	100			195	295
2.1.3 Establish Institute for Policy Studies in Agricultural Rural Development			50	75	125	250		50			200	250

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.1.4 Reinstated the Academy of Agricultural Sciences to strengthen and integrate academic, research, and policy making capabilities in the agricultural and food sector		15	30	25	25	95	- Academy is mainly sponsored by organisations and individuals in the agricultural sector - Government contribution - \$ 0.01 mn - five years - Member contribution - \$ 0.070 - five years	30	30		35	95
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												
- Crop varietal improvement research	300	400	500	600	500	2,300	- Rice - Ky 400 m; oil crops - ky 200 m; legumes - Ky 150 m; industrial crops - Ky 250 m; Horticultural crops - Ky 200m;	1,000			1,300	2,300
- Animal breeds improvement research	100	200	250	300	250	1,100		800			300	1,100
- Fisheries and aquaculture varieties research	80	120	180	200	200	780		780				780
- Cropping systems research encompassing biological and physical aspects of ecological, climate change and other resilience challenges and opportunities	150	180	200	220	200	950		950				950
- Soil and water management and utilisation research	170	230	230	220	220	1,070		1,070				1,070

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
- <i>Biotechnological research, including management of plant, animal and other species resources</i>	150	180	210	230	230	1,000		400	300		300	1,000
- <i>Plant protection research including Integrated Pest Management</i>	150	180	220	200	200	950		500			450	950
2.1.6 Undertake socio-economic research, cost of production and marketing studies by geographical areas, crops, production techniques, and farming systems.	500	400	600	750	1,250	3,500	US \$ 2.5 million over 5 years	700			2,800	3,500
2.1.7 Undertake research on postharvest technology to improve productivity and competitiveness	100	200	250	350	400	1,300		650			650	1,300
2.1.8 Establish a system for collating, publishing and sharing and disseminating data and results of research activities including collaboration with private sector	5	10	10	20	25	70		70				70
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.		1,000	1,500	2,000	2,000	6,500		3,500	2,000	1,000		6,500
2.1.10 Build institutional, human, infrastructure (including ICT) and financial capacity of agricultural research services, namely based on the Agriculture Research Plan, including:												

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
- 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.	325	500	750	1,000	425	3,000	US\$ 4 million over 4 years - Crops \$0.5 m - Livestock \$2.0 m	2,000			1,000	3,000
- Provide sufficient resources to increase the number of researchers and technical staff through short, medium, and long term training both in Myanmar and abroad.												0
o Agriculture/Crops Research Service	5,200	10,400	10,400	5,200	2,600	33,800		11,300			22,500	33,800
o Livestock Research Service (new)	2,600	5,200	5,200	2,600	1,300	16,900		5,600			11,300	16,900
o Fisheries and Aquaculture Research Service (new)	1,200	3,900	3,900	1,200	1,200	11,400		3,800			7,600	11,400
- Establish a performance assessment system for agricultural research		10	10	10	10	40	US\$ 0.040 m over 5 years	40				40
- Establish a new international agricultural research partnership programme through CGIAR, with a special role for ISNAR (International Service for National Agricultural Research)		30	45	35	20	130	US\$ 0.100 m - Government of Myanmar - US \$ 0.010m - CGIAR partners and donors - US\$ 0.090 m	40			90	130

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.2 Agricultural extension – Transformed agricultural extension system delivering improved (crop, livestock, fisheries, forest) products and technology for adoption and adaptation	4,345	10,395	12,515	12,915	10,715	50,885		33,780	750	0	16,355	50,885
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.	65	65				130		50			80	130
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.	30	30	15	15	15	105		80			25	105

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
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.	100	200	350	300	250	1,200		800			400	1,200
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.	1,250	3,100	3,500	3,100	1,600	12,550		3,000			9,550	12,550
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.	750	1,000	1,250	1,000	1,000	5,000		5,000				5,000

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
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.	50	100	150	150	150	600		300			300	600
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.	500	1,500	1,750	1,750	1,500	7,000		3,000			4,000	7,000
2.2.8 Strengthen farmer organizations (groups, associations, cooperatives, federations) to become facilitators for change (FUNDING ALLOCATED UNDER PILLAR 1 – OUTPUT 5)												
2.2.9 Establish information and knowledge system to provide advisory services to farmers:	500	1,000	1,000	1,000	500	4,000	Amount to be planned at implementation	1,250	750		2,000	4,000

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
<ul style="list-style-type: none"> Address farmers' and other stakeholders' demand for information and knowledge through facilitating direct contact with subject matter specialists. 						0						
<ul style="list-style-type: none"> Prepare and disseminate simple farmer-friendly technical documents, including manuals on crop, livestock, apiculture, fisheries and agri-business enterprises and activities and other tools. 						0						
<ul style="list-style-type: none"> Promotes and use ICT to interactively link SBS, extension workers and farmers with Knowledge System, demonstrations, updated crop/animal/fisheries husbandry manuals, and advisory services – include research centres, call centres and knowledge centres. 						0						
2.2.10 Pilot voucher system for extension and advisory services to allow farmers to select extension service providers.		2,000	3,000	4,000	4,000	13,000		13,000				13,000
2.2.11. Introduce farmer marketing schools.		200	300	400	500	1,400		1,400				1,400
2.2.12. Train field personnel to be sensitized to Gender and Social Inclusion (GESI) and nutrition.		100	100	100	100	400		400				400

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.2.13. Build and strengthen capacity of agricultural, livestock, and fisheries extension services institutions and staff through adequate training (long-term and in-service with competency testing), mobility, connectivity.	1,000	1,000	1,000	1,000	1,000	5,000		5,000				5,000
2.2.14. Evaluate extension activities (training, demonstrations, farmer field schools, advisory services) based on feedback from farmers and independent monitoring and evaluation system.	100	100	100	100	100	500		500				500
2.3 Research-extension coordination - Improved research-extension coordination systems with participation of farmers and private sectors	95	325	260	195	195	1,070		780	140	150	0	1,070
2.3.1 Conduct in-depth study of agricultural, livestock, fisheries and forest extension and research systems with view to improve coordination	65	65				130		130				130
2.3.3 Implement Annual Research - Extension Liaison Meetings for sharing of experience and information and decisions on approaches to crop, livestock, and fisheries development	30	65	65	65	65	290		250		40		290

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.3.4 Establish farmers' training and adaptive research centers to jointly demonstrate research results and extension recommendations on modernized farming		130	130	65	65	390		140	140	110		390
2.3.5 Jointly package, promote and disseminate knowledge on improved production technologies for adoption by farmers, including preparation of Commodity Manuals		65	65	65	65	260		260				260
2.4 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.	750	2,465	1,750	1,500	500	6,965	T	6,965	0	0	0	6,965
2.4.1 Upgrade and rationalize the current Yezin Agriculture University, University of Veterinary Science and Myanmar Marine University to become Yedin National University							One consolidated university with colleges for agriculture, livestock and aquaculture with both undergraduate and graduate degrees. Upgrade key sectoral disciplines in Yezin and other universities, including agricultural economics, agricultural business and marketing, agriculture engineering, water management, food technology, and agricultural extension and communications.					0

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
- Institutional consolidation feasibility study for establishment of Yezin National University to bring together crops, livestock and fisheries elements into one academic institution		600				600	[Estimate for this study by YAU was Ky 9,000 m - considered to high and reduced]	600				600
- Feasibility study for re-organisation of linkages between Yedin National University and State Agriculture, Livestock and Fisheries Institutes		300				300	[Estimate for this study by YAU was Ky 7,000 m - considered to high and reduced]	300				300
- Facilitate transfer of functioning of Yezin National University and constituent units to Min of Education		65				65		65				65
- Upgrade existing Departments and establish new Departments						0	- No direct cost to MOALI - Approx cost Ky 3,720,000 m to be financed under Min of Educ - Yedin National University will be under Min of Education					0
2.4.2 Expand the 3-year diploma curriculums of State Agricultural Institutes (SAI) in all states and regions to provide training on all key sectoral disciplines (Get budget from DOA, DOL, DOF)	750	1,500	1,750	1,500	500	6,000	Disciplines: agriculture, livestock, fisheries, machinery, food technology, farm management, agribusiness and marketing. Expand these institutes' offerings to include short-term certificate training as well. Invest US 5 million over 5 years	6,000				6,000

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.4.3 Revive high school level agricultural training and other vocational training institutions, both public and private.						0	No direct cost to MOALI - under Ministry of Education					0
2.5 Irrigation and water use - More efficient and sustainable irrigation and other water use systems	35,300	61,200	92,350	102,600	107,850	399,300		81,920	1,400	18,300	297,680	399,300
2.5.1. Develop Regulations for the Myanmar National Water Policy.												
a. Develop bylaws and regulations to implement the National Water Policy including regulations for rainfed agriculture, drainage, groundwater, WUA, and ISF	200	200	200			600		60			540	600
b. Develop bylaws and regulations related to research, studies, demonstration, training, and extension of water use management practices.	200	200	200			600		60			540	600
2.5.2. Develop appropriate Measures for Water Management in Rainfed Agriculture												
a. Conduct research and training on water use management in rainfed systems	400	400	400	400	400	2,000		1,000			1,000	2,000
b. Conduct demonstrations and extension programs on water use management in rainfed systems	800	800	800	800	800	4,000		3,000			1,000	4,000

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
c. Conduct feasibility of drainage investment in rainfed area, particularly in delta areas	800	800	800			2,400		1,200			1,200	2,400
d. Carry out drainage work in delta areas		10,000	20,000	20,000	20,000	70,000		15,000			55,000	70,000
2.5.3. Establish program on groundwater development												
a. Conduct hydrological studies to establish resources for groundwater utilization	2,000	2,000	2,000			6,000		600			5,400	6,000
b. Develop program to promote use of sustainable groundwater use		5,000	10,000	10,000	10,000	35,000		4,000			31,000	35,000
2.5.4 Village Irrigated (VI) dam and Village Embankment systems (VE) of less than 200 acres command areas: Rehabilitate system and modestly expand total command area.	1,000	2,000	2,250	2,750	3,000	11,000	Total allocation - -/=US\$ 8 million (-/+ Ky 11,000 million	6,000		1,000	4,000	11,000
▪ Village Irrigated system rehabilitation (XXX acres) and new construction (XXX acres)												
▪ Village Embankment rehabilitation (XXX acres) and new construction (XXX acres)												
[Work undertaken by Dep't of Irrigation and Water Management (DIWM) of respective State/Region and community, also DRD]												

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.5.5 Small Dam irrigation systems (500 – 1,000 acres): Rehabilitation of XXX acres.	1,000	2,000	3,000	3,500	3,500	13,000	- Lump sum allocation of US\$ 10 m over 5 years	6,000		3,000	4,000	13,000
[Work undertaken by Dept of Irrigation and Water Management (DIWM) of respective State/Region and community, also DRD]												
2.5.6 Medium pond/recharge basins (basins that store water and recharge groundwater, for use by both irrigation and water supply).	500	1,000	1,500	1,750	1,750	6,500	[Work coordinated by multi-water water resource agency with support by DIWM, DRD, appropriate Departments and community]	2,000		1,000	3,500	6,500
▪ Pilot construction of schemes, including linkage with surface or non-conventional irrigation (e.g. sprinklers, drip systems) under Public-Private Partnership arrangements.												
2.5.7 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.	400	800	1,200	1,400	1,400	5,200	- Lump sum allocation of US\$ 4 m over 5 years	2,000	1,400	1,800		5,200
[Work undertaken by DOI and community, also DRD]												
						0						

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.5.8 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)	25,000	30,000	40,000	50,000	55,000	200,000	- Total renovation (5 years) - 40,000 acres, one-half of area needing renovation ¹- Cost per acre - Ky 5 million (-/+US\$ 4000) ¹- Total Cost - Ky 200,000 million (-/+US\$ 150) ¹- Av. Cost per year - Ky 40,000 m (-/+US\$ 30 m) ¹- Detailed of sub-activities to be planned within this budget	30,000		10,000	160,000	200,000
<ul style="list-style-type: none"> ▪ 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 DOI and community]												

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
<ul style="list-style-type: none"> 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. 												
<ul style="list-style-type: none"> Support canal network expansion to increase the irrigable area served by an existing irrigation system. 												
<ul style="list-style-type: none"> 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. 												
<ul style="list-style-type: none"> Construct permanent headworks and improve main canals on farmer-managed irrigation systems (FMIS). 												

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
<ul style="list-style-type: none"> Improve catchment area management and restoration catchment. 												
<ul style="list-style-type: none"> 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. 												
2.5.9 Improve management of irrigation systems and on-farm water, including:	2,000	4,000	6,000	8,000	9,000	29,000	- Lump sum allocation of US\$ 20 m over 5 years - Detailed planning of subactivities to be made within this overall amount	8,000		1,000	20,000	29,000
<ul style="list-style-type: none"> Prepare the Integrated Water Resources Management (IWRM) policy within the Framework of the National Water Policy. 												0
<ul style="list-style-type: none"> Build capacity of WUAs and provide advice and possibly funding to farmers to improve their irrigation systems and practices. 												0
<ul style="list-style-type: none"> Continue to implement on-going irrigation management transfer (IMT), include: transfer of management from DOI to WUA, for example in relation to employment of gatekeepers. 												0

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
<ul style="list-style-type: none"> Transfer of full responsibility and ownership to WUA or a federation of WUAs for medium schemes (5,000 to 10,000ha). 												0
<ul style="list-style-type: none"> Prepare and implement an Irrigation Management Transfer pilot project for two medium-to-large irrigation systems. 												0
<ul style="list-style-type: none"> Set up a model on-farm water management system in a feasible irrigation tract. 												0
<ul style="list-style-type: none"> 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. 												0
<ul style="list-style-type: none"> Harmonizing and streamlining legal structures required for ownership transfer to WUAs. 												0

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.5.10 Establish funding system and guidelines for Operation and Maintenance (O&M), encompassing: (a) incentives into scheme, (b) legislation to require a receipt for ISF payment to be attached to land tax payment; (c) enforcement of existing requirement that ISF payments be brought up to date before a land sale can be registered; (d) define and charge ISFs – per crop in the short-term, and per volume of water in the long term on schemes with volumetric metering.	1,000	2,000	4,000	4,000	3,000	14,000	- Lump sum allocation of US\$ 10 m over 5 years - Detailed planning of subactivities to be made within this overall amount	3,000		500	10,500	14,000
2.6 Crop inputs - Increased use of improved farm production inputs and technologies by crop growers	31,802	40,032	41,821	51,504	51,858	217,017		120,732	22,750	9,300	64,235	217,017
Seed and planting material:	27,145	32,939	35,869	45,865	46,465	188,283		106,373	22,700	9,300	49,910	188,283
2.6.1 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.	6	10	10	6	6	38		38				38

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.6.2 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.	9	9	9	9	9	45		45				45
2.6.3 Strengthen certification of multiplied seed, including improved seed laboratories capacity	2,500	2,700	2,900	3,600	4,000	15,700		10,000	700		5,000	15,700
2.6.4 Build-up capacity of seed research stations to produce breeder and foundation seeds.												
<ul style="list-style-type: none"> ▪ Increase funding to enhance capacity of public research institutions and research stations, universities, and private sector industry. 	3,900	4,200	4,400	5,400	5,800	23,700		12,000			11,700	23,700
<ul style="list-style-type: none"> ▪ Maintaining good quality land races and open pollinated varieties (OPVs) of different crops in the remote areas that are dominated by subsistence agriculture. 	600	800	1,100	1,800	2,100	6,400		6,000		400		6,400
<ul style="list-style-type: none"> ▪ Establish good linkages with international agencies. 	50	70	100	100	100	420		210			210	420
2.6.5 Promote private and cooperative sector and community based seed production. This will involve:												

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
<ul style="list-style-type: none"> Participate in partnerships with relevant private and cooperative organizations, farms and nurseries for production of quality seed and planting materials 	800	1,000	1,300	1,900	2,100	7,100		2,500	4,000	600		7,100
<ul style="list-style-type: none"> Facilitate private sector to produce breeder, foundation and hybrid seeds, especially by providing breeder and foundation seed to private and cooperative seed growers. 	600	800	1,000	1,700	1,900	6,000		3,500	2,000	500		6,000
<ul style="list-style-type: none"> Promoting seed enterprise as an industry catering to the national needs and for export. 	800	1,100	1,300	1,900	2,300	7,400		4,000	3,000	400		7,400
<ul style="list-style-type: none"> 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. 	700	1,200	1,500	2,000	2,300	7,700		3,000		1,700	3,000	7,700
2.6.6 Enforce quality assurance systems, involving:												0
<ul style="list-style-type: none"> Improved capacity of concerned government certification bodies and laboratories to undertake planting materials certification processes. 	7,500	9,000	9,000	10,000	7,000	42,500		22,500			20,000	42,500
<ul style="list-style-type: none"> Enforcing compliance of nurseries with farm inputs quality standards. 	500	700	1,200	1,900	2,100	6,400		6,400				6,400

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
<ul style="list-style-type: none"> 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. 	1,000	1,300	1,400	2,000	2,300	8,000		8,000				8,000
<ul style="list-style-type: none"> Enforce legislation that compensates farmers when purchasing poor quality seed not complying with existing standards 	50	100	200	300	300	950		950				950
<ul style="list-style-type: none"> 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. 	130	150	150	150	150	730		730				730
2.6.7 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.	4,000	5,000	5,000	6,500	7,000	27,500		12,500	10,000	5,000		27,500

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.6.8 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.	2,000	2,300	2,500	2,900	3,000	12,700		9,000	3,000	700		12,700
2.6.9 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 Centres; (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 GMO having negative impact on bio-diversity, genetic resources, and human	2,000	2,500	2,800	3,700	4,000	15,000		5,000			10,000	15,000

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
health.												
2.6.10 Pilot voucher system for seeds whereby targeted farmers are provided with a voucher that empowers them to purchase the input (in this case seeds) of their preference. First pilot the system and on the basis of a positive review of the pilot, replicate the system and upscale.						0						0
Soil fertility management:	2,267	2,473	2,532	2,719	2,773	12,764		5,389	50	0	7,325	12,764

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.6.11 Measures to improve productivity and fertilizer use efficiency will involve promoting a greater private sector role, and include:												
<i>(a) Soil survey and mapping - to cover all Myanmar in greater detail than done in 1960s</i>	1,300	1,400	1,400	1,450	1,500	7,050	<i>See Division's worksheet for details</i>	3,050			4,000	7,050
<i>(b) Promotion and demonstration of soil conservation techniques</i>	45	65	65	70	70	315		100			215	315
<i>(c) Promotion and demonstration of soil amelioration techniques with involvement of private sector</i>	110	100	100	100	100	510		200	50		260	510
<i>(d) Strengthen laboratory facilities to ensure that farmers can get access to timely and affordable soil testing and other services</i>	80	95	95	100	105	475		175			300	475
<i>(d) Enforce quality assurance systems, including fertilizer inspection</i>	22	23	22	24	23	114		114				114
<i>(e) Capacity building of Soil Division staff, Units and facilities</i>	650	700	700	750	750	3,550		1,000			2,550	3,550

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
<i>(f) Promote domestic fertiliser production and trade with involvement of private sector, including: - Feasibility studies on domestic production - Establishment of commercial bio-fertilizer production enterprises based on municipal biomass and agro-processing waste</i>	50	75	125	200	200	650	- US \$ 0.50 m for Government to facilitate activities	650				650
<i>(g) Establish a fertilizer buffer stock under PPP arrangement.</i>	-					0	Interesting subject to be studied later					0
<i>(h) Establish database and monitoring system on fertilizer use and distribution, including both official and informal import (the latter to be obtained through survey data).</i>	10	15	25	25	25	100		100				100
Plant Disease and Pest Management:	2,390	4,620	3,420	2,920	2,620	15,970		8,970	0	0	7,000	15,970
2.6.12 Develop and promote integrated pest management (IPM) and bio-control of weeds	1,000	1,500	1,000	1,000	1,000	5,500		2,500			3,000	5,500
2.6.13 Strengthen pesticide and herbicide laboratories (\$2.000 m)	500	800	1,000	500	200	3,000		1,500			1,500	3,000
2.6.14 Establish quality assurance for pesticides and other plant protection products. This will involve:						0						0

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
i) Strengthening pesticides, herbicides, and other products inspection through improved capacity of concerned public organizations	260	520	260	260	260	1,560		560			1,000	1,560
ii. Enforcing compliance of importers and dealers with quality standards, comprising: - Enforce the law on Fertilizer - Enforce Law on pesticides and herbicides - Approve and implement a modern Law on Trademarks - Ensure proper testing and enforcement processes to prevent circulation of counterfeit, adulterated or mislabelled products	130	260	130	130	130	780		780				780
iii. Encouraging provision of quality control and certification from private sector as well as government		40	30	30	30	130		130				130
2.6.15 Plant and animal quarantine – border and inland control facilities, including laboratories, storage, and replication/testing plots	500	1,500	1,000	1,000	1,000	5,000		3,500			1,500	5,000
2.7 Mechanization - Increased application of appropriate mechanization in the agricultural value chain	50,630	91,729	38,235	33,469	32,579	246,640	T	21,740	1,070	100	223,730	246,640

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.7.1 Encourage farmers to consolidate their fields (including farm roads, drainage, irrigation networks, land levelling) 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.	3,680	2,870	2,070	2,180	2,000	12,800	AMD's work for land consolidation is to eliminate levee, levelling and making new levee only. Farm roads, drainage, Irrigation network are for Irrigation Department.	12,800	-	-	-	12,800
2.7.2 Improve utilization of increased number of farm machinery by the public sector and rural farmers	2,070					2,070	In 2017-2018 , Investment on procurement by the loan of India EXIM Bank; rest of years is only government budegt	1,000	1,070			2,070
- Selling the Farm Machinery to farmer by Installment paying system with department's budget	16,980	17,130	17,670	18,870	20,590	91,240					91,240	91,240
- Selling the Farm Machinery to farmer by Installment paying system with loan of India EXIM Bank	25,040	66,780	9,540	9,540	8,350	119,250					119,250	119,250
2.7.3 Ensure a gradual handover or privatization of mechanization stations currently under the AMD to private sector or farmer organizations.	100	600	600	600	600	2,500	Handover or privatization of mechanization stations of AMD is now (end 2016) at the analysis stage. 2017 - Completion of Analysis - donor - Ky 100m; 2018-2018-2-122 privatisation activities -- implementation for staff compensations, logistics, reallocation of facilities - - Ky 600m per year by GORUM	2,400		100		2,500

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.7.4 Training Program for farmers and private on proper operation and maintenance of farm machinery												
- Conduct training programs at training centers and mechanization stations with department's budget	690	100	210	180	200	1,380	Planning, preparing and conducting training programs at training centers and mechanization stations with department's budget; Govt budget	1,380	-	-	-	1,380
- Conducting on repair and maintenance training course to AMD's staff and farmers support by ADS using World Bank loan	1,900	1,000	500	500	500	4,400	World Bank' loan project (\$4 million loan from ADSP project) upgrading AMD Training Centre in Meikhtila and up-grade 4 mechanisations stations upgraded	-	-	-	4,400	4,400
- Conducting training on repair and maintenance training course to AMD's staff and farmers support by ADS using India EXIM Bank facility		39	39	39	39	154	In 2018 only India EXIM Bank loan project s upgrading facilities of training center of Two Agric Mechanisation Training Centres -- near YAU and in Bago Region	-	-	-	154	154
2.7.5 Promote emergence of rural workshop for agricultural machinery repair and maintenance.												
- Upgrading mechanization stations with department's budget	50	180	150	180	180	740	Upgrading mechanization stations with department's budget - Government budget - machine tools	740	-	-	-	740
- Facilitating 14 Mechanization Stations to workshops and upgrading 7 existing workshops with India EXIM Bank loan project		2,910	4,860			7,770	Facilitating 14 Mechanization Stations to workshops and upgrading 7 existing workshops with India EXIM Bank loan project -	-	-	-	7,770	7,770

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
							CDZ - Saigain Region					
- Upgrading mechanization stations with JICA project			916			916	Upgrading mechanization stations with JICA project - Ayarwaddy Region	-	-	-	916	916
- Upgrading mechanization stations in Central Dry Zone, excepting AMS aided by EXIM Bank and AIPP			1,260	1,260		2,520		2,520				2,520
2.7.6 In collaboration with private sector, ensure timely availability of spare parts.	120	120	120	120	120	600	Distribution of spare parts in collaboration with private sector is still in consideration stage - Ky 120 m per year - Govt budget	600	-	-	-	600
2.7.7 Provide financial analysis for use of alternative machinery to guide investment decision of farmers under different agro ecological conditions.			300			300	Provision of financial analysis for use of alternative machinery to guide investing decision of farmers has not been carried out yet . One year study by donor (not identified)	300	-	-	-	300
2.8 Animal breeding - More productive and profitable genetic composition of animals	9,502	11,698	8,358	4,928	9,838	44,324		32,460	1,364	0	10,500	44,324
2.8.1 Develop and maintain Myanmar Animal Genetic Resources Information System	120	120	120	120	120	600	Develop systems to assess, collect and collate Myanmar genetic animal including hard- and software	300			300	600

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.8.2 Develop National Strategy and Action Plan for Animal Genetic Resources (AnGR) conservation and protection - with legislation, regulations and guidelines	60	60	60	60	60	300		100	-	-	200	300
2.8.3 Support technical and operational capacity of LBVD staff and technical taskforces	30	70	100	100	70	370	Provide long term training in appropriate subjects/disciplines; provide ongoing on the job training	70			300	370
2.8.4 Strengthen physical, human resources and financial capacity for animal breeding	500	500	500	500	500	2,500		1,000			1,500	2,500
2.8.5 Participate in applied research in animal breeding in line with Livestock Research Programme	0	0	120	120	120	360		360				360
2.8.6 Implement nation-wide Artificial Insemination (AI) Programme												
- Develop and maintain Semen Production Unit	1,200	1,200	60	60	60	2,580	Acquire and install semen units in 2017 and 2018 - \$2.00m; operation of semen units - \$0.050 per year	2,580				2,580
- Develop and maintain Liquid Nitrogen plant together with Liquid Nitrogen Distribution programme	1,260	1,260	660	60	60	3,300	Acquire and install liquid nitrogen plant in 2017-2019 - U\$ 1.6m ; operation of plants and distribution of Nitrogen - \$0.05 m per year	3,300				3,300
- Develop and maintain National Training Center for AI and AI Service Centers – strategically located in different regions	120	4,000	90	60	5,000	9,270	Building and rehabilitation of 14 AI training and service centres -- \$5 million; maintenance and operation of centres of all centres -- \$0.5 m per year.	6,270			3,000	9,270

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
- Provide farmer support for Artificial Insemination (AI)	600	600	600	600	600	3,000		3,000				3,000
Establish and operate new Liquid Nitrogen plant at cattle potential areas (Sagaing, Magwe, Mandalay)	900	240	240	240	240	1,860	MACHINE ALREADY IN COUNTRY; BUILDING - \$.500; SUPPLIES-AND OPERATION - \$.200 @ YEAR	1,860				1,860
- Provide the Liquid Nitrogen tank (3/ 5 liter tank)	120	120	120	120	120	600		600				600
- Develop Embryo Transfer technology, In vitro fertilization and cloning technology	800	120	120	120	120	1,280	INCUBATOR, ELECTRO MICROSCOPE, ETC - \$.500M; OPERATION - .100 M	680			600	1,280
- Provide technical know-how for frozen semen and frozen embryo	120	120	120	120	120	600	TRAINING, EXTENSION, DEMONSTRATION	400			200	600
2.8.7 Support specialized Mythun cattle development, conservation and production programme	1,200	2,400	4,800	2,000	2,000	12,400	Mithun breed improvement - \$3m; Conservation of natural habitat of Mithuns - \$2m ; Mithun health program - \$2m; Cultivation of relished natural mithun fodders - \$1m; Conservation of biodiversity in area - \$1m; Community mobilization for participatory approach - \$1m	8,000			4,400	12,400
2.8.8 Promote private sector and cooperatives to produce improved breeds with proper recording of progeny, productivity, and efficiency.	60	60	60	60	60	300	Training	300				300

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.8.9 Expansion of artificial insemination laboratories and service for the promotion of programs for breeds improvement.	240	240	240	240	240	1,200	ESTABLISH NEW AI CENTER IN NPT; BUILDINGS / STRUCTURE; 0.500M; MACHINERY & equipment - \$1.5 M; poeration per year - \$.5m	1,200				1,200
2.8.10 Support private sector to establish grandparent stocks of livestock, especially local breed for increased food security and market sales, including exports							Establish breeder farms including infrastructure and stock - poultry \$0.5 m- 2017; sheep and goat - \$1.0 m - 2018; cattle - \$ 2m - 2019; Annual cost for m local breeds; multiply local breeds; distribute and support small holder farms					0
- Poultry	600	12	12	12	12	648		200	448			648
- Sheep and goat	120	24	24	24	24	216		100	116			216
- Cattle	1,200	60	60	60	60	1,440		640	800			1,440
2.8.11 Support recording and improvement of quality, health status, productivity of improved herds.	12	12	12	12	12	60		60				60
2.8.12 Support implementation of livestock insurance schemes.		240				240	Feasibility study - may be done by FAO	240				240
2.8.13 Reliable, efficient and continuous supply of Liquid Nitrogen (LN2) for the AI program. One of the effective approaches could be the establishment of LN2 plant on PPP model.	240	240	240	240	240	1,200	Distribute liquid nitrogen tanks to all state and region, up to township level	1,200				1,200

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.9 Animal health - More healthy and productive animals	8,300	16,900	17,700	16,520	17,900	77,320	T	49,650	16,000	0	11,670	77,320
2.9.1 Strengthen animal health information systems, including strengthened National Animal Health and Disease Surveillance Plan and actual surveillance and reporting activities	240	600	1,000	1,200	1,500	4,540		2,270			2,270	4,540
2.9.2 Facilitate production and distribution of vaccines, including cold-chain management	2,400	4,600	6,000	6,000	6,000	25,000		18,000	7,000			25,000
2.9.3 Establish and manage Community Animal Health Workers (CAHW) programme and activities	60	1,500	1,500	120	1,200	4,380		4,380				4,380
2.9.4 Implement contingency planning and action for emerging animal disease threats	2,400	2,400	2,400	2,400	2,400	12,000		7,000			5,000	12,000
2.9.5 Strengthen Veterinary and Animal Health Services to ensure their accessibility to farmers, including developing role of private sector	2,000	6,000	5,000	5,000	5,000	23,000		14,000	9,000			23,000
2.9.6 Conduct animal population baseline survey	1,200	1,800	1,800	1,800	1,800	8,400	2017 - Phase 1 in selected states and regions; 2018 - expand to cover whole country	4,000			4,400	8,400
2.10 Animal nutrition – Better fed and productive animals	2,120	4,250	5,700	5,920	6,120	24,110		19,510	600	0	4,000	24,110
2.10.1 Support improved pasture, fodder and grazing and feeding practices	1,000	2,000	3,000	3,000	3,000	12,000		12,000				12,000

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.10.2 Compile and maintain national information, inventory and data base on animal pastures, fodder and feed systems - with specific breakdown of situation and conditions by area	60	250	300	120	120	850		850				850
2.10.3 Strengthen physical, human resource and financial capacity of Feed Testing Laboratory of Livestock Breeding and Veterinary Department (LBVD)	600	1,000	1,200	1,600	1,800	6,200		3,200			3,000	6,200
2.10.4 Develop and/or import high-quality fodder and feed planting materials - including establishment of forage/fodder production plots and on-farm demonstration	200	400	600	600	600	2,400		1,800	600			2,400
2.10.5 Scale-up on-going pilot activities on development of animal feeding strategies on cover the whole country	200	400	400	400	400	1,800		800			1,000	1,800
2.10.6 Support applied research in animal nutrition in conjunction with Livestock Research Programme	60	200	200	200	200	860		860				860
2.11 Animal and dairy production – Strengthened capacity of small-scale animal producers	4,580	7,950	6,060	4,240	3,710	26,540	T	14,000	3,100	0	9,440	26,540
2.11.1 Train and provide information to build capacity of livestock producers on different technical, economic and marketing aspects	180	250	200	150	120	900		900				900

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.11.2 Implement small-holder dairy development programme (including building strategically located medium size milk processing plants, cold storage, transport and other facilities; and support to Myanmar Dairy Excellence Project)	1,200	2,700	900	250	250	5,300		1,300	2,000		2,000	5,300
2.11.3 Support small-scale beef cattle production and distribution	100	1,200	1,200	600	300	3,400		2,800	600			3,400
2.11.4 Support small animal (pigs, goats, sheep, etc) production	100	900	900	400	200	2,500		2,000	500			2,500
2.11.5 Develop, establish, and promote adoption adopt and compliance to national standards on sustainable livestock production	600	500	460	440	440	2,440		1,000			1,440	2,440
2.11.6 Capacity building for livestock income generation in rural areas - vocational, entrepreneurship and enterprise training, with special attention to women	2,400	2,400	2,400	2,400	2,400	12,000	Design gender sensitive programmes; Develop role and activities for women; develop activities and enterprises for women; connect women to markets;	6,000			6,000	12,000
2.12 Apiculture -- Expansion and increased importance of apiculture (bee honey) industry as primary and additional source of income generation for small-scale producers	725	88	94	69	69	1,045		1,045	0	0	0	1,045

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.12.1 Carry out surveys, field trials to assess biological and ecological potential and capacity of apiculture as a source of income	32	20	20	20	20	112	Apicultural Surveys - 2017 - \$0.020; 20118-22 - .010 per year; field trials - \$0.005 per year	112				112
2.12.2 Study of major constraints, opportunities and value chain of bee honey in Myanmar	25	25	25			75	2017 - Cost and opportunities study - \$0.010; 2017 - 2018 values chain analysis - 0.030	75				75
2.12.3 Establish and operate apiculture laboratory for research and for quality control of bee honey	650	25	25	25	25	750	Building - \$0.030; Equipment -- \$0.450; operations - \$0.02 per year	750				750
2.12.4 Train staff, bee keeper, processors and handlers on best practices and market responses	12	12	12	12	12	60	Training topics: improvement of bees; artificial insemination; identification and treatment of disease; managing beehive pests; production of supplementary bee products; handling of beeswax and wax production; utilization of bees for the production of pollen; and advanced technologies in beehive migration and extraction tools.	60				60
2.12.5 Promotion Myanmar bee honey in major including domestic and overseas markets	6	6	12	12	12	48	Media messages, messages in Myanmar Trade Fairs	48				48

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.13 Fisheries and aquaculture inputs and services - Maximum output and profit from fishing and aquaculture industries using sustainable practices	4,250	8,650	11,600	9,200	6,000	39,700		26,150	0	0	13,550	39,700
2.13.1 Support restructuring and expansion of seedling infrastructure (hatcheries & breeding ponds) for aquaculture industry and production and distribution of fish and shrimp seeds	1,000	1,500	1,500	1,000	1,000	6,000		6,000				6,000
2.13.2 Identification, inventory and resource conservation of adaptable fish species (for cold upland areas, dryland areas, etc.)	200	500	600	400	300	2,000		500			1,500	2,000
2.13.3 Establish network of Aquaculture Technology Centers (Koica Research Center - Marine Biology Departments of Universities of Mawlamaine, Patheingyi, Meiktila and Yangon), with supporting laboratory facilities	500	1,500	3,000	3,500	1,500	10,000		2,000			8,000	10,000
2.1.4 Facilitate provision and availability of fishing infrastructure	300	1,200	1,500	1,000	1,000	5,000		5,000				5,000
2.13.5 Facilitate legal and regulatory framework for fisheries and other aquatic livelihoods, demarcating open fisheries, law enforcement for closed season and closed areas for fishing and banning destructive fishing gears	50	150	200	100	100	600	Small GEF Project	50			550	600

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.13.6 Promote aquaculture optimisation initiatives such as land development, cage and pen technology integrated with existing dams or reservoirs (exclusion of dams serve for domestic water delivery), under the proper legal frame work	1,000	1,500	2,000	1,500	1,000	7,000		3,500			3,500	7,000
2.13.7 Provide technical support to fish and aquaculture processing industry to increase supply of good quality fish for domestic and export markets	1,000	2,000	2,500	1,500	1,000	8,000		8,000				8,000
2.13.8 Promote the production of aqua feed by strengthening the link between the soybean production in Shan State, soybean cultivar improvement of Department of Agricultural Research and set up of the soybean mills and aqua feed mills of the private sector	200	300	300	200	100	1,100		1,100				1,100
2.14 – Good Agricultural Practices (GAP), also incorporating Good Veterinary and Husbandry Practices (GVAHP) and Organic Agriculture (OA) -- Sufficient, safe and good quality food products from environmentally, economically and socially acceptable and sustainable off-farm and off-farm practices by producers.	900	1,785	2,910	1,610	1,105	8,310	T	5,765	2,025	520	0	8,310

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.14.1 – Coordinate, formulate, elaborate, document, and promote concepts, principles, guidelines, laws, regulations and protocols for GAP (including GVAHP, GFP and OA) in Myanmar.												0
▪ Establish GAP Unit or Focal Point within MOALI to coordinate and spearhead development and implementation of GAP, GVAP, GFP, OA	30	50	60	30	30	200		200				200
▪ Document, share and promote adoption of principles, guidelines, regulations and protocols for GAP – with attention to Myanmar, ASEAN and global markets	10	20	20	20	20	90		90				90
▪ Build capacity for inspection and certification, including training and establishment of National Laboratory for GAP and other standards and protocols	50	200	150	50	50	500		500				500
▪ Monitor, control, regulate and enforce compliance with GAP, GVAHP, GFP 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	20	30	30	30	30	140		140				140

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
<ul style="list-style-type: none"> ▪ Undertake GAP, GVAHP, GFP and OA certification and facilitate incentives for certification 		10	15	15	15	55		55				55
<ul style="list-style-type: none"> ▪ Promote connections, harmonize standards and protocols within ASEAN 	5	5	10	10	10	40		40				40
2.14.2 – Increase production, value-addition, sale and consumption of GAP and OA rice, pulses, vegetables, fruits, meat, dairy, honey, cash crops, and other products						0						
- Build capacity and empower stakeholders, including facilitate formation of Myanmar GAP and OA farmer groups and cooperatives	50	150	300	150	150	800		400		400		800
- Build capacity of MOALI Departments in GAP and OA	50	100	100	75	75	400		400				400
- Undertake applied research in GAP and OA practices, including private sector support	10	10	15	15	15	65		65				65
<ul style="list-style-type: none"> ▪ Conduct value chain analyses and cost of production studies on GAP and OA 	20	20	10	10	10	70		70				70
<ul style="list-style-type: none"> ▪ Conduct tailored extension programmes for transfer of technology on GAP and OA applications and production, including private sector support 	15	25	20	20	20	100		100				100

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
- Support Good Livestock Husbandry Practices (GAHP) development for small and medium scale animal, dairy and poultry producers	120	120	120	120	120	600		500		100		600
- 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	500	1,000	2,000	1,000	500	5,000		3,000	2,000			5,000
▪ Organise GAP competitions, fairs and ceremonies		15	20	25	25	85		40	25	20		85
2.14.3 – Establishment and exploitation of “Myanmar Brand” of GAP and OA products in domestic and international markets												0
▪ Build market information base on GAP and OA	10	10	10	10	10	50		50				50
▪ Obtain at least two accredited management standards			5	5		10		10				10
▪ 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	10	20	25	25	25	105		105				105
												0

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.15 Improved Resilience of Farmers to Climate Change and Disasters	1,860	3,355	3,315	2,235	2,205	12,970	T	5,460	0	0	7,510	12,970
2.15.1 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.	500	2,000	2,000	1,000	1,000	6,500	Work of Biotechnology Unit on resilient crops - about Ky3000 million over 5 years, plus purchase of lab and other facilities in 2017 and 2018 - Ky 2,000 ; Other including livestock - About Ky 150 million	3,500			3,000	6,500
2.15.2 Establish an early warning system and adopt early warning information for managing climate change risks in agriculture and food and nutrition security.	60	90	120	120	90	480		120			360	480
2.15.3 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.		30	40	40	40	150		150				150
2.15.4 Strengthen the food reserve system to cope with emergency and food safety distribution to targeted farm households.						0	Study and recommendations by 2021					0

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
2.15.5 Strengthen the seed and feed/fodder reserve system to cope with natural disasters such as flood and drought.						0	Study and recommendations by 2021					0
2.15.6 Improve capacity of extension staff and farmers in climate smart agricultural practices through training, FFS, and demonstrations.	40	65	65	65	65	300	Including-country programmes and specialised study tours - e.g. ARI - Asian Rural Institute)	150			150	300
2.15.7 Implement programme to in-build mitigation factors and resilience of livestock farmers to climate change, natural disasters and other uncertainties	120	120	120	120	120	600		200			400	600
2.15.8 Increased climate smart and conservation-oriented livestock utilization practices and conservation farming	1,100	1,000	900	800	800	4,600	E.g. FAO project in Dry Zone	1,000			3,600	4,600
2.15.9 Establish a fund for preparedness and response to droughts, flood, epidemics and emergencies affecting rural areas and farmers not covered by agricultural insurance.						0	Study and recommendations by 2021					0
2.15.10 Carry out Community Based Disaster Risk Management (CBDRM) capacity building.	40	50	70	90	90	340		340				340
OUTCOME 3 - Enhanced market linkages and competitiveness of Myanmar farmers and agro-enterprises	262,804	167,379	177,302	177,277	127,847	912,611		259,718	13,075	1,340	638,478	912,611
3.1 Improved business environment along the supply chain	25	200	225	150	125	725		275	0	0	450	725

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
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. - Elimination of unnecessary internal taxes, road and bridge tolls, and permits to make it easier to move goods within the country. - Reduction of “transaction costs” by eliminating “red tape” (that is, overly complex procedures) related to starting and running businesses.		100	100	50	50	300	Tasks: Review status of legal and regulatory framework of agri-business and related commercial of institutions; Develop mediation and arbitration services to resolve contract disputes that are accessible in rural areas; improve the court system to resolve the full range of commercial disputes. US \$ 0.5 m over 4 years (Policy Units)	100			200	300
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.		50	75	75	50	250	(Policy Unit)	100			150	250
3.1.3 Identify models, lessons, and guidelines for effective contract farming and implement standard operating procedures for contract farming	25	50	50	25	25	175		75			100	175

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.2 Improved investment regulations for agrifood investors to develop and expand businesses throughout the relevant agricultural and food supply chains	50	400	450	350	350	1,600		1,200	250	0	150	1,600
3.2.1 Design and implement an investment promotion strategy for the agricultural and food sector		100	100			200	US\$ 0.150 in 2018 - 2019 to design and launch strategy	50			150	200
3.2.2 Strengthen the capacity of Myanmar Investment Commission to expedite investment applications in the agriculture sector while effectively taking into account environmental and social impact assessment.		200	250	250	250	950	Support agriculture sector operations in MIC, including promoting Agriculture Investment Unit	950				950
3.2.3 Approve the draft Investment Law, 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 sectoral restrictions that prevent entry of private investors through a transparent and short negative list of restricted investment sectors.	50	100	100	100	100	450		200	250			450

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.3 Protection of intellectual property rights for agricultural and food sector	0	360	265	200	200	1,025		845	0	0	180	1,025
3.3.1 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.		130				130		40			90	130
3.3.2 Approve the draft Trademark Law and implementing regulations to enable protection for geographical indications, certification marks, and trademarks for agricultural/food products.		130				130		40			90	130
3.3.3 Strengthen IPR protection against counterfeit agricultural inputs, especially for pesticides, including stronger border control measures to reduce the import of counterfeit products.		100	200	200	200	700		700				700
3.3.4 Approve the Patent Law to protect domestic research and innovators in the agriculture and food sector.			65			65		65				65
3.4 Development of quality-based product standardization and grading system to help farmers and food processors to get higher prices for their goods,	300	960	925	595	565	3,345		3,165	0	0	180	3,345

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
incentivising quality upgrading												
3.4.1 Develop product standards and certifications, quality grading, quality control measures, and reliable conformity assessment (testing) procedures.		65	65			130		40			90	130
3.4.2 Revise the Law on Standardization to introduce key international best practices and transparency requirements for the development of standards, conformity assessment processes, and technical regulations		65	65			130		40			90	130
3.4.3 Support the establishment and functioning of a National Accreditation Bureau for testing processes and a National Metrology Institute for measurements.		100	65	65	65	295		295				295
3.4.4 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).		30	30	30		90		90				90

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.4.5 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.	200	400	400	300	300	1,600	Purchase of lab and other equipment, training of staff and industry clients, passage of legislation, regulations, rules and guidelines	1,600				1,600
3.4.6 Approve 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.	100	200	200	100	100	700		700				700
3.4.7 Support the development of public and private calibration capacities to ensure the use of accurate testing/measurement equipment.		100	100	100	100	400		400				400
3.5 Enhanced institutional framework for planning and implementation of rural development programmes	605	1,515	1,100	1,000	1,000	5,220		2,700	0	0	2,520	5,220
3.5.1 Establish new Research and Development Division within DRD	175	425	400	300	300	1,600	Review, planning and launching Ky 50m; office and amenities - Ky 600 m; additional staff - Ky 950 - Over 5 year	700			900	1,600
3.5.2 Establish new Design Division for rural infrastructure	430	1,090	700	700	700	3,620	Review, planning and launching Ky 40m; office and amenities - Ky 1900m; additional staff - Ky 1680 - Over 5 year	2,000			1,620	3,620

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.6 Rural communities empowered and enabled to initiate locally-generated development initiatives	109,308	14,528	17,071	17,224	17,568	175,699		55,612	0	0	120,086	175,699
3.6.1 Village level community development initiatives (DRD Green Village Project example)	4,680	4,800	4,950	5,100	5,202	24,732		24,732				24,732
3.6.2 Township level community development initiative (DRD Community based project example)	104,463	9,559	11,949	11,949	12,188	150,108		30,022			120,086	150,108
3.6.3 Community capacity building in preparation and drafting of action plan projects	39	40	41	41	41	202		202				202
3.6.4 Training on rural entrepreneurship and enterprise development (e.g. rural livestock raising)	126	129	131	134	137	657		657				657
3.7 Expanded and improved rural road network integrated with national transport plans	83,717	65,716	67,024	68,348	69,715	354,520		53,254	0	0	301,266	354,520
3.7.1 Improve rural road infrastructure consistently with mater plan for transportation												
- Rural road construction	54,415	55,503	56,614	57,746	58,901	283,179		42,477			240,702	283,179
- Rural bridges construction	29,292	10,180	10,384	10,592	10,804	71,252		10,688			60,564	71,252
3.7.2 Remove all restriction on internal movement of agricultural goods, incl. taxes and fees, within and between states and regions (Min of Trade / MOALI)												

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
- Review existing transport regulatory system and suggest improved system (Min of Trade MOALI)		13	6			19		19				19
- Enact necessary legislation and regulations and by-laws on agricultural goods transportation (Min of Trade / MOALI)		5	5			10		10				10
3.7.3 Monitor transport costs and times and share information widely	10	15	15	10	10	60		60				60
3.8 Expansion of rural electrification and use of renewable energies	3,534	3,999	4,265	4,233	4,302	20,333		4,275	1,000	0	15,058	20,333
3.8.1 Rural electricity projects												
- Connect rural communities and households to national grid	3,234	3,299	3,365	3,433	3,502	16,833		2,525			14,308	16,833
- Promote renewable energies (micro-hydro, solar, micro, biomass, biogas)	200	300	400	300	300	1,500		750			750	1,500
- Promote public-private partnerships (PPP) for development and distribution of power to rural farming communities	100	400	500	500	500	2,000		1,000	1,000			2,000
3.9 Enhanced access to potable water by rural households	1,765	1,801	1,838	2,667	4,438	12,510		1,922	0	0	10,588	12,510
3.9.1 Construction of rural water supply infrastructure	1,755	1,791	1,827	2,656	4,427	12,456	2928 water supply units	1,868			10,588	12,456
3.9.2 Knowledge sharing on access to clean drinking water technology program	10	10	11	11	11	53	150 trainings	53				53

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.10 Developed and well-managed marketing and market institutions and logistics infrastructure	320	800	905	780	580	3,385		1,085	1,000	0	1,300	3,385
3.10.1 Establish a dedicated Agribusiness and Marketing Division/Unit in MAF to work with corresponding entity within Ministry of Trade (MOT), and streamline respective MOALI and MOT institutional set-up and modus operandi, and coordinate arrangements between the two Ministries	75	100	75	50	50	350		75			275	350
3.10.2 Identify strategic locations for agricultural market development and undertake feasibility studies.	20	30	30	30	30	140		140				140
3.10.3 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.	200	250	300	300	250	1,300		300	700		300	1,300
3.10.4 Implement PPP financing support mechanisms		200	150	150	100	600		300	300			600
3.10.5 Develop rules and regulations and SOP for improved market infrastructure management.		20	25			45		45				45
3.10.6 Capacity building programs for market infrastructure management	100	300	400	300	200	1,300		300			1,000	1,300

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.11 Increased competitiveness in a number of prioritized, climate friendly agricultural value chains	2,635	2,675	2,560	2,565	2,565	13,000		2,975	3,800	800	5,425	13,000
3.11.1 Establish 7 prioritized National Value Chain Programs (including crops, livestock, and aquaculture). Example: rice, vegetables, pulses, oilseeds, cotton, sugarcane, poultry, cattle, aquaculture							No direct cost					
3.11.2 Conduct value chain study and identify bottlenecks and opportunities for respective prioritized enterprises	700	700	700	700	700	3,500	Challenges and opportunities study in 2101-2019 - US \$ 0.100m; ongoing investigations in remaining years - \$ 0.100m	500			3,000	3,500
3.11. Prepare a value chain policy, strategy and development programme	150	150				300	Preparation of policy, strategy and programme in 2018-19 - US\$ 0.100 m	50			250	300
3.11.3 Establish value chain information desks to monitor cost of production, market information and analysis	65	65	65	65	65	325		125			200	325
3.11.5 Support formation of farmer organizations dedicated to specific value chain development	70	70	70	70	70	350		100			250	350
3.11.6 Support formation of trade associations dedicated to specific value chain development	15	15	10	10	10	60		60				60
3.11.7 Support the formation of industry associations including farmers, processors, logistics operators, and service providers dedicated to specific value chain	15	15	15	15	15	75		75				75

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
development												
3.11.8 Conduct regular (quarterly) meetings of value chain industry with Government	10	10	10	10	10	50		50				50
3.11.9 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	30	30	30	30	30	150		75			75	150
3.11.10 Establish value chain development funds to promote farmer-enterprises partnerships	1,000	1,000	1,000	1,000	1,000	5,000		1,000	2,500	500	1,000	5,000
3.11.11 Establish a value chain innovation fund to fund an annual value chain innovation competition	500	500	500	500	500	2,500		500	1,250	250	500	2,500
3.11.12 Organize annual value chain fairs, exhibits, seminars, workshops, conferences, and training both in Myanmar and abroad aimed to have access to markets for agrifood products from Myanmar	50	75	100	100	100	425		325	50	50		425
3.11.13 Promote the formation of PPP for value chain development		10	15	20	20	65		65				65
3.11.14 Training of Trainers (ToT) on Climate Friendly Agribusiness Value Chains	30	35	45	45	45	200		50			150	200

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.12 Enhanced food quality and safety	1,318	2,823	3,370	3,175	2,070	12,755		7,070	0	540	5,145	12,755
3.12.1 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.		260	200	60	60	580		250			330	580
3.12.2 Develop sanitary and phytosanitary regulations in line with international practices to protect crop and animal health in Myanmar.	130	390	130	130	130	910		400			510	910
3.12.3 Formulation and promulgation of food safety and quality standards, starting from the standards for the prioritized value chains		130	130	130	130	520		220			300	520
3.12.4 Adopt legislation on accreditation of standards certification bodies and national laboratories for foods safety and quality certification		60	130	30	30	250		200			50	250
3.12.5 Strengthen and upgrade laboratories to international accreditation standards		260	520	780	260	1,820		1,000			820	1,820
3.12.6 Establish regional laboratories and district offices for a number of food safety tests (soil testing, Maximum Residue Levels, water testing, pesticides, fertilizers, etc.)		390	780	780	260	2,210		1,510			700	2,210
3.12.7 Establish capacity for risk assessment (for both plant and animals), SPS management and surveillance	260	390	260	130	65	1,105		400			705	1,105

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.12.8 Conduct awareness campaign on food safety	15	30	45	90	90	270		270				270
3.12.9 Adopt One <i>Health Approach</i> and strengthen animal health surveillance, diagnostic, and response capacity						0	No direct cost - activities unders Output 2.9					
3.12.10 Negotiate SPS protocols with key trading partners to facilitate exports.	3	3	5	5	5	20		20				20
3.12.11 Apply legitimate policy objectives based on international standards wherever possible with minimum compliance costs and unnecessary impacts on trade.						0	No direct cost					0
3.12.12 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.	390	390	520	520	520	2,340		1,800		540		2,340
3.12.13 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.	520	520	650	520	520	2,730		1,000			1,730	2,730

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.13 Improved access to a range of financial services for farmers and agribusiness enterprises	55,626	59,026	62,036	61,851	12,478	251,017		76,727	0	0	174,290	251,017
3.13.1 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.		130	130			260	This must be done in close cooperation with the Myanmar Central Bank and Ministry of Planning and Finance.	70			190	260
3.13.2 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.						0	No direct cost					0

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.13.3 Over time revise the Law on Microfinance, but in the short-run implement a number of 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.						0	No direct cost					0
3.13.4 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.						0	No direct cost					0
3.13.5 Develop creditworthiness information systems that make it easier to provide credit to viable farmers and SMEs without full collateral backing.	65	130	65	65	65	390		390				390

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.13.6 Return control of the Myanmar Agricultural Development Bank (MADB) to the Ministry of Planning and Finance or to Central Bank						0	No direct cost					0
3.13.7 Allow the MADB to perform as a development bank as provided for under the Myanmar Agricultural and Rural Development Bank Law (1990).						0	No direct cost					0
3.13.8 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.		130	130			260	No direct cost	130			130	260
3.13.9 Consider options for privatizing or dramatically changing the MADB's corporate governance, including establishing an autonomous Board of Directors.						0	No direct cost					0
3.13.10 Allow MADB to offer longer term loans and allow loans beyond seasonal credit for specific crops.						0	No direct cost					0
3.13.11 Provide training in financial management for farmers	30	30	30	30	30	150		150				150
3.13.12 On-going capitalization of MADB MOALI budget, including development support to MOALI	2,000	5,000	8,000	8,000	7,000	30,000		10,000			20,000	30,000

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.13.13 Microfinance for cooperative using finance from Japan and Korea Banks	53,531	53,606	53,681	53,756	5,383	219,957	Only 20% of finance figures from DOC used here - estimate only 20% of finances go to agriculture sector.	65,987			153,970	219,957
3.13.14 Formulate policy, law, and regulations for agricultural insurance						0	Next plan					0
3.13.15 Promotion campaign for agricultural insurance to farmers						0	Next plan					0
3.13.16 Pilot a local-level weather indexed insurance scheme (WIIS)						0	Next plan					0
3.13.17 Strengthen technical capacity for crop forecasting						0	Next plan					0
3.13.18 Pilot scheme of Livestock insurance						0	Next plan					0
3.14 Market information available to farmers, farmer's groups, private sector, and public workers	245	395	535	605	705	2,485		220	2,025	0	240	2,485
3.14.1 Promote development of a suite of products for market information and market intelligence	30	50	60	30	30	200		50			150	200
3.14.2 Provide financial, logistical and other support to facilitate training and technical assistance for MOALI and staff of other relevant agencies like MOT in market intelligence and information systems and policy analysis, including provisions for international training and meeting	10	20	20	20	20	90		90				90

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	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.14.3 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												0
- MOALI/Met Dept/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; agric technology and knowledge like fertilisation and pesticide use; soil and land use maps; etc etc		20	50	50	50	170		80			90	170
- Private sector info providers to set up networks for info distribution through cell phones, Internet, info kiosks; etc	200	300	400	500	600	2,000			2,000			2,000
- Ensure that research and extension services and personnel are linked into and contribute to and use ICT networks	5	5	5	5	5	25			25			25
3.15 Growth of small and medium agro-enterprises	1,707	6,309	9,511	9,512	8,014	35,053		30,053	5,000	0	0	35,053
3.15.1 Adopt tax incentives to stimulate investment in agro-based enterprises							No direct cost					0
3.15.2 Promote establishment of Agribusiness Incubators	1,000	2,000	4,000	4,000	3,000	14,000		14,000				14,000

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
Research, development and training activities to promote SMEs (by Dept of SME)	7	9	11	12	14	53		53				53
3.15.3 Establish matching grants to promote agro-enterprise innovation	500	1,000	2,000	2,000	1,500	7,000		7,000				7,000
3.15.4 Innovation Competition Fund for Agro-enterprises and Coops		3,000	3,000	3,000	3,000	12,000		7,000	5,000			12,000
3.15.5 Agro-Entrepreneurship Programs for youth, women, disadvantaged groups and disadvantaged regions	200	300	500	500	500	2,000		2,000				2,000
3.16 Liberalized agrifood exports and imports and upgraded trade diplomacy capabilities to protect Myanmar exporters.	1,630	5,710	3,760	3,210	2,360	16,670		16,670	0	0	0	16,670
3.16.1 Greatly 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.							No direct cost					0

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.16.2 Develop more effective trade facilitation capacities to reduce the cost of clearing goods through customs and border control		200	500	200	200	1,100	(i) streamline and automate non-tariff measure processes, including for SPS measures; 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.	1,100				1,100
3.16.3 Upgrade customs clearance processes and logistics facilities for key land border crossings.	1,000	2,500	1,000	1,000	1,000	6,500	US\$ million for equipment, buildings, staff development	6,500				6,500
3.16.4 Negotiate with neighboring countries to improve the trading regime at land-border	130	260	260	260	260	1,170		1,170				1,170
3.16.5 Improve processes for transiting products through Myanmar, especially from Yangon to Muse by implementing the ASEAN Customs Transit System.	500	1,250	1,000	750	500	4,000		4,000				4,000
3.16.6 Develop and implement 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 Chinese markets.		1,500	1,000	1,000	400	3,900		3,900				3,900

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OUTCOME, OUTPUTS, AND ACTIVITIES	Million Kyat						Remarks	Source of Funding (Million Kyat)				
	2017-18	2018-19	2019-20	2020-21	2021-22	Total		Govt	Private	Farmers	Donors	Total
3.17 Improved trade and growth in volume and value of food and agricultural products exports	20	163	1,463	813	813	3,270		1,670	0	0	1,600	3,270
3.17.1 Prepare and implement National Export Strategy and Agricultural Export Promotion Program			1,300	650	650	2,600	Tasks: Provide information to farmers and processors about export opportunities and requirements, promote Myanmar products in targeted foreign markets.	1,000			1,600	2,600
3.17.2 Develop the national capacity for more effective trade diplomacy in government including private and public sector		130	130	130	130	520	Aim: enable public and private sector to protect national interests in international agriculture and food trade situations and to engage well with organisations like WTO and ASEAN Economic Community. // Tasks: build capacities to negotiate more effectively with neighboring countries to reduce situations where Myanmar exports are restricted. // Place Agric Attaches in strategic Myanmar Embassies	520				520
3.17.3 Cooperation, coordination, negotiation with international loan/grant/grant assistance projects of MOALI	13	26	26	26	26	120		120				120
3.17.4 Document and provide guidance to enterprises that are not in line with Trade Related Investment Management	7	7	7	7	7	30		30				30

