

**MINISTRY OF AGRICULTURE, LIVESTOCK AND
IRRIGATION
THE REPUBLIC OF THE UNION OF MYANMAR**

**DATA COLLECTION SURVEY FOR
FOOD VALUE CHAIN
DEVELOPMENT ASSISTANCE
IN
THE REPUBLIC OF THE UNION OF
MYANMAR**

**FINAL REPORT
APPENDIX**

November 2018

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
SANYU CONSULTANTS INC.(SCI)**

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| JR |
| 18-045 |

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Appendix 1
Person-Month Input
for the Survey

APPENDIX 1 PERSON-MONTH INPUT FOR THE SURVEY

| | 2018 | | | | | | | | | | | | Assignment | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|------|-----|-----|------|------|-----|-----|-----|------------|----------|-----------|------------|------|------|------|
| | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | In Myanmar | In Japan | Total | | | | |
| In Myanmar | Team Leader/Agricultural Materials Distribution | | 24 | 24 | 2 | 15 | 4 | | | | 1.83 | 1.83 | | | | |
| | Co-Leader/Agricultural Materials Distribution | | 2 | 2 | 18 | | | | | | 0.50 | 0.50 | | | | |
| | Trends Analysis in Agricultural Food Business | | 24 | 24 | 2 | 21 | 4 | | | | 1.67 | 1.67 | | | | |
| | Livestock Marketing and Distribution | | | 28 | 19 | 22 | 3 | | | | 1.17 | 1.17 | | | | |
| | International Distribution/Regional Trade Analysis | | 24 | 24 | 2 | | | | | | 1.17 | 1.17 | | | | |
| | Environmental and Social Consideration | | 24 | 24 | 24 | 29 | | | | | 1.00 | 1.00 | | | | |
| | Project Coordination/Agricultural Statistics/Horticulture | | | 24 | 2 | 15 | 4 | | | | | | | | | |
| | Distribution of Agricultural Products and Agricultural Food Business | | | | 2 | | 10 | | | | | | | | | |
| | Water Festival (4/13-17) | | | | | | | | | | | | Sub-total | 7.34 | | 7.34 |
| | Reports | | | | | | | | | | | | | | | |
| In Japan | Team Leader/Agricultural Materials Distribution | SCI | | | | | | | | | | 0.40 | 0.40 | | | |
| | Co-Leader/Agricultural Materials Distribution | SCI | | | | | | | | | | 0.00 | 0.00 | | | |
| | Trends Analysis in Agricultural Food Business | SCI | | | | | | | | | | 0.00 | 0.00 | | | |
| | Livestock Marketing and Distribution | SCI* | | | | | | | | | | 0.40 | 0.40 | | | |
| Water Festival (4/13-17) | | | | | | | | | | | | Sub-total | 0.80 | | 0.80 | |
| Main Activities: | | | | | | | | | | | | | | | | |
| <ul style="list-style-type: none"> - Documents review + Set scope and methods of the Survey - Preparation and discussion of the Inception Report - Conduct FVC Survey in Myanmar (agricultural and livestock products, market, and distribution) - Identification and confirmation of potential projects | | | | | | | | | | | | | | | | |
| <ul style="list-style-type: none"> - Identifying potential projects - Implementing structure - Environmental and Social Consideration - Propose priority potential projects | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Total | 7.34 | 0.80 | 8.14 | | | |

Legend: In Myanmar In Japan Own Expenses

SCI : Sanyu Consultants Inc., Japan
SCI* : Reinforcement (Bansyo)

Appendix 2
Survey on
Agricultural Input

APPENDIX 2 SURVEY ON AGRICULTURAL INPUT

2.1 Questionnaire for “How to Utilize Agricultural Inputs”

Questionnaire for “How to Utilize Agricultural Inputs” (1/4)

Questionnaire for “How to Utilize Agriculture Inputs”

DATA COLLECTION SURVEY FOR FOOD VALUE CHAIN DEVELOPMENT ASSISTANCE

1.0 Preliminary Information

- 1.1 Date of Interview _____
 1.2 Interviewer _____
 1.3 Place to Interview _____

2.0 Profile of Farmer

- 2.1 Name of Farmer : _____
 2.2 Sex : 1. Male 2. Female
 2.3 Address _____
 2.4 Years in Farming _____ years
 2.5 Total Household Members _____ Children (<16 years old) _____ persons
 Adult (Age≥16) _____ persons Old (Age≥70) _____ persons Women _____ persons
 2.6 Contact Phone Number: _____

3.0 Production (Crops)

- 3.1 Tenorial Status 1. Owned 2. Leased 3. Tenant
 3.2 Total Land Owned _____ Acre
 3.4 No. of family members helping farming _____ persons
 3.5 Production

Crops, Production Area, Production Cost, Volume Harvest/Hectare

| | Crop Name | Production Area | Volume Harvest/Acre (Basket/Piece) | Production Cost/Acre | Farmgate Income in your sales period |
|-----|-----------|-----------------|---------------------------------------|----------------------|-----------------------------------------|
| (1) | | Acre | basket/acre | kyats/acre | Kyats/acre |
| (2) | | Acre | basket/acre | kyats/acre | Kyats/acre |
| (3) | | Acre | basket/acre | kyats/acre | Kyats/acre |
| (4) | | Acre | basket/acre | kyats/acre | Kyats/acre |
| (5) | | Acre | basket/acre | kyats/acre | Kyats/acre |

4.0 Usage of Agriculture Inputs

4.1 Seed/Seedlings for Crops Listed in Item No. 3.5

| crop number | Seed/Seedlings | Variety Name | Maker Company or Source (e.g. Awba, DOA) | Unit Price | Unit (e.g. kg, basket, viss) | Apply Amount per Acre |
|----------------|----------------|--------------|------------------------------------------------|------------|---------------------------------|-----------------------------|
| (1) | | | | | | |
| (2) | | | | | | |
| (3) | | | | | | |
| (4) | | | | | | |
| (5) | | | | | | |

4.2 Fertilizer / Soil Conditioner Used for Crops Listed in Item No. 3.5

| crop number | Product Name (Fertilizer component) | Synthetic/ Organic | Sacks/ Acre | Cost/ Sack | Producer / Importer Company |
|-------------|-------------------------------------|--------------------|-------------|------------|-----------------------------|
| (1) | | | | | |
| | | | | | |
| | | | | | |
| (2) | | | | | |
| | | | | | |
| | | | | | |
| (3) | | | | | |
| | | | | | |
| | | | | | |
| (4) | | | | | |
| | | | | | |
| | | | | | |
| (5) | | | | | |
| | | | | | |
| | | | | | |

*Soil Conditioner
ex) Bark compost, chaff; Vermiculite etc.

4.3 Pesticide/Herbicide/Fungicide for Crops Listed in Item No. 3.5

| crop number | Pesticides/Herbicides/Fungicides (Product name) | Sacks/ Acre | Cost/ Sack | Producer / Importer Company | Label instruction | | | | | |
|-------------|-------------------------------------------------|-------------|------------|-----------------------------|-------------------|------|------|------|------|------|
| | | | | | Q4.4 | Q4.5 | Q4.6 | Q4.7 | Q4.8 | Q4.9 |
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| () | | | | | | | | | | |

* For question 4.4 – 4.8, please write the answers on the table above

- 4.4 In which language is Label instruction written? (Skip Q4.5 – 4.8 if the answer is “2”-“4”)
 1. Written in Myanmar 2. Written in other than Myanmar 3. No instruction 4. Not sure
- 4.5 According to the label, until how many days before do you have to stop the utilization (i.e.PHI; Pre Harvest Interval)? (Days)
- 4.6 According to the label, how many times can you apply this pesticides/herbicides/fungicides? (Times)
- 4.7 Did you comply with the PHI for the last cultivation? (Yes / No)
- 4.8 How many times do you actually apply this pesticides/herbicides/fungicides? (Times)
- 4.9 How many days before harvest, do you apply this pesticides/herbicides/fungicides ? (Days)
- 4.10 When you have a problem in chemical use, with whom do you consult on that? (Multiple answer is possible)
 1. Agriculture extension workers 2. Your family member 3. Your friends or neighbors
 4. NGO (Name: _____) 5. DOA staff 6. Retail shops or agencies 8. Others _____

Questionnaire for “How to Utilize Agricultural Inputs” (2/4)

- 4.11 Where do you usually buy pesticides/herbicides/fungicides ? (Multiple answer is possible)
 1. Branch shop of agro-material company (name _____) 2. Agent shop of agri-material company
 3. Retailer (Not necessarily specializing in agro-material) 4. Others (_____)
- 4.12 What kind of instruction do the sellers provide? (Multiple answer is possible)
 1. Instruction at Demo-plots 2. Instruction with brochure 3. Telephone consultancy
 4. Visiting your plot regularly 5. Visiting your plot irregularly 6. Face to face communication at the shop
 7. Nothing 8. Others _____
- 4.13 Do you think that you are sufficiently informed about how to use pesticides/herbicides/fungicides ?
 1. Sufficiently informed 2. Informed 3. Limitedly informed 4. Almost nothing
- 4.14 Do you use pesticides/herbicides/fungicides after harvesting? (Yes / No)
- 4.15 If yes, what kind? (Same names in item 4.3 may be listed here as well)

| crop number | Pesticides/Herbicides/Fungicides (Product name) | Synthetic / Organic | Sacks/Acre | Cost/Sack | Producer / Importer Company |
|-------------|-------------------------------------------------|---------------------|------------|-----------|-----------------------------|
| (1) | | | | | |
| (2) | | | | | |
| (3) | | | | | |
| (4) | | | | | |
| (5) | | | | | |

- 4.15 If no, what is the reason? (Multiple answer is possible)
 1. There is no reason to apply 2. To avoid contamination 3. Shortage of money
 4. Others _____

4.17 Main Farming Machinery/Equipment Utilization for Crops Listed in Item No. 3.5

| crop number | Name of Farming Machinery/Equipment | Total Utilization (Machine-days/acre) | 1/ Mode of Utilization | Total Machine Cost/Acre |
|-------------|-------------------------------------|---------------------------------------|------------------------|-------------------------|
| (1) | | | | |
| (2) | | | | |
| (3) | | | | |
| (4) | | | | |
| (5) | | | | |

1/ Mode of Utilization: O – Owned L – Lease

5.0 Finance Assistance for Farming and Loan Terms and Condition

- 5.1 Do you utilize finance assistance for farming? (Yes / No)
- 5.2 If yes, what is the terms and condition?
 (1) Repayment period: 1. Monthly 2. Quarterly 3. Semi-Annually 4. Annually
 (2) Interest Rate: 1. Monthly ___% 2. Quarterly ___% 3. Semi-Annually ___% 4. Annually ___%
 (3) Collateral: 1. Machinery 2. House / Land 3. Without Collateral
 4. Others _____
- 5.3 If no, what is the reason? (Multiple answer is possible)
 1. There is no reason to apply 2. To avoid risk that becomes difficult to pay back 3. Condition is too severe to borrow
 4. Others _____

Questionnaire for “How to Utilize Agricultural Inputs” (3/4)

6.0 Post Harvest Facilities and Transportation

6.1 What type of facilities do you have for farming operation?

1. Storage/Warehouse 2. Concrete Slab Dryer 3. Mechanical Dryer
 3. Others: _____

6.2 What transportation do you use to access markets?

1. Own Car/ Truck 2. Tiller 3. Own Motorbikes 4. Own Bicycles
 5. Public Bus 6. Lease/ Rent 7. Provided by Trader 8. Others _____

6.3 Owned available machineries/ implements

1. Hand Tractor 2. Tractor 3. Combine Harvester
 4. Thresher 5. Corn Sheller 6. Others _____

7.0 Training, Seminar, Symposium Attended

7.1 Training Attended

| | Name of Training | Name of Training Organizer/Provider | Title of Training/Seminar/Symposium | Period |
|-----|------------------|-------------------------------------|-------------------------------------|--------|
| (1) | | | | |
| (2) | | | | |
| (3) | | | | |
| (4) | | | | |
| (5) | | | | |

Questionnaire for "How to Utilize Agricultural Inputs" (4/4)

Source: JICA Study Team

2.2 The Results of Agricultural Input Survey

The survey regarding the utilization of agricultural inputs was conducted in five different Townships. Collected data was analyzed and demonstrated in the figures and tables of main report. However, a part of data and original data of those figures and tables is demonstrated in this section.

2.2.1 Seed/Seedling Providers

The next table shows the seed/seedling providers by crop. The respondents answered country names and private company name as the seed/seedling providers.

Table 2.2.1 Seed/Seedling Providers

| | Awba | Ayeyar Pathein | Chia tai | China | CP | DOA | East-West | Japan | Local broker /retailer | MUS ASHI NO | Pan | Other Farmer | Self Production | Thailand | Nethe rland |
|------------------|------|----------------|----------|-------|----|-----|-----------|-------|------------------------|-------------|-----|--------------|-----------------|----------|-------------|
| Banana | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Butterfly flower | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Cabbage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Cabbage (summer) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cabbage (Winter) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Carrot | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Cauliflower | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chickpea | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 0 |
| Chili | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| Chinese cabbage | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chrysanthemum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 |
| Corn | 1 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Cotton | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dragon fruit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Eggplant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Garlic | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 7 | 1 | 0 | 0 |
| Ginger | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Grape | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Green gram | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| Groundnut | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Jack fruit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Jasmine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Mango | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| Mask Mellon | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Morning Glory | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Okra | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 1 | 0 | 0 |
| Orange | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Paddy | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Paddy (Monsoon) | 0 | 1 | 0 | 5 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Paddy (Summer) | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| Papaya | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |

| | Awba | Ayeyar Pathain | Chia tai | China | CP | DOA | East-West | Japan | Local broker /retailer | MUS ASHI NO | Pan | Other Farmer | Self Production | Thailand | Nethe rland |
|---------------------|------|----------------|----------|-------|----|-----|-----------|-------|------------------------|-------------|-----|--------------|-----------------|----------|-------------|
| Pigeon pea | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| Pineapple | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Pomelo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Potato | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 |
| Roselle | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| Sesame | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6 | 2 | 0 | 0 |
| Sesame + Pigeon pea | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Small Jasmine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Soap pod | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Soy bean | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Strawberry | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Sunflower | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 |
| Taro | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tomato | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Water melon | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Yard Long Bean | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 2 | 1 | 2 | 14 | 4 | 35 | 7 | 4 | 30 | 1 | 1 | 50 | 13 | 4 | 1 |

Source: JICA Study Team

2.2.2 Fertilizer Providers

The providers of fertilizers that the farmers use are demonstrated by type of fertilizer and by crop in the next tables.

(1) NPK Compound

Table 2.2.2 NPK Compound Providers

| | Armo | China | Thailand | Hle Yinn Co.,Ltd. | JJ pan Co.ltd | Megga Co.,Ltd | Aung Kyar Phue | Golden dragon | Sein lann | Toebwar man Co.ltd., | Taung Thar Tsp. | Myay Kabar Co.ltd., | Golden Lion | MC |
|-----------------|------|-------|----------|-------------------|---------------|---------------|----------------|---------------|-----------|----------------------|-----------------|---------------------|-------------|----|
| Cabbage | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Carrot | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cauliflower | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Chilli | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Corn | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Garlic | 6 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Greengram | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Groundnut | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Mango | 5 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Okra | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Paddy (Monsoon) | 15 | 3 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Paddy (Summer) | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Pigeon pea | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pineapple | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Armo | China | Thailand | Hle Yinn Co.,Ltd. | JJ pan Co.ltd | Megga Co.,Ltd | Aung Kyar Phue | Golden dragon | Sein lann | Toebwar man Co.ltd., | Taung Thar Tsp. | Myay Kabar Co.ltd., | Golden Lion | MC |
|----------------|-----------|-----------|----------|-------------------|---------------|---------------|----------------|---------------|-----------|----------------------|-----------------|---------------------|-------------|----------|
| Pomelo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Potato | 8 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sesame | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Yard Long Bean | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 74 | 10 | 4 | 6 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 2 |

Source: JICA Study Team

(2) Urea

Table 2.2.3 Urea Providers

| | Awba | China | Shwe Taung | Pan Phu | Armo | CP | Thailand | Shwe Nagar | Total |
|-----------------|----------|-----------|------------|----------|----------|----------|----------|------------|-----------|
| Cabbage | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 3 |
| Cauliflower | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Chilli | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Corn | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Garlic | 0 | 5 | 0 | 2 | 0 | 0 | 1 | 0 | 8 |
| Greengram | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Mango | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Okra | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Paddy (Monsoon) | 0 | 9 | 3 | 0 | 1 | 1 | 0 | 0 | 14 |
| Paddy (Summer) | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 6 |
| Pigeon pea | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Potato | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Sesame | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| Yard Long Bean | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 |
| Total | 2 | 29 | 10 | 4 | 2 | 1 | 1 | 1 | 50 |

Source: JICA Study Team

(3) Triple Super Phosphate

Table 2.2.4 Triple Super Phosphate Providers

| | China | Armo | Thailand | Total |
|-----------------|-----------|----------|----------|-----------|
| Cabbage | 2 | 0 | 0 | 2 |
| Carrot | 1 | 0 | 0 | 1 |
| Chilli | 1 | 0 | 0 | 1 |
| Corn | 2 | 0 | 0 | 2 |
| Garlic | 4 | 1 | 0 | 5 |
| Paddy (Monsoon) | 9 | 0 | 1 | 10 |
| Paddy (Summer) | 5 | 0 | 0 | 5 |
| Pigeon pea | 1 | 0 | 0 | 1 |
| Pineapple | 0 | 1 | 0 | 1 |
| Potato | 1 | 1 | 0 | 2 |
| Yard Long Bean | 0 | 1 | 0 | 1 |
| Total | 26 | 4 | 1 | 31 |

Source: JICA Study Team

(4) Foliar Fertilizer

Table 2.2.5 Foliar Fertilizer Providers

| | Armo | Awba | Thailand | Unknown | Total |
|-----------------|------|------|----------|---------|-------|
| Carrot | 1 | 0 | 0 | 0 | 1 |
| Chickpea | 1 | 1 | 0 | 0 | 2 |
| Greengram | 0 | 2 | 0 | 0 | 2 |
| Groundnut | 1 | 1 | 0 | 0 | 2 |
| Mango | 0 | 1 | 1 | 0 | 2 |
| Paddy (Monsoon) | 1 | 0 | 0 | 0 | 1 |
| Pineapple | 0 | 0 | 1 | 0 | 1 |
| Sesame | 1 | 0 | 0 | 1 | 2 |
| Total | 5 | 5 | 2 | 1 | 13 |

Source: JICA Study Team

(5) Gypsum

Table 2.2.6 Gypsum Providers

| | Golden Key | Golden Lion | Wisara Co.ltd., | Awba | Total |
|-----------------|------------|-------------|-----------------|------|-------|
| Cauliflower | 1 | 0 | 0 | 0 | 1 |
| Groundnut | 0 | 1 | 1 | 0 | 2 |
| Okra | 0 | 1 | 0 | 0 | 1 |
| Paddy (Monsoon) | 0 | 1 | 0 | 1 | 2 |
| Paddy (Summer) | 0 | 0 | 0 | 1 | 1 |
| Total | 1 | 3 | 1 | 2 | 7 |

Source: JICA Study Team

(6) Potash

Table 2.2.7 Potash Providers

| | Armo | China | Awba | Unknown | Total |
|-----------------|------|-------|------|---------|-------|
| Cabbage | 2 | 0 | 0 | 0 | 2 |
| Cauliflower | 0 | 0 | 1 | 0 | 1 |
| Corn | 1 | 0 | 0 | 0 | 1 |
| Garlic | 1 | 1 | 0 | 1 | 3 |
| Paddy (Monsoon) | 1 | 3 | 0 | 0 | 4 |
| Paddy (Summer) | 0 | 4 | 0 | 0 | 4 |
| Potato | 1 | 0 | 0 | 0 | 1 |
| Total | 6 | 8 | 1 | 1 | 16 |

Source: JICA Study Team

(7) Organic

Table 2.2.8 Organic Providers

| | DOA | Japan | Villager | Total |
|-----------------|-----|-------|----------|-------|
| Garlic | 0 | 1 | 0 | 1 |
| Mango | 1 | 0 | 0 | 1 |
| Okra | 0 | 0 | 1 | 1 |
| Paddy (Monsoon) | 0 | 1 | 0 | 1 |
| Pineapple | 0 | 0 | 1 | 1 |
| Potato | 0 | 1 | 0 | 1 |
| Total | 1 | 3 | 2 | 6 |

Source: JICA Study Team

2.2.3 Pesticide

Regarding pesticides, some of the respondents answered them by their trade names. So, active ingredients of them are clarified after the survey. The list of trade name and active ingredients by eight crops is summarized in the next table.

Table 2.2.9 Trade Names and Active Ingredients of Pesticide

| Trade Name | Active Ingredient | Trade Name | Active Ingredient |
|----------------------------------|-----------------------------------------|--------------------------|--------------------------------|
| Paddy (Monsoon) | | Paddy (Summer) | |
| Paung King (herbicide) | Bispyribac-sodium | Acephate (pesticide) | Acephate |
| Furadan 3G (pesticide) | Carbofuran | Nominee Gold (herbicide) | Bispyribac-sodium |
| Acephate (pesticide) | Acephate | Furadan 3G (pesticide) | Carbofuran |
| Select Plus (pesticide) | Lambda-Cyhalothrin, Profenofos | Complete (herbicide) | Bispyribac-sodium |
| Fury (pesticide) | Zeta Cypermethrin | Amida (pesticide) | Imidacloprid |
| Yan Shin (pesticide) | Acephate | Cypermethrin (pesticide) | Cypermethrin |
| Tenchant (pesticide) | Chlorpyrifos, Cypermethrin | Select Plus (pesticide) | Lambda-Cyhalothrin, Profenofos |
| Cypermethrin (pesticide) | Cypermethrin | Zaung Htet (herbicide) | Quinclorac, Bensulfuron Methyl |
| Pardan (pesticide) | Cartap Hydrochloride | Tenchant (pesticide) | Chlorpyrifos, Cypermethrin |
| Mega (herbicide) | 2,4-D Amine Salt | Cyclone (pesticide) | Chlorpyrifos, Cypermethrin |
| Cyclone (pesticide) | Chlorpyrifos, Cypermethrin | Shwe- mectin (pesticide) | Abamectin |
| Complete (herbicide) | Bispyribac-sodium | Mancozed (Fungicide) | Mancozeb |
| Sulphur (fungicide) | Sulphur | Imidacloprid (pesticide) | Imidacloprid |
| Hi- Tac (pesticide) | Cartap Hydrochloride | Eramectin (pesticide) | Abamectin |
| Zombie (pesticide) | Cartap Hydrochloride | Ayar- mectin (pesticide) | Abamectin |
| Emir (pesticide) | Acetamiprid, Cypermethrin | Klody (Fungicide) | Sulphur |
| Mancozed (Fungicide) | Mancozeb | Fusin-M (Fungicide) | Thiophanate methyl |
| Klody (Fungicide) | Sulphur | Armo Mycin (fungicide) | Kasugamycin |
| Shwe Cyper (pesticide) | Cypermethrin | 2.4.D (Herbicide) | 2,4 D Dimethyl Amine |
| Armo Mycin (fungicide) | Kasugamycin | Okra | |
| Carbofuran 3G (pesticide) | Carbofuran | Cypermethrin (pesticide) | Cypermethrin |
| Shwe- mectin (pesticide) | Abamectin | Sultan (pesticide) | Imidacloprid |
| Pin kaung paung thay (herbicide) | Pyrazosulfuran Ethyl, Nitrogen, Sulphur | Thunder (pesticide) | Cypermethrin |
| Dim (pesticide) | Dimethoate | Danadin (pesticide) | Dimethoate |
| Amida (pesticide) | Imidacloprid | Armo Hi- Tap (pesticide) | Cartap Hydrochloride |
| Imidacloprid (pesticide) | Imidacloprid | Zombie (pesticide) | Cartap Hydrochloride |
| Garlic | | Paung Killer (herbicide) | 2,4-D Amine, Glyphosate |

| Trade Name | Active Ingredient | Trade Name | Active Ingredient |
|----------------------------------|----------------------------------------|---------------------------------|----------------------------------------|
| Metalaxyl (fungicide) | Metalaxyl | Venus (Herbicide) | Pretilachlor |
| Copper hydroxide (fungicide) | Copper Hydroxide | Tenchant (pesticide) | Chlorpyrifos, Cypermethrin |
| 777 (pesticide) | Emamectin Benzoate | Fortune (herbicide) | Quinzalofop-P-ethyl |
| Moxy (fungicide) | Cymoxanil | Cyclone (pesticide) | Chlorpyrifos |
| Pro-one (fungicide) | Propiconazole | Mancozeb +Metalaxyl (fungicide) | Mancozeb, Metalaxyl |
| Venus (Herbicide) | Pretilachlor | Lancer (pesticide) | Acephate |
| Armo Top Star (pesticide) | Emamectin Benzoate, Lambda-cyhalothrin | Alarm (pesticide) | Emamectin Benzoate, Lambda Cyhalothrin |
| Armo Venus (fungicide) | Difenoconazole, Propiconazole | Pilar King (pesticide) | Imidacloprid |
| Topsin M (fungicide) | Thiophanate Methyl | Sesame | |
| Potato | | Acephate (pesticide) | Acephate |
| Furadan 3G (pesticide) | Carbofuran | Imidacloprid (pesticide) | Imidacloprid |
| Fury (pesticide) | Zeta Cypermethrin | Emalan (pesticide) | Emamectin benzoate, Lambda-Cyhalothrin |
| Unity (fungicide) | Azoxystrobin, Difenoconazole | Demon - Abamitin (pesticide) | Abamectin |
| Star (pesticide) | Lambda-cyhalothrin | Mancozed (Fungicide) | Mancozeb |
| Acephate (pesticide) | Acephate | Ameda (pesticide) | Imidacloprid |
| Metalaxyl (fungicide) | Metalaxyl | Sulphur (Fungicide) | Sulphur |
| Metalaxyl + Mancozeb (fungicide) | Mancozeb, Metalaxyl | Shwe- Cypermethrin (pesticide) | Cypermethrin |
| Pardan (pesticide) | Cartap Hydrochloride | Mango | |
| Tenchant (pesticide) | Chlorpyrifos, Cypermethrin | Shaolin (Pesticide) | Lambda-cyhalothrin |
| Cypermethrin (pesticide) | Cypermethrin | Cevin (Pesticide) | unknown |
| Mancozed (Fungicide) | Mancozeb | Furadan 3G (pesticide) | Carbofuran |
| Thunder (pesticide) | Cypermethrin | Imidacloprid (pesticide) | Imidacloprid |
| Armo bright (pesticide) | Fipronil, Acetamiprid | E-T Carben (pesticide) | unknown |
| Abamectin (pesticide) | Abamectin | Cypermethrin (pesticide) | Cypermethrin |
| Carbofuran 3G (pesticide) | Carbofuran | Shwe Cyper (pesticide) | Cypermethrin |
| Phosdrin (pesticide) | Chlorpyrifos | Acephate (pesticide) | Acepahte |
| Cymoxanil(fungicide) | Cymoxanil | Hammer (pesticide) | Abamectin |
| Doza (pesticide) | Imidachloprid | Antracol (Fungicide) | Propineb |
| Azoxystrobin (fungicide) | Azoxystrobin | Karsukamycin (Fungicide) | Kasugamycin |
| Dimethomorph (fungicide) | Dimethomorph | Halex (pesticide) | Acephate |
| Pinapple | | | |
| Thunder (pesticide) | Cypermethrin | | |

Source: JICA Study Team

2.3 Analyzed Active Ingredients and the Results of Pesticide Residue Analysis

Regarding pesticide residue analysis, 194 active ingredients of four major compounds; Organophosphorus, Organochloride, Pyrethroid and Carbamate, were analyzed in all six various crops; sesame, green gram/black gram, tomato, mustard, mango and rice. Additionally, two each different active ingredients were analyzed in each crop, and so the total 196 items were analyzed in each crop, as shown in the last part of the next table. In the next table, all of the results are shown. “No detected” means no analyzed pesticide residue was found in those samples. The locations where samples were collected are mentioned in the table as Y; Yangon, M; Mandalay, T; Taunggyi, Super; Supermarket, and Whole; Wholesale Market.

| Active Ingredients and Results of Pesticide Residue Analysis | | | Sesame | | | | Greengram | Blackgram | Greengram | Tomato | | | | Mustard | | | | Mango | | | | Rice | | | |
|--------------------------------------------------------------|------------------------------------------------------|----------------|-------------|-------------|-------------|-------------|-----------|-------------|-----------|---------------|---------|---------|-------------|---------------|-------------|-------------|---------|-------------|-------------|-------------|-------------|-------------|-------------|---------|-------------|
| No. | Active Ingredients | Analyzed Crops | Y-Super | Y-Whole | M-Super | M-Whole | Y-Super | Y-Whole | M-Whole | Y-Super | Y-Whole | M-Super | T-Whole | Y-Super | Y-Whole | M-Super | T-Whole | M-Super | M-Whole | M-Farm | T-Whole | Y-Super | Y-Whole | M-Super | M-Whole |
| | Label | | | | | | Natural | | | Chemical Free | | | | Chemical Free | | | | | | GAP | | | | | |
| | Result | | No Detected | No Detected | No Detected | No Detected | | No Detected | | | | | No Detected | No Detected | No Detected | No Detected | | No Detected | No Detected | No Detected | No Detected | No Detected | No Detected | | No Detected |
| 1 | 1,1-Dichloro-2,2-Bis(4-Ethylphenyl) Ethane (Perthan) | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2 | 1-Naphthol | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3 | Acephate | All | - | - | - | - | 0.052 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4 | Acetochlor | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 5 | Alachlor | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | Aldicarb | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 7 | Aldicarb sulfoxide | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 8 | Aldoxycarb(Aldicarb sulfone) | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 9 | Aldrin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | Allethrin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 11 | alpha-BHC | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | Anilofos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 13 | Azaconazole | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 14 | Azinphos-methyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 15 | Bendiocarb | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 16 | Benfluralin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 17 | Benoxacor | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 18 | beta-BHC | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 19 | Bifenox | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | Bifenthrin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 21 | Boscalid | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 22 | Bromophos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 23 | Bromophos-ethyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 24 | Bromopropylate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | Bufencarb | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 26 | Bupirimate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 27 | Butachlor | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 28 | Butamifos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 29 | Cadusafos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 30 | Captafol | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 31 | Captan | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 32 | Carbaryl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 33 | Carbofuran | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 34 | Carbophenothion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 35 | Carfentrazone-ethyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 36 | Chlorbenside | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 37 | Chlordane | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 38 | Chlorethoxyphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 39 | Chlorfenapyr | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 40 | Chlorfenson | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 41 | Chlorfenvinphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 42 | Chloroneb | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 43 | Chlorothalonil | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 44 | Chlorpyrifos | All | - | - | - | - | 0.04 | - | - | - | - | 0.086 | - | - | - | - | - | - | - | - | - | - | - | <0.03 | - |
| 45 | Chlorpyrifos-methyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 46 | Chlorthal-dimethyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 47 | Chlozolinate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 48 | Cinidon-ethyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 49 | Clomeprop | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 50 | Coumafos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 51 | Cyanofenphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 52 | Cyanophos | All | - | - | - | - | - | - | - | - | - | <0.06 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 53 | Cyfluthrin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 54 | Cyhalothrin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 55 | Cypermethrin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 56 | DDD | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 57 | DDE | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 58 | DDT | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 59 | delta-BHC | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 60 | Deltamethrin, | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 61 | Demeton-S-methyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 62 | Di-Allate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 63 | Diazinon | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 64 | Dichlofenthion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

| Active Ingredients and Results of Pesticide Residue Analysis | | | Sesame | | | | Greengram | Blackgram | Greengram | Tomato | | | | Mustard | | | | Mango | | | | Rice | | | |
|--------------------------------------------------------------|--------------------|----------------|---------|---------|---------|---------|-----------|-----------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|---------|---------|---------|---------|---------|
| No. | Active Ingredients | Analyzed Crops | Y-Super | Y-Whole | M-Super | M-Whole | Y-Super | Y-Whole | M-Whole | Y-Super | Y-Whole | M-Super | T-Whole | Y-Super | Y-Whole | M-Super | T-Whole | M-Super | M-Whole | M-Farm | T-Whole | Y-Super | Y-Whole | M-Super | M-Whole |
| 65 | Dichlofluanid | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 66 | Dichloran | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 67 | Dichlorimid | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 68 | Dichlorvos, | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 69 | Diclocyvet | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 70 | Dicofol | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 71 | Dicrotophos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 72 | Dieldrin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 73 | Dimethenamid | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 74 | Dimethipin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 75 | Dimethoate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | <0.03 | - | - | - | - | - | - | - | - |
| 76 | Dimethylvinphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 77 | Dioxathion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 78 | Disulfoton | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 79 | Edifenphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 80 | Endosulfan | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 81 | Endosulfan-a | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 82 | Endosulfan-b | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 83 | Endrin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 84 | Endrin aldehyde | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 85 | Endrin ketone | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 86 | EPN | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 87 | Ethalfuralin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 88 | Ethion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 89 | Ethoprophos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 90 | Etridiazole | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 91 | Etrimfos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 92 | Etrofol | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 93 | Famphur | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 94 | Fenamidone | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 95 | Fenamiphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 96 | Fenchlorphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 97 | Fenitrothion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 98 | Fenobucarb | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 99 | Fenpropathrin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 100 | Fensulfothion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 101 | Fenthion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 102 | Fenvalerate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 103 | Fipronil | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 104 | Flucythrinate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 105 | Flufenacet | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 106 | Flusilazole | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 107 | Fluthiacet-methyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 108 | Fluvalinate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 109 | Folpet | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 110 | Fonofos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 111 | Formothion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 112 | Fosthiazate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 113 | Fthalide | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 114 | Heptachlor | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 115 | Heptachlor epoxide | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 116 | Hexachlorobenzene | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 117 | Iprobenfos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 118 | Isazophos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 119 | Isocarbofos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 120 | Isofenphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 121 | Isofenphos-methyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 122 | Isoprocarb | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 123 | Isoxaflutole | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 124 | Isoxathion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 125 | Lindane(gamma-BHC) | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 126 | Malathion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 127 | Mecarbam | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 128 | Mefenpyr-diethyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 129 | Mephospholan | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 130 | Methacrifos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 131 | Methamidophos | All | - | - | - | - | 0.06 | - | - | - | - | <0.009 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 132 | Methidathion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 133 | Methiocarb | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 134 | Methomyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

| Active Ingredients and Results of Pesticide Residue Analysis | | | Sesame | | | | Greengram | Blackgram | Greengram | Tomato | | | | Mustard | | | | Mango | | | | Rice | | | |
|--------------------------------------------------------------|-----------------------|---------------------|---------|---------|---------|---------|-----------|-----------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|---------|---------|---------|---------|---------|
| No. | Active Ingredients | Analyzed Crops | Y-Super | Y-Whole | M-Super | M-Whole | Y-Super | Y-Whole | M-Whole | Y-Super | Y-Whole | M-Super | T-Whole | Y-Super | Y-Whole | M-Super | T-Whole | M-Super | M-Whole | M-Farm | T-Whole | Y-Super | Y-Whole | M-Super | M-Whole |
| 135 | Methoxychlor | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 136 | Metolcarb | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 137 | Mevinphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 138 | Monocrotophos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 139 | Myclobutanil | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 140 | Nitrapyrin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 141 | Norflurazon | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 142 | Omethoate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 143 | Oxabetrinil | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 144 | Oxamyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 145 | Parathion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 146 | Parathion-methyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 147 | Pentoxazone | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 148 | Permethrin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 149 | Phenthoate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 150 | Phorate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 151 | Phosalone | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 152 | Phosmet | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 153 | Phosphamidon | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 154 | Piperophos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 155 | Pirimioxyphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 156 | Pirimiphos-ethyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 157 | Pirimiphos-methyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 158 | Profenofos | All | - | - | - | - | - | - | - | - | 0.066 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 159 | Promecarb | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 160 | Propaphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 161 | Propetamphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 162 | Propoxur | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 163 | Prothiofos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 164 | Pyrazophos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 165 | Pyrethrins | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 166 | Pyridaben | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 167 | Pyridafenthion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 168 | Pyridalyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 169 | Pyrifenox | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 170 | Quinalphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 171 | Quintozene | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 172 | Salithion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 173 | Sulprofos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 174 | Tecnazene | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 175 | Terbufos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 176 | Tetrachlorvinphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 177 | Tetradifon | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 178 | Thiazopyr | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 179 | Thifluzamide | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 180 | Thiodicarb | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 181 | Thiometon | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 182 | Tolclofos-methyl | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 183 | Tolyfluanid | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 184 | Tri-Allate | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 185 | Triazophos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 186 | Tribuphos | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 187 | Trichlamide | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 188 | Trichlorfon | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 189 | Triflumizole | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 190 | Trifluralin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 191 | Vamidothion | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 192 | Vinclozolin | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 193 | XMC | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 194 | Xylylcarb(MPMC) | All | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 195 | 2,4-D | Sesame | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 196 | Abamectin | Mustard, Mango | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 197 | Acetamiprid | Green/Black Gram | - | - | - | - | <0.015 | - | <0.015 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 198 | Carbendazim(including | Tomato, Rice | - | - | - | - | - | - | - | 0.032 | - | 0.024 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 199 | Cartap Hydrochloride | Rice | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 200 | Imidacloprid | All except for rice | - | - | - | - | <0.015 | - | <0.015 | 0.038 | <0.015 | <0.015 | - | - | - | - | - | - | - | - | - | - | - | - | - |

Appendix 3
Suvey on Agri-food
Business

APPENDIX 3 SURVEY ON AGRI-FOOD BUSINESS

3.1 Questionnaire for Agri-Food Company

Questionnaire for Agri-Food Company (1/7)

Questionnaire for Agri-Food Company

**DATA COLLECTION SURVEY FOR DEVELOPMENT ASSISTANCE OF FOOD VALUE CHAIN
IN THE REPUBLIC OF THE UNION OF MYANMAR**

* This questionnaire is conducted as part of the component of above mentioned survey.
Please be noted that the result will be utilized for the report and appendices.
Please contact (ktaung.mitasu@gmail.com) if you have any question regarding this survey.

1.0 Preliminary information

- 1.1 Name of Company _____
- 1.2 Name of Respondent _____
- 1.3 Position _____
- 1.4 Telephone _____
- 1.5 Email Address _____
- 1.6 Location (Address) _____

- 1.7 Type of Industry
- | Category by Value Chain Stage | Detail (e.g. food-processing; logistics etc) |
|-----------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> Input Supplying | _____ |
| <input type="checkbox"/> Production | _____ |
| <input type="checkbox"/> Distribution | _____ |
| <input type="checkbox"/> Processing | _____ |
| <input type="checkbox"/> Cumsumption / Market | _____ |

Product Discription (type of product, low material, production area of low material)

- 1.8 Please select the most applicable answer to describe your company's business
- Business to Business Business to Consumer
 - Business to Government Others
- 1.9 Company Type
- Myanmar National Foreign Affiliated
 - Joint Venture (more than 50% of the company's equity)
 - with Foreign (name of contry _____) Local
 - Joint Venture (equal or less than 50% of the company's equity)
 - with Foreign (name of contry _____) Local
- 1.10 Year Established
- 1.11 Number of employee
- | | | | |
|---------|-------------------------------------------|----------------|-------------------------------------------|
| Total | <input style="width: 60px;" type="text"/> | Regular | <input style="width: 60px;" type="text"/> |
| Manager | <input style="width: 60px;" type="text"/> | Local Employee | <input style="width: 60px;" type="text"/> |

2.0 Organization (Cooperative, Corporation) Profile

If not established before 2011, go on to 2.4

- 2.1 Compated to **before and after democratization (before around 2012 and after)**, how did your business change in scale?
- 1. Extended go to 2.2 2. Almost same
 - 3. Shrunk go to 2.3

Questionnaire for Agri-Food Company (2/7)

2.2 If your answer 2.1 was "extended", please select the reason. (Multiple answers are Acceptable)

- (1) Increase of sales in exporting market
- (2) Increase of sales in local (Myanmar) market
- (3) Changes of exchange rates
- (4) Procurement cost reduction
- (5) Personnel cost reduction
- (6) Reduction in other expenses
- (7) Improvement in production efficiency
- (8) Improvement in sales efficiency
- (9) Others ()

2.3 If your answer 2.1 was "Shrunk", please select the reason (Multiple answers are Acceptable)

- (1) Decrease of sales in exporting market
- (2) Decrease of sales in local (Myanmar) market
- (3) Changes of exchange rates
- (4) Procurement cost Increase
- (5) Personnel cost Increase
- (6) Increase in other expenses
- (7) Increase in interest ratio
- (8) Inadequate margin in pricing
- (9) Others ()

2.4 After NLD won (Nov 2015 until now), how did your business change in scale?

- 1. Extended **go to 2.5**
- 2. Almost same
- 3. Shrunk **go to 2.6**

2.5 If your answer 2.4 was "extended", please select the reason. (Multiple answers are Acceptable)

- (1) Increase of sales in exporting market
- (2) Increase of sales in local (Myanmar) market
- (3) Changes of exchange rates
- (4) Procurement cost reduction
- (5) Personnel cost reduction
- (6) Reduction in other expenses
- (7) Improvement in production efficiency
- (8) Improvement in sales efficiency
- (9) Others ()

2.6 If your answer 2.4 was "Shrunk", please select the reason (Multiple answers are Acceptable)

- (1) Decrease of sales in exporting market
- (2) Decrease of sales in local (Myanmar) market
- (3) Changes of exchange rates
- (4) Procurement cost Increase
- (5) Personnel cost Increase
- (6) Increase in other expenses
- (7) Increase in interest ration
- (8) Inadequate margin in pricing
- (9) Others ()

2.7 Please select the most applicable answer for your future direction of business (1~2 years after)

- 1. To be extended **go to 2.8**
- 2. Maintain the present status
- 3. To be shrunk
- 4. Withdrawal **go to 2.9**

Questionnaire for Agri-Food Company (3/7)

2.8 If your answer 2.7 was "To be extended", please select its concrete strategy. (Multiple answers are Acceptable)

- (1) expansion in scale by additional investment
- (2) Selection and concentration into certain products / services
- (3) Investment to another company / M&A
- (4) Expansion of business fields (expansion of types of goods and services)
- (5) Expansion of market (expansion of sales and promotion)
- (6) Enhancement of designing, research, development
- (7) Others _____

2.9 If your answer 2.7 was "withdrawal", please select the reason (Multiple answers are Acceptable)

- (1) Sales Decline
- (2) Cost Increase (e.g. Procurement cost, personnel cost)
- (3) Strict Regulation
- (4) Restructuring
- (5) Recreation of production / sales networks given the progress of FTA / EPA
- (6) Relationships with customers
- (7) Others _____

2.10 Please select the most applicable item from below to explain your local marketing strategy in Myanmar

- (1) Assigning higher priority in local market than exporting market.
- (2) Almost same priority between local market and exporting market.
- (3) Assigning higher priority in exporting market than local market.
- (4) Company Products are export-oriented and thus no concerning in local market.
- (5) Not Sure

2.11 If the answer 2.10 was (1) or (2), go on to this question (Otherwise skip this question)

Please select your applicable present / future target for your products / services. (Multiple answers are Acceptable)

| | | | | |
|-------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------|----------------------|
| Present Target | For Company (In case B to B) | | Price Segment | |
| | <input type="checkbox"/> | For Japanese Company addressing in MMR | <input type="checkbox"/> | High-Price Segment |
| | <input type="checkbox"/> | For Local (Myanmar) Company | <input type="checkbox"/> | Middle-Price Segment |
| | <input type="checkbox"/> | For Foreign-Affiliated Company addressing in MMR | <input type="checkbox"/> | Low-Price Segment |
| | For Consumer (In case B to C) | | Price Segment | |
| | <input type="checkbox"/> | For Japanese Company addressing in MMR | <input type="checkbox"/> | High-Price Segment |
| Future Target | <input type="checkbox"/> | For Local (Myanmar) Company | <input type="checkbox"/> | Middle-Price Segment |
| | <input type="checkbox"/> | For Foreign-Affiliated Company addressing in MMR | <input type="checkbox"/> | Low-Price Segment |
| | For Company (In case B to B) | | Price Segment | |
| | <input type="checkbox"/> | For Japanese Company addressing in MMR | <input type="checkbox"/> | High-Price Segment |
| | <input type="checkbox"/> | For Local (Myanmar) Company | <input type="checkbox"/> | Middle-Price Segment |
| | <input type="checkbox"/> | For Foreign-Affiliated Company addressing in MMR | <input type="checkbox"/> | Low-Price Segment |
| For Consumer (In case B to C) | | Price Segment | | |
| <input type="checkbox"/> | For Japanese Company addressing in MMR | <input type="checkbox"/> | High-Price Segment | |
| <input type="checkbox"/> | For Local (Myanmar) Company | <input type="checkbox"/> | Middle-Price Segment | |
| <input type="checkbox"/> | For Foreign-Affiliated Company addressing in MMR | <input type="checkbox"/> | Low-Price Segment | |

Questionnaire for Agri-Food Company (4/7)

In case your answer in 2.11 include "middle-price segment" or "low-price segment" for present or future target segment, please go on to 2.12, otherwise, 2.13.

2.12 When your company promote middle / low price segment goods and services for local markets, companies from which country / region are the strongest competitors? (Not origin of the product but nationality of the company)

Please select only one from below.

- | | | |
|--------------------------------------------------------------|-----------------------------------------------|-----------------------------------------|
| <input type="checkbox"/> 1. Indonesia | <input type="checkbox"/> 2. Malaysia | <input type="checkbox"/> 3. Philippines |
| <input type="checkbox"/> 4. Singapore | <input type="checkbox"/> 5. Thailand | <input type="checkbox"/> 6. Vietnam |
| <input type="checkbox"/> 7. Other ASEAN (_____) | <input type="checkbox"/> 8. Bangladesh | <input type="checkbox"/> 11. Sri Lanka |
| <input type="checkbox"/> 9. India | <input type="checkbox"/> 10. Pakistan | <input type="checkbox"/> 13. Australia |
| <input type="checkbox"/> 12. Southeast Asia Others (_____) | <input type="checkbox"/> 15. China mainland | <input type="checkbox"/> 16. Taiwan |
| <input type="checkbox"/> 14. New Zealand | <input type="checkbox"/> 18. the USA | <input type="checkbox"/> 19. Europe |
| <input type="checkbox"/> 17. Korea | <input type="checkbox"/> 20. Others (_____) | |

2.13 What are your issues facing or to be facing for promoting goods and services to middle / low price segments in Myanmar local market (Multiple answers are Acceptable)

- (1) Difficulty in grasping market characteristics / needs (insufficient information)
- (2) Difficulty in designing to satisfy consumer characteristics in Myanmar.
- (3) Tight competition with rival companies
- (4) Difficulty in changes or specification / quality standard in order to reduce production / service cost
- (5) Difficulty in changes of production / supply system in order to reduce production / service cost
- (6) Difficulty in recruiting sales persons / dealers to promote for new areas / new customers.
- (7) Inadequate infrastructure for logistics
- (8) Difficulty in promotion of products / services
- (9) Risks in collecting receivables
- (10) Inadequate human resources in your own company who are well-experienced in Myanmar local market.
- (11) Difficulty in compliance of local standards / regulations
- (12) Other Problem (_____)
- (13) Nothing Special

2.14 What are your issues in Sales and Promotion (Multiple answers are Acceptable)

- (1) Reduction of order from the headquarter.
- (2) Reduction of order from customers
- (3) Price cutting request from primary costumers
- (4) Stagnation of primary sales market (decrease in consumption tendency)
- (5) Difficulty in developping new customer
- (6) Downward tendency of sales price due to excess supply structure in global market.
- (7) Inflow of importing products to Myanmar local market which are low prices.
- (8) Competitor's share increase (compete in terms of quality)
- (9) Competitor's share increase (compete in terms of cost)
- (10) Unsucessful collection of receivables
- (11) Other Problems (_____)
- (12) Nothing special

Questionnaire for Agri-Food Company (5/7)

2.15 What are your issues in finance, money, banking, exchange and order (Multiple answers are Acceptable)

- (1) Inadequate cash flow to expand business scale
- (2) Difficulty in receiving financial arrangement from local financial institutions
- (3) Flactuation of local currency exchange rate against USD
- (4) Flactuation of local currency exchange rate against JPY
- (5) Flactuation of JPY against USD
- (6) Regulation related to fund procurement / settlement
- (7) Tax Burden (corporate tax etc..)
- (8) Increase in Interest Ratio
- (9) Other Problem ()
- (10) Nothing Special

2.16 What are your issues in employment / labor (Multiple answers are Acceptable)

- (1) Increase in staff salarie costs
- (2) Difficulty in recruiting human resources (general staff / office workers)
- (3) Difficulty in recruting human resources (middle-level manager)
- (4) Difficulty in recruiting human resources (engineer)
- (5) Retention rate
- (6) Quality of employees
- (7) Cost for Japanese managers
- (8) Regulations against firing / restructuring
- (9) Difficulty in localization of managers / local representatives
- (10) Employment regulation against foreign workers
- (11) Other issues
- (12) Nothing Special

2.17 What are your issues in Trade Rules (Multiple answers are Acceptable)

- (1) Complicated procedure for border checkpoints and others
- (2) Taking too much time in border checkpoint
- (3) Inadequate informing of notices / regulations
- (4) Unclear assessment of tax imposition of tariffs
- (5) Unclear classification of tariffs
- (6) Unclear inspection system and procedure
- (7) Non-Tariff Barrior
- (8) Strict and unclear quarantine system and procedure
- (9) Other problem ()
- (10) Nothing Special

Questionnaire for Agri-Food Company (6/7)

2.18 What are your issues in Production (Multiple answers are Acceptable)

- (1) Inadequate production capacity in equipment
- (2) Excessive cost reduction strategy
- (3) Increase in procurement cost
- (4) Difficulty in local procurement of ingredients / materials / parts
- (5) Difficulty in switching products in a short periods
- (6) Difficulty in quality management
- (7) High tariff rates against capital goods and intermediate importing
- (8) Electrical outage / power interruption
- (9) Underdevelopment of infrastructure for logistics
- (10) Tighting environmental regulations
- (11) Other problem
- (12) Nothing Special

3.0 Procurement of materials / inputs (Skip if not manufacturing companies like food processing companies)

3.1 Please describe the brakedown by procuring countries of materials / inputs (cash basis; the total should equal to 100%)

- | | |
|---------------------------------------------------|-------------------------------------------------------|
| (1) <input type="checkbox"/> Myanmar (%) | (2) <input type="checkbox"/> Japan (%) |
| (3) <input type="checkbox"/> ASEAN (%) | (4) <input type="checkbox"/> China mainland (%) |
| (5) <input type="checkbox"/> Other Asia (%) | (6) <input type="checkbox"/> Oceania (%) |
| (7) <input type="checkbox"/> USA (%) | (8) <input type="checkbox"/> EU (%) |
| (9) <input type="checkbox"/> Southeast (%) | (10) <input type="checkbox"/> Others (%) |

If there is any local (in Myanmar) procurement, go on to question 3.2 , otherwise 3.3

3.2 Out of local (in Myanmar) procurement, please describe the brakedown by type of company.

- (1) Japanese Company addressing in Myanmar (%)
- (2) Myanmar Local Company (%)
- (3) Other foreign affiliated companies (%)

3.3 Please select applicable answers to describe your companie's future procurement policy. (Multiple answers are acceptable)

- (1) Increase local procurement ratio in Myanmar
- (2) Increase procurement ratio from ASEAN countries
- (3) Increase procurement ratio from China
- (4) Increase procurement ratio from India
- (5) Increase procurement ratio from Japan
- (6) Sustain current conditions
- (7) Others ()

3.4 Does your company make a contract farming with farmers?

- (1) Yes
- (2) No

Questionnaire for Agri-Food Company (7/7)

3.5 If the answer 3.4 was "Yes", please select applicable answers to describe your company's support to farmers.

(Multiple answers are acceptable)

- (1) Provision of technical support.
 (2) Provision of financial support
 (3) Provision of seed
 (4) Provision of fertilizers
 (5) Provision of machinery service
 (6) Buying all products from farmers
 (7) Others ()

4.0 Import / Export Situation

4.1 Please describe the ratio of export against total sales in your company (_____ %)

Not include indirect export. However, in case exporting through Myanmar local sales company, please also take into account of them.

4.2 Please describe the breakdown by exporting countries (cash basis; the total should equal to 100%)

- | | | | | | |
|------------------------------------------|---|-----------------------------------------|---|--------------------------------------|---|
| (1) <input type="checkbox"/> Japan | % | (2) <input type="checkbox"/> ASEAN | % | (3) <input type="checkbox"/> China | % |
| (4) <input type="checkbox"/> Korea | % | (5) <input type="checkbox"/> Honkong | % | (6) <input type="checkbox"/> Taiwan | % |
| (7) <input type="checkbox"/> India | % | (8) <input type="checkbox"/> Other Asia | % | (9) <input type="checkbox"/> Oseania | % |
| (10) <input type="checkbox"/> USA | % | (11) <input type="checkbox"/> EU | % | (12) <input type="checkbox"/> Russia | % |
| (13) <input type="checkbox"/> South East | % | (14) <input type="checkbox"/> Others | % | | |

4.3 As an exporting market for your business / products for a short periods (1~3 years), which country / region you assess as a most potential market. **Please select only one market from below.**

- | | | |
|------------------------------------------|-----------------------------------------|---------------------------------------|
| (1) <input type="checkbox"/> Indonesia | (2) <input type="checkbox"/> Malaysia | (3) <input type="checkbox"/> Vietnam |
| (4) <input type="checkbox"/> Philippines | (5) <input type="checkbox"/> Singapore | (6) <input type="checkbox"/> Thailand |
| (7) <input type="checkbox"/> Cambodia | (8) <input type="checkbox"/> Laos | (9) <input type="checkbox"/> India |
| (10) <input type="checkbox"/> Japan | (11) <input type="checkbox"/> Korea | (12) <input type="checkbox"/> China |
| (13) <input type="checkbox"/> Honkong | (14) <input type="checkbox"/> Taiwan | (15) <input type="checkbox"/> USA |
| (16) <input type="checkbox"/> EU | (17) <input type="checkbox"/> Oceania | (18) <input type="checkbox"/> Russia |
| (19) <input type="checkbox"/> Other Asia | (20) <input type="checkbox"/> Southeast | |
| (22) <input type="checkbox"/> Others () | | |

Thank you !!

Source: JICA Study Team

3.2 Company List for the Questionnaire Survey

Company List for the Questionnaire Survey (1/2)

| No | Category | Name | Services | Company Breafing | Address | Contact |
|----|------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 1 | Raw Milk | Aye Aye Chaing (Dairy Farm) | Production, processing and distribution diary products (Raw Milk, Yogurt, cool milk and pasturized milk ect...) | Foundation : 1997 Employee : 32 | Thayet Kaing Village, Pathein Gyi Tps, Mandalay Region | Mr. Khin Mg Soe Contact : 09-795534484 |
| 2 | Raw Milk | Shwe Oh Dairy Farm | Production, processing and distribution diary products (Raw Milk, Yogurt, cool milk and pasturized milk ect...) | Foundation :2003 Employee : 14 | Kalama Taung Village, Pathein Gyi Tps, Mandalay Region | Mr. Kyaw Soe Linn Contact :09-797471429 kyawsoelin3893@gmail.com |
| 3 | Processed Milk | Mother Milk Production | Production, processing and distribution diary products (Raw Milk, Yogurt, cool milk and pasturized milk ect...) | Foundation :2014 Employee : 15 | Pyigyitakhon Tsp, Near LBVD Mandalay office. | Mr. Kyaw Kyaw Htun Contact : 09-401526034 kyawkun@gmail.com |
| 4 | Processed Milk | Happy Farm | Production, processing and distribution diary products (Raw Milk, Yogurt, cool milk and pasturized milk ect...) | Foundation :2008 Employee : 23 | Tamargone Village, Seywa Village Tract, Sintgyaing Tsp, Mandalay Region | Mr. Yan Kway Kywan @ Mr. Soe Myint Contact : 09-402592418 |
| 5 | Meat | Maung Maung Khin Co.,LTD | Farming and Distribution (Cattle cow and goat) | Foundation :2015 Employee : 7 | No.A-2, 35th road, between 80 street and 81 street, ChanAyeTharSan Tsp,Mandalay Region | Mr. Zaw Zaw Htet Contact : 09-5188740 zawzaw.mmk@gmail.com |
| 6 | Meat | American Dressed Chicken Priduction and Distribution | Producton,processing and distribution (Chicken Meat, Fried chicken meat, Chicken meat ball and sausage) | Foundation :1997 Employee : 17 | Coner of 40th st and 87th st, Mahar Aung Myae Tsp, Mandalay Region. | Dr. Khin Mg Htwe Contact :09-2009215 kmh.american@gmail.com |
| 7 | Edible Oil | Asia Thar Oil Factory | Production,processing and distribution (Ground nut oil, Sunflower oil and sesame oil) | Foundation :1995 Employee : 16 | No.793, 81 st between 45 st and 46st, ChanMyaTharSe Tsp, Mandalay Region | Mr. Than Lwin Contact : 09-2009332 sparrowthanlwin31@gmail.com |
| 8 | Edible Oil | Golden Taste (Pure Cooking Oil Production) | Processing and Distribution (penut oil and seame oil) | Foundation :1970 Employee : 10 | Cormer of 61st & 14th st,Aung Myae Thar San Tsp,Mandalay Region | Mr. Thet Htun Linn Contact : 09-792024323 goldentaste8@gmail.com |
| 9 | Pulses & Beans | Nyein Chan Yae | Processing and Distribution (yellow bean, gram , chick pea and Bean powder) | Foundation :2008 Employee : 15 | H.106,68th st KaNaung Min Thar Gyi Road, Industry Zone (1),Mandalay. | Dr. Aung Si Hein Contact : 09-2038459 drsihein@gmail.com |
| 10 | Pulses & Beans | Kyin Kyin Thein | Processing and Distribution (Chick pea and Pigeon pea) | Foundation :1980 Employee : 18 | NaNa (23), 69 x Corner of SanPya st, Industry Zone (1), Mandalay Region | Mr. Nyunt Wai Contact : 09-5100517 unyuntwai.mdy@gmail.com |
| 11 | Seed | East- West Seed Company Co.,Ltd | Input Supplying, Production and Distribution (Vegetable seed) | Foundation : 2006 Employee : 71 | No.(10)B, Thukhawaddy st, Yankin Tsp, Yangon | Mr. Thein Tun Contact : 09-977121966 thein.tun@gmail.com |
| 12 | Seed | Ayeyarwaddy Seed Co., Ltd | Input Supplying and Distribution (Vegetable seed and field corn seed) | Foundation : 2003 Employee : 7 | 8 miles, Mayangne Tsp, Yangon | Mr. Soe Than Contact : 09-5134608 soethan@ayeyarwaddyseeds.com |
| 13 | Agri Machinery | Good Brother Co.,Ltd | Input Supplying and Distribution (Agricultural Machieries) | Foundation : 1991 Employee : 1830 | No.22, Bayint Naung Road, Thiri Mon Housing, Hlaing Tsp, Yangon | Mr. Aung Myint Aye Contact : 09-767666608 aungmyint.ayem@gmail.com |
| 14 | Agri Machinery | Fan Te Shin Co.,Ltd | Input Supplying and Distribution (Agricultural Machieries) | Foundation : 2007 Employee : 40 | No.130, Wet Ma Sout Win Htauk St, Industry Zone (4) Hlaing Thar Yar Tsp, Yangon | Ms. Yi Yi Lwin Contact : 09-450696885 myatmin.122@gmail.com |
| 15 | Fertilizers/ Pesticide | Agro-Power Co.,Ltd | Input Supplying and Distribution (Agricultural Pesticides) | Foundation : 2012 Employee : 60 | No.570, ThuMaNa st, Ward 16/4, Thingangkyun Tsp, Yangon | Ms. Aye Myint Than Contact : 09-764709722 amt.coolaye@gmail.com |
| 16 | Fertilizers/ Pesticide | Shan Maw Myae Co.,Ltd | Input Supplyig, Productoin and Distribution (Bio - Pesticides and bio - Fertilizers) | Foundation : 2001 Employee : 105 | No (243), 1st Floor (left), Bo Aung Kyaw st(Middle block), Kyauktada Tsp, Yangon | Mr. Nyan Lin Contact : 09-5501282 nl@shanmawmyae.com |
| 17 | Fertilizers/ Pesticide | Margamin Co.,Ltd | Input Supplyig and Distribution (Agricultural chemical fertilizer and pesticides) | Foundation : 2016 Employee : 120 | No.24, City golf resort Housing, Thiri Mingalar Road, Insein Tsp, Yangon | Mr. Myo Kyaw Contact : 09-5029796 myokyaw95@gmail.com |
| 18 | Fertilizers/ Pesticide | Agro Green Land Chemical Co.,Ltd | Input Supplyig and Distribution (Agricultural chemical fertilizer and pesticides) | Foundation : 2017 Employee : 35 | No. 61, Gayunar Road, near of Ywar Thar Gyi Ka Nya Na, Dagon Myo Thit(South) Tsp, Yangon | Mr. Sai Khan Khome Contact : 09-5106747 agl.chemical.ks@gmail.com |
| 19 | Food Processing | Dream World Company | Processing and Distribution (Double fermentation : Vinegar, chilli sauce and vinegar drink) | Foundation : 2004 Employee : 60 | 245-248 Mya Khwar Nyo Road, Thakaytha Tsp, Yangon | Mr. Zaw Soe Contact : 09-798477463 dreamworldcompany@gmail.com |
| 20 | Food Processing | Yathar Cho Co.,Ltd | Processing and Distribution (instand noodle and vermicelli) | Foundation : 1997 Employee : 320 | Building 3, 2nd floor, MICT Park, Hlaing Tsp, Yangon | Mr. Ye Myat Htoo Contact : 09-5165464 yemyathtoo@chochoco.biz |

Company List for the Questionnaire Survey (2/2)

| No | Category | Name | Services | Company Breafing | Address | Contact |
|----|-----------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 21 | Food Processing | Htoo Mar and Pop Pop Co.,Ltd | Processing and Distribution (Strawberry gem, Piapple gem, Penut oil, Coffee powder, Sesame powder and Traditional drug (Balm)) | Foundation : 1996 Employee : 140 | No.25, Waizayantar road, Thingangyun Tsp, Yangon | Mr. Htoo Lynn Soe Contact : 09-5122419 htoolynnsoe@gmail.com |
| 22 | Food Processing | Myanmar Golden Produce Co.,Ltd | Production, processing, trading and distribution (Dehydrate Mango and Mago Puree) | Foundation : 2012 Employee : 205 | 531-B, Marlarmyaing Housing, Pyay Road, Kamaryut Tsp, Yangon | Ms. Lai Lai Oo Contact : 09-5003377 dawlailai@gmail.com |
| 23 | Food Processing | Itsumiya Myanmar Co.,Ltd | Processing, trading and distribution (Cheese roll) | Foundation : 2015 Employee : 20 | WarTaYar Industrial Zone, ShwePyiThar Tsp, Yangon | Mr. Myo Myo Thein Contact : 09-262372322 komyo2thein@gmail.com |
| 24 | Food Processing | Myat Myint Moh Co.,Ltd | Processing and Distribution (Fish ball and Herbal Jelly) | Foundation : 2005 Employee : 30 | No.34-B, Ground Floor, Thayargone St, Pazundaung Tsp, Yangon | Mr. Aung Naing Win Contact : 09-5144522 aungnaingwin131177@gmail.com |
| 25 | Meat | Yangon Breeders Development Co.,Ltd | Production and Distribution (sell in their own shop and distribute in the downtown markets.(meat only)) | Foundation : 2017 Employee : 18 | No. 78/A, Thanthumar Road, Corner of Loadthar st, Thingankyun Tsp, Yangon | U Myo Thura Contact : 09-43028811 myowillian@gmail.com |
| 26 | Meat | Myanmar CP Livestock Co.,Ltd | Production, Processing and distribution (Chicken Meat Chicken curry, Sausage, Fried chickenmeat, pork meat, Doc, Feed and Egg) | Foundation : 1997 Employee : 3000 | No. 96-A, Lan Thit st, Insein Tsp, Yangon | Dr. Myo Thant Contact : 09-260284365 drmyohant1971@gmail.com |
| 27 | Egg | Oakar Myint Moh Co.,Ltd | Productoin and Distribution (Egg) | Foundation : 2008 Employee : 60 | No. 594-A, PannTaPwint Taung st, Lower Wanetchaung Village, Hmawbi Tsp, Yangon | Mr. Mg Mg Contact : 09-798399188 victorxi88@gmail.com |
| 28 | Egg | Popa Co.,Ltd | Production and Distribution (Egg, Doc, Feed and Meat) | Foundation : 1974 Employee : 90 | N0.6, Pyay Road, Near Htauk Kyant cemetry, Yangon | Dr. Kyaw Swar Wint Contact : 09-974338858 dr.kyawswarwint@gmail.com |
| 29 | Feed | Green Field International Co.,Ltd | Production and Distribution (Chicken feed , fish feed, Cow feed and DOC) | Foundation : 1995 Employee : 55 | Bldg-53, Roo. -9 , Nilar (2)St, SawBwaGyiGone Cargo Terminal & Warehouse Compound, Insein Tsp, Yangon | Dr. Hla Hla Thein Contact : 09-5147058 drhht.gfi@gmail.com |
| 30 | Feed | Yin Myint Livestock Co.,Ltd | Processing and Distribution (Animal feed (chicken, Pig and Doc and egg) | Foundation : 2002 Employee : 56 | No.30, Myo Shaung Road, Near Htauk Kyant Toll Gate, Hmawbi Tsp, Yangon | Mr. Thein Myint Contact : 09-73097864 kaunghtet.theinmyint@gmail.com |
| 31 | Food Processing | Divine food garden Industry | Production, Processing and Distribution (Bread, Cake, Cookie and Pastry) | Foundation - 2003 Employee - | No. (149/6) Kanaung Min Thar Gyi St, East Dagon Industrial Zone | Ms. Khin Nandar Soe Contact : 09 43144460 khinnandarsoe84@gmail.com |
| 32 | Food Processing | Globus Myanmar Co.,Ltd | Production, Processing and Distribution (Myanmar Traditional Cooking Sauce) | Foundation - 2016 Employee - | No.420 Thein Phyu Road, Mingalar Taung Nyuit TSp, Yangon | Ms. Myint Myint Hpu Contact : 09-43202271 mimiphu@gmail.com |

Source: JICA Study Team

3.3 The Results of Agri-Food Business Survey

Summary of Agri-Food Business Survey result is discussed in the main report, and detailed result is shown in this section. The detailed result is analyzed by five aspects; all samples, company scale, company category, year experienced and location. Definition of each aspect is shown in the table below.

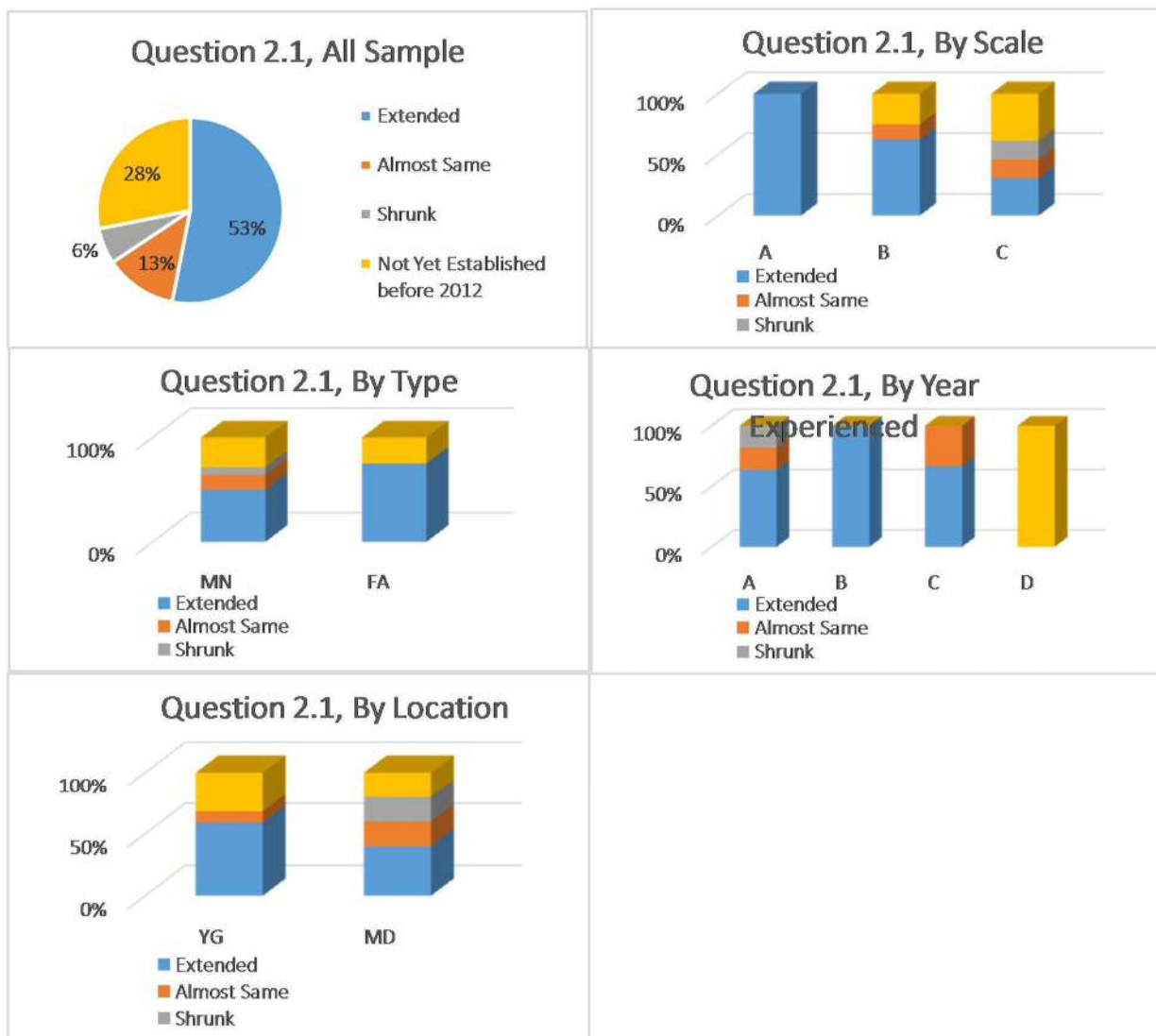
| By Company Scale | | |
|-------------------------|----------|------|
| Scale | Notation | Size |
| More than 300 employees | A | 3 |
| Less than 300 employees | B | 16 |
| Less than 30 employees | C | 13 |
| Total | | 32 |

| Company Category | | |
|--------------------|----------|------|
| Category | Notation | Size |
| Myanmar National | MN | 28 |
| Foreign Affiliated | FA | 4 |
| Total | | 32 |

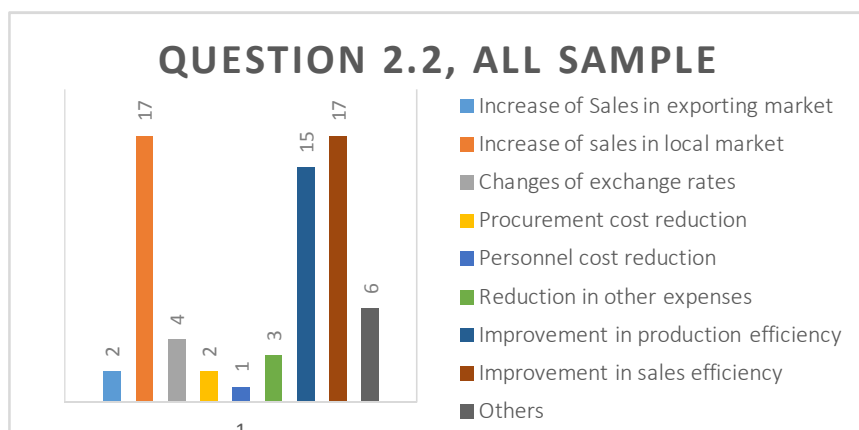
| Year Experienced | | |
|-------------------|----------|------|
| Category | Notation | Size |
| Since Before 1994 | A | 11 |
| Since After 2000 | B | 6 |
| Since After 2006 | C | 6 |
| Since After 2012 | D | 9 |
| Total | | 32 |

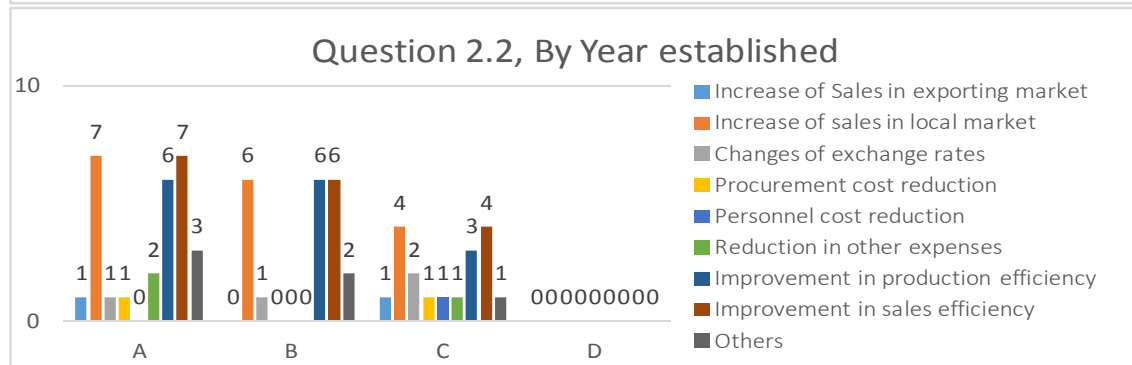
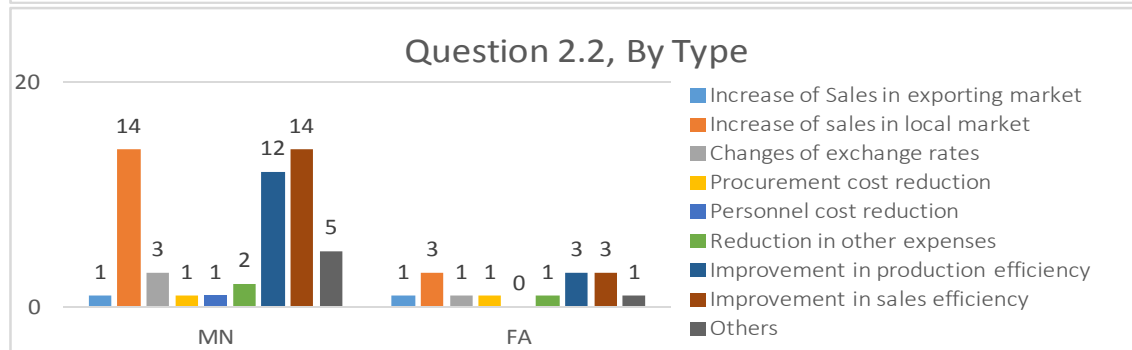
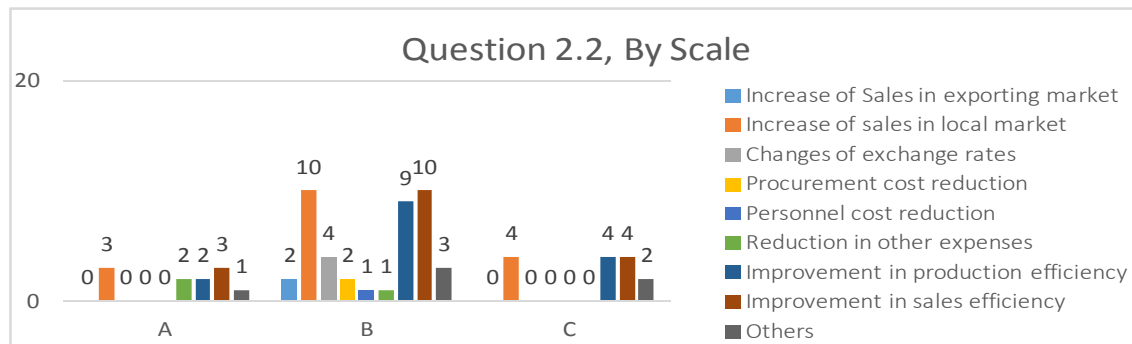
| Location | | |
|----------|----------|------|
| Category | Notation | Size |
| Yangon | YG | 22 |
| Mandalay | MD | 10 |
| Total | | 32 |

Q 2.1 Compared to before and after democratization (before around 2012 and after), how did your business change in scale?

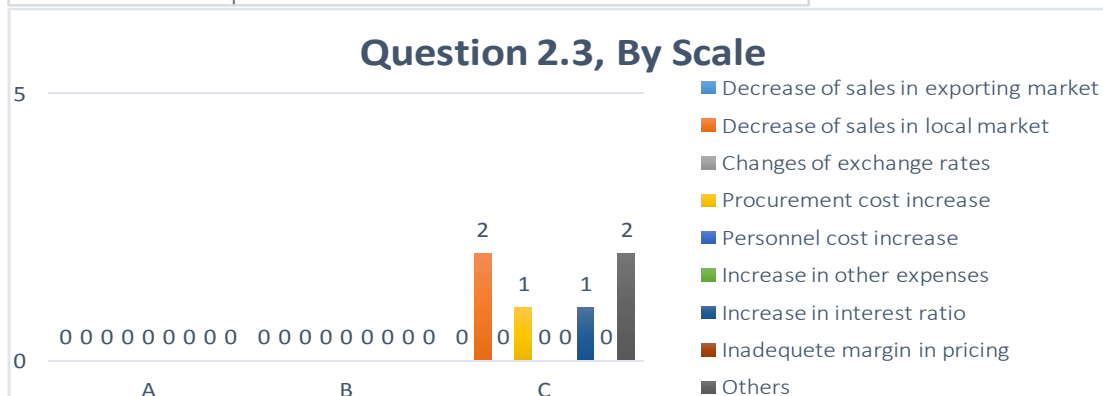
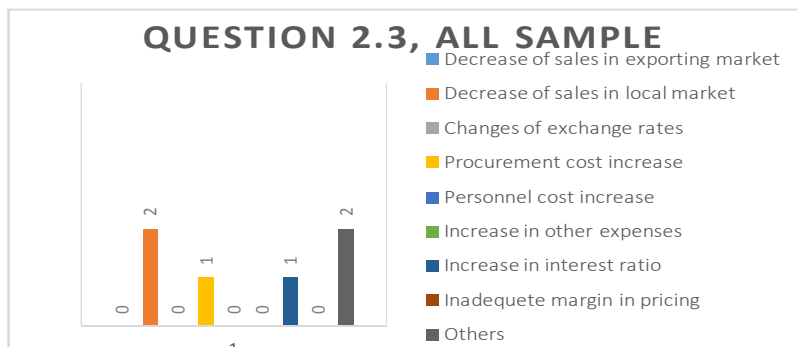


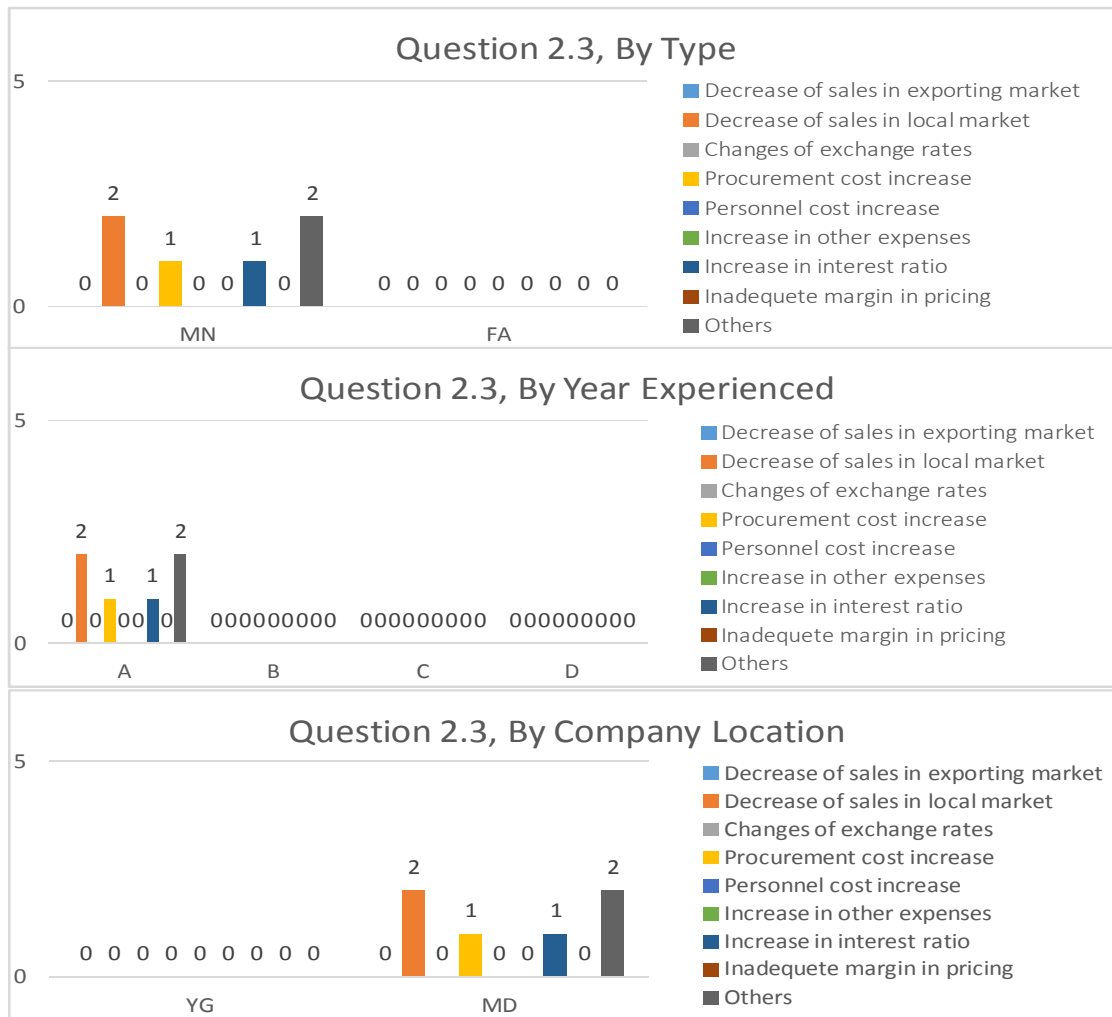
Q 2.2 If your answer 2.1 was "extended", please select the reason. (Multiple answers are Acceptable)



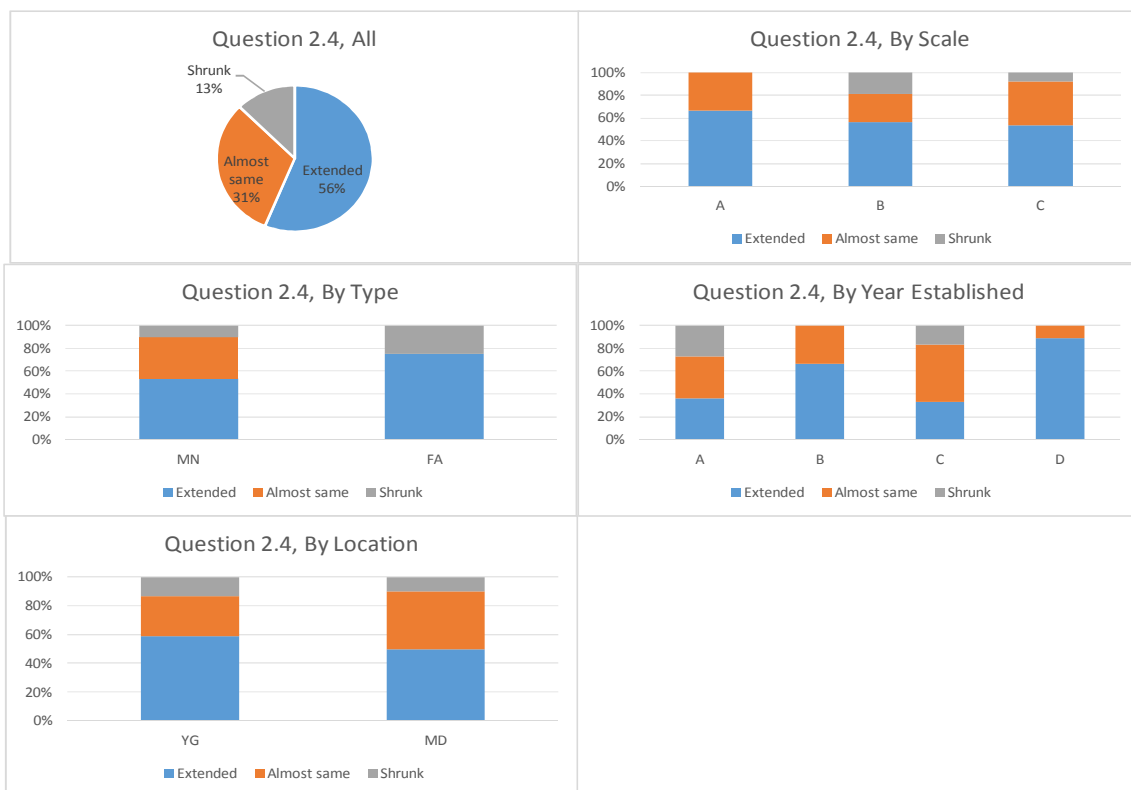


Q 2.3 If your answer 2.1 was "Shrunk", please select the reason (Multiple answers are Acceptable)

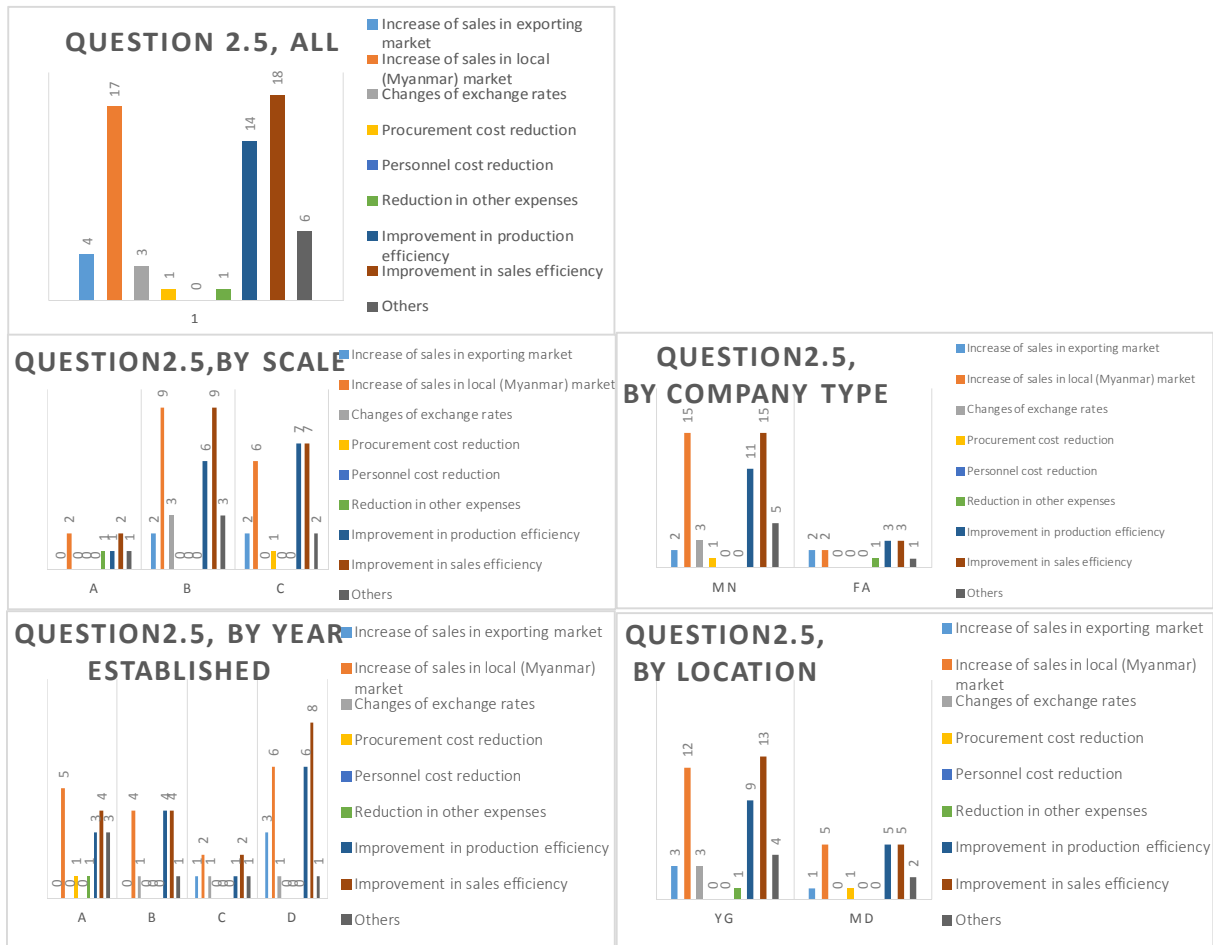




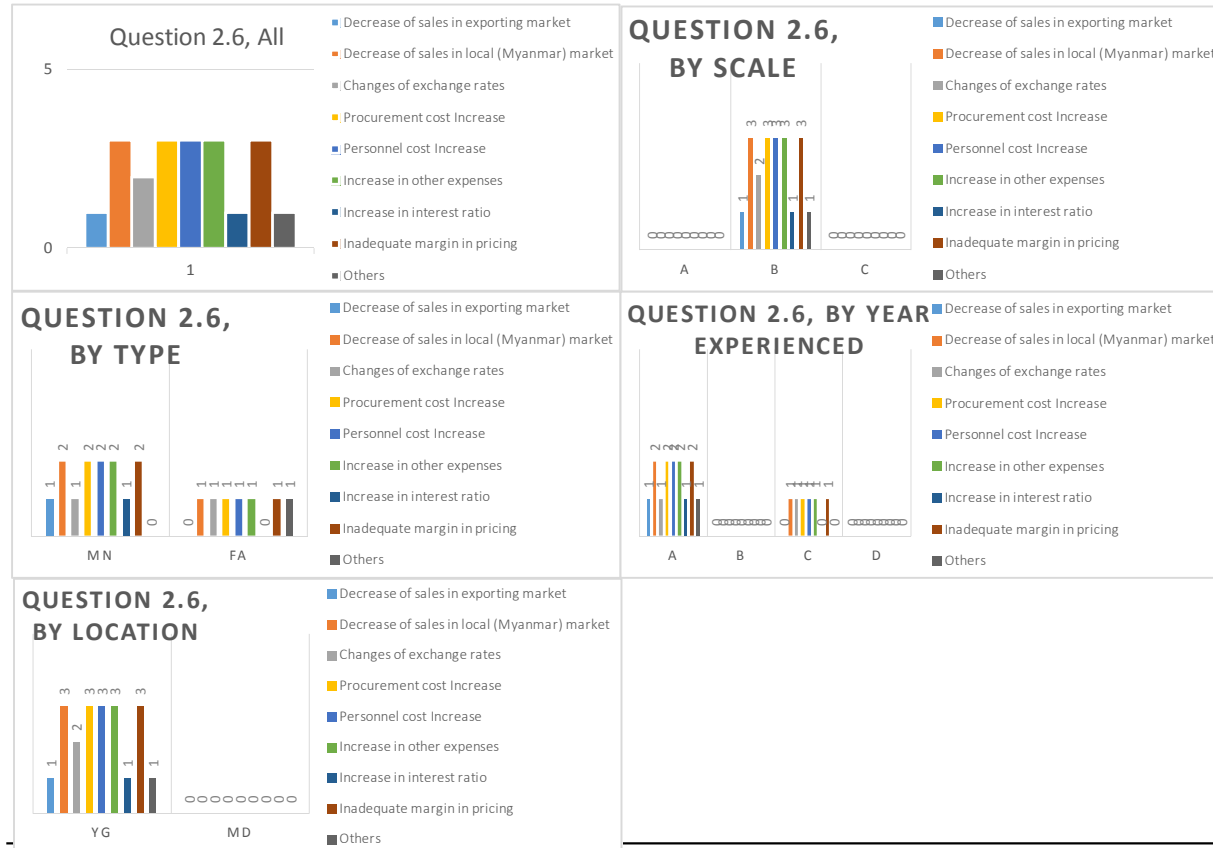
Q 2.4 After NLD won (Nov 2015 until now), how did your business change in scale?



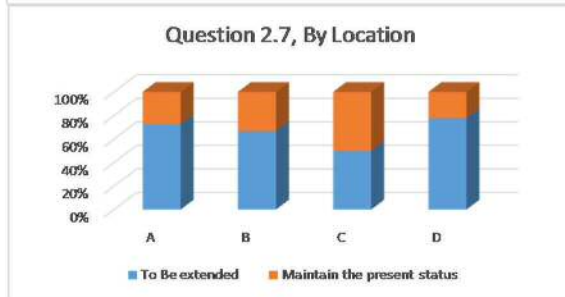
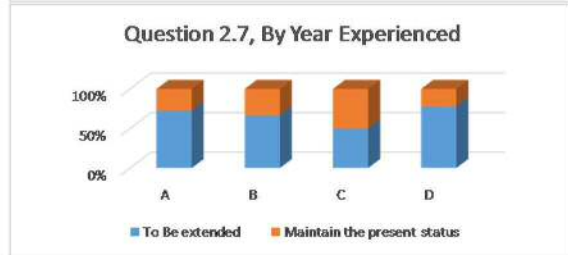
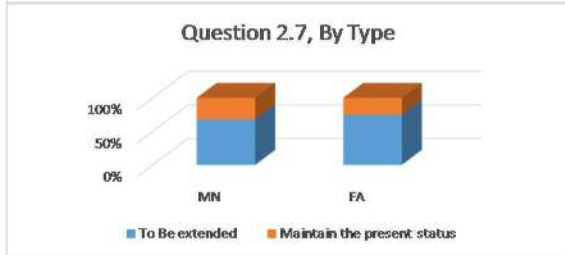
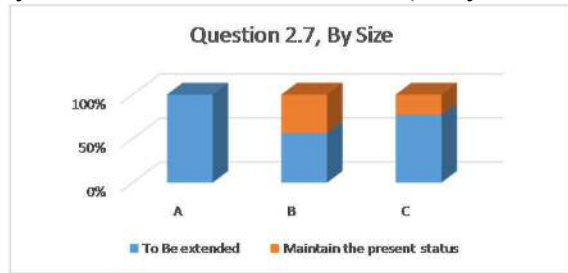
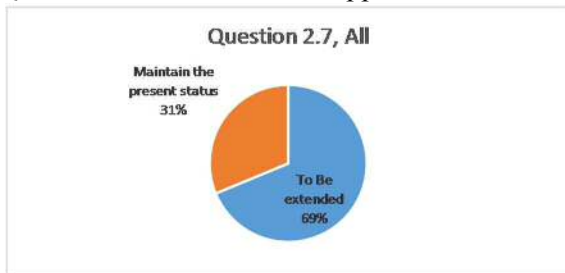
Q2.5 If your answer 2.4 was "extended", please select the reason. (Multiple answers are Acceptable)



Q2.6 If your answer 2.4 was "Shrunk", please select the reason (Multiple answers are Acceptable)

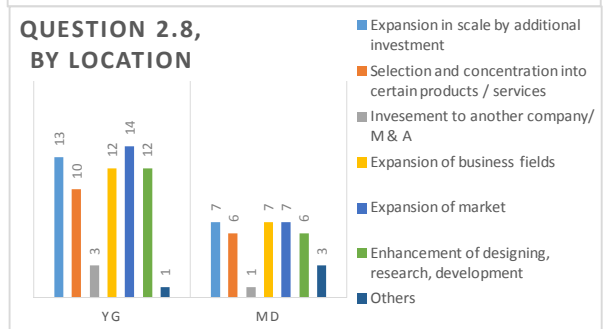
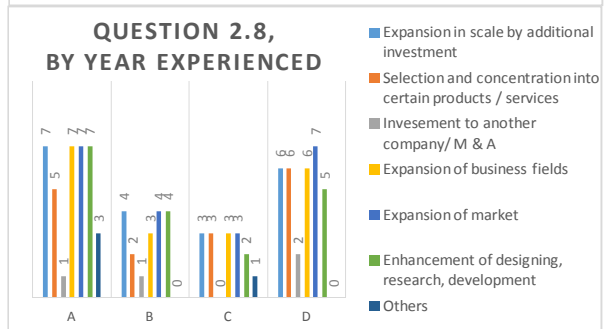
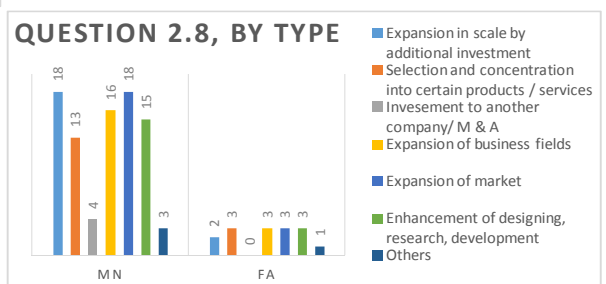
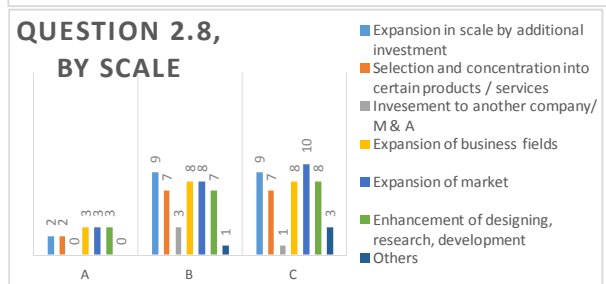
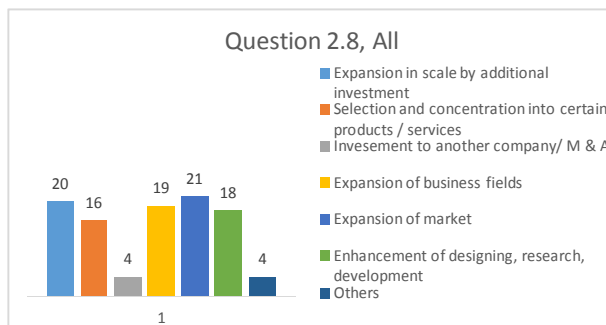


Q 2.7 Please select the most applicable answer for your future direction of business (1~2 years after)



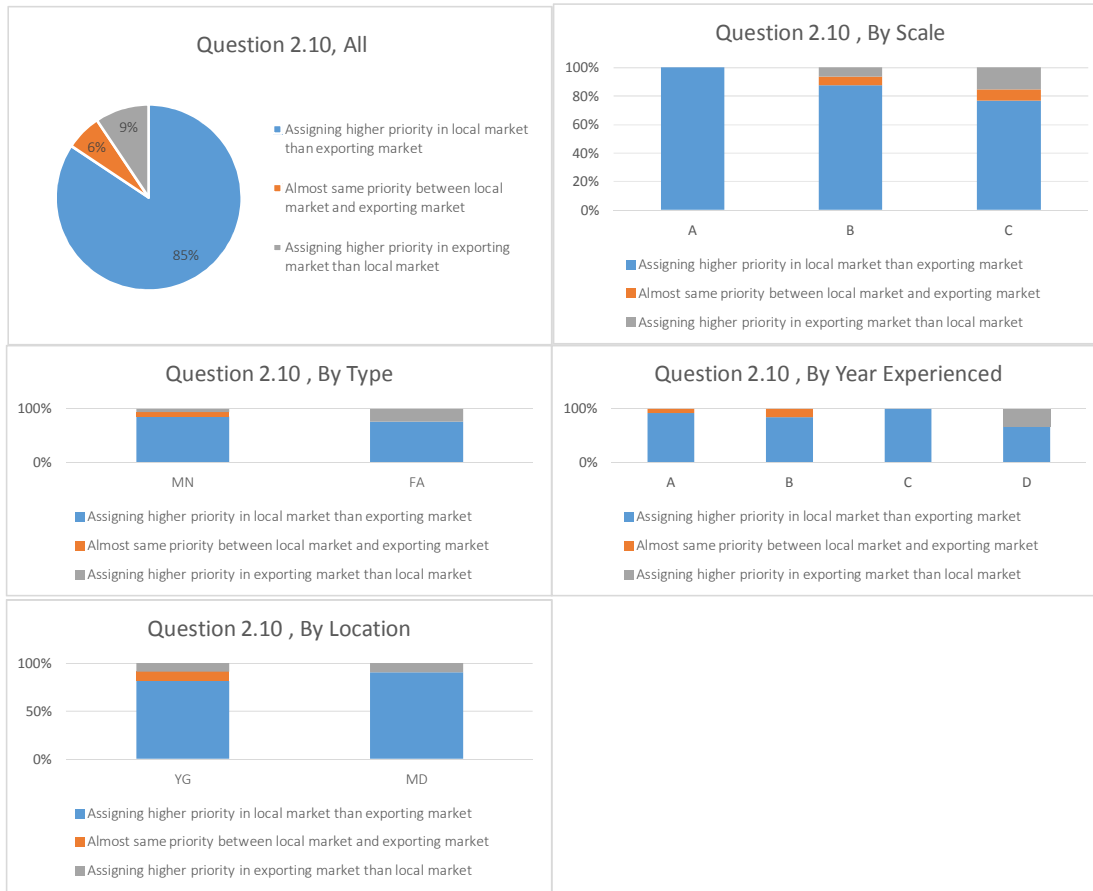
Q 2.8 If your answer 2.7 was "To be extended", please select its concrete strategy.

(Multiple answers are Acceptable)

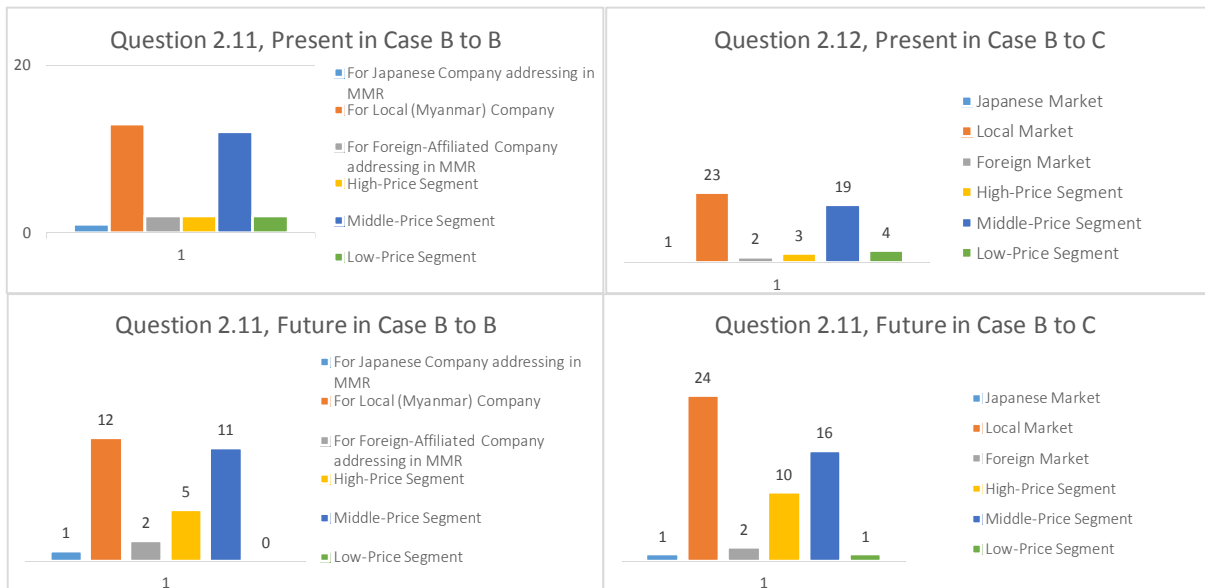


Q 2.9 No data. (No one answered "withdrawal" in 2.7)

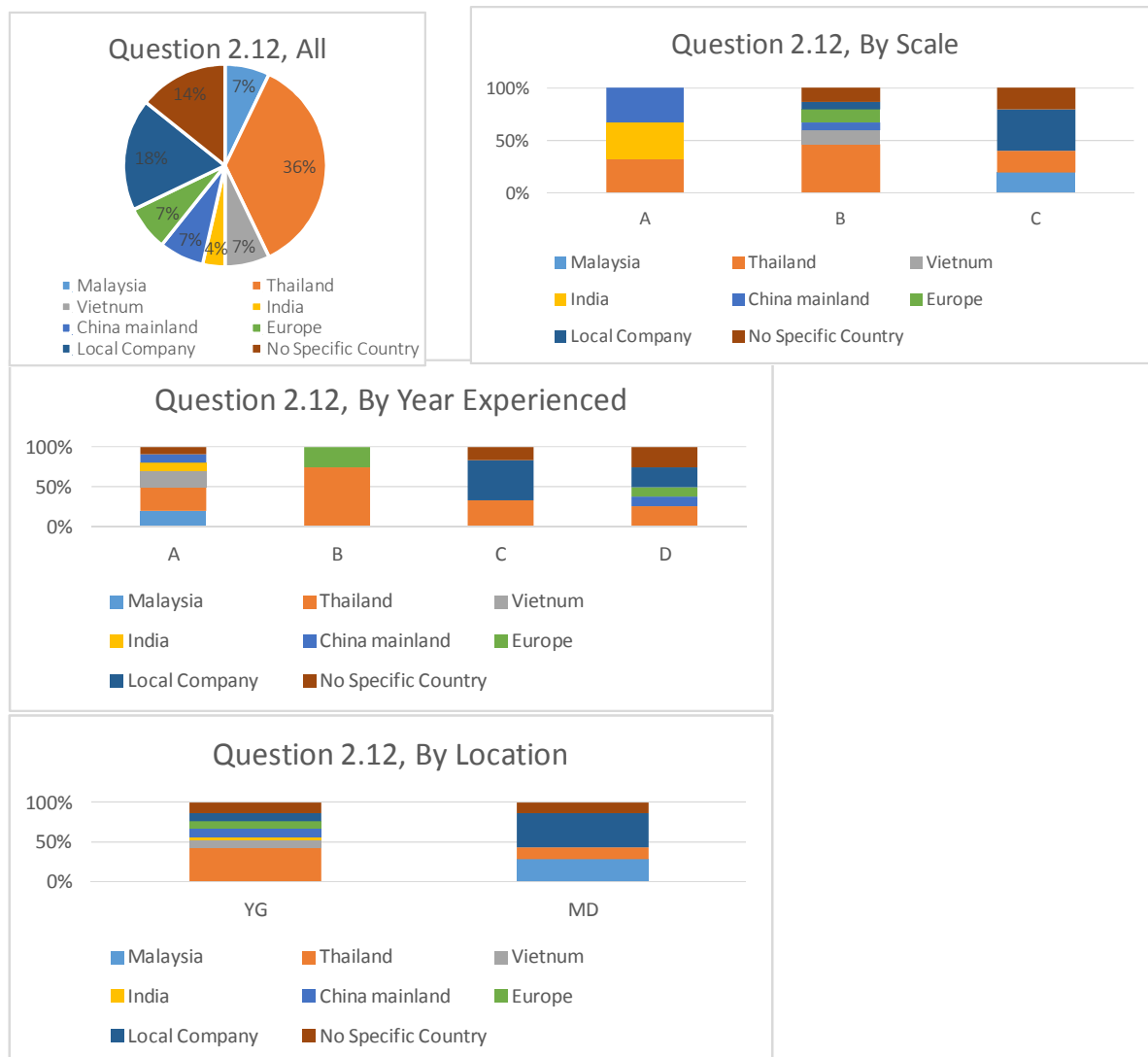
Q 2.10 Please select the most applicable item from below to explain your local marketing strategy in Myanmar (Select Only 1)



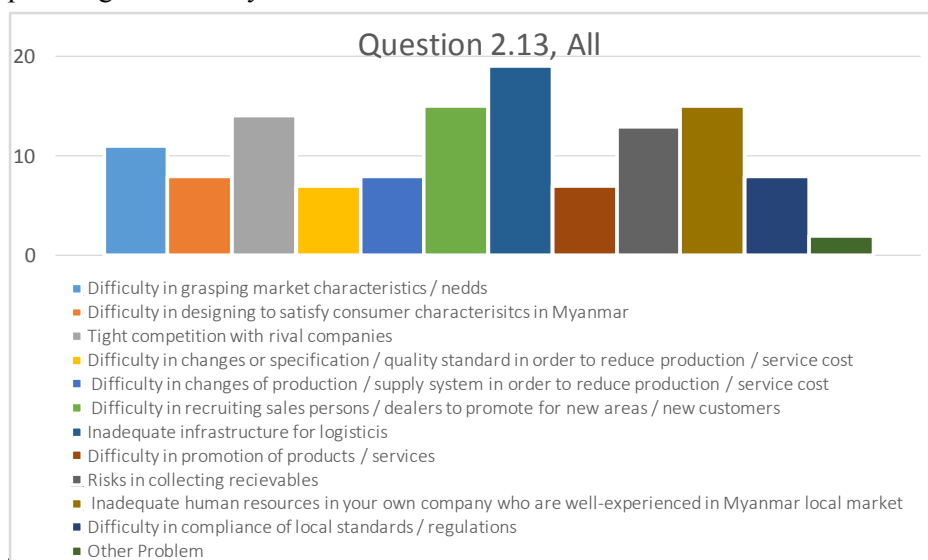
Q 2.11 If the answer 2.10 was (1) or (2), go on to this question (Otherwise skip this question)

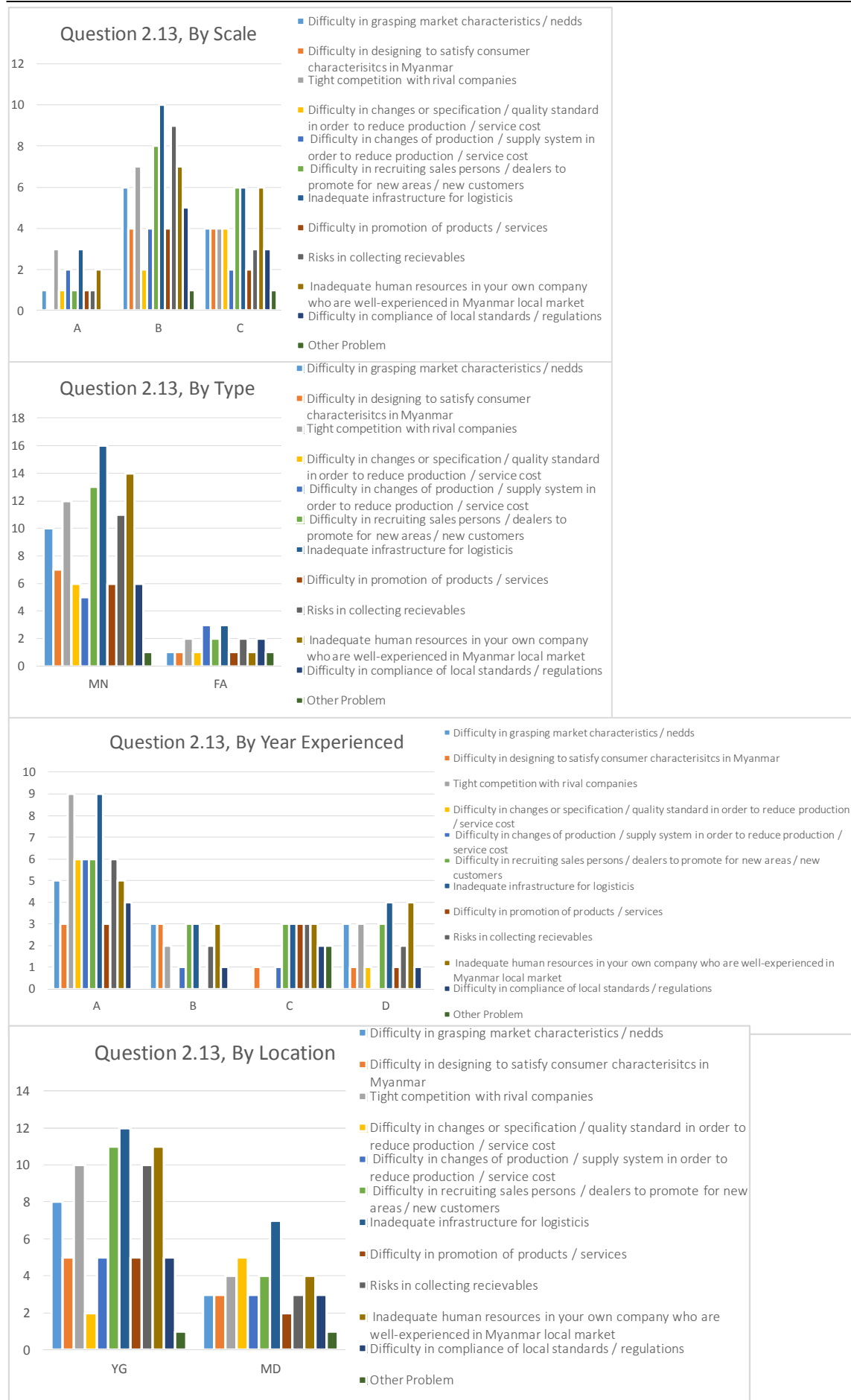


Q 2.12 When your companies promote middle / low price segment goods and services for local markets, companies from which country / region are the strongest competitors? (Not origin of the product but nationality of the company)?

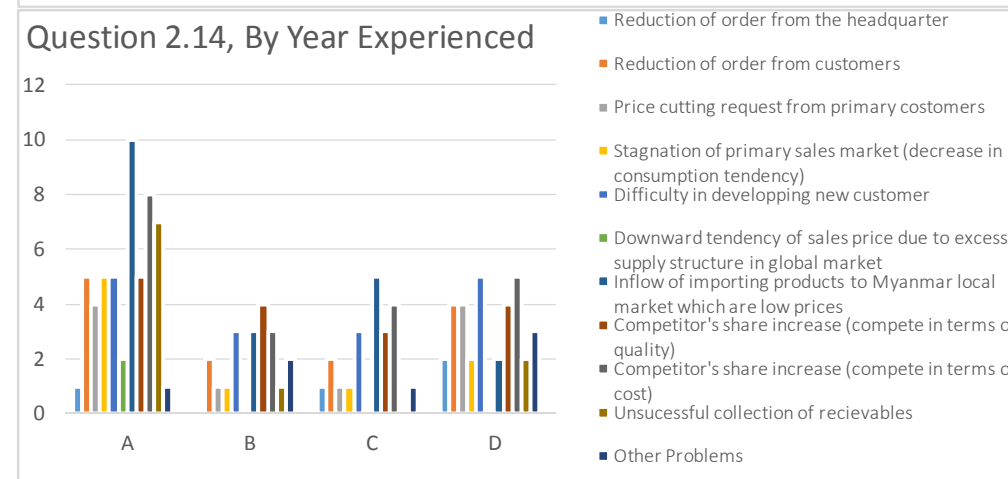
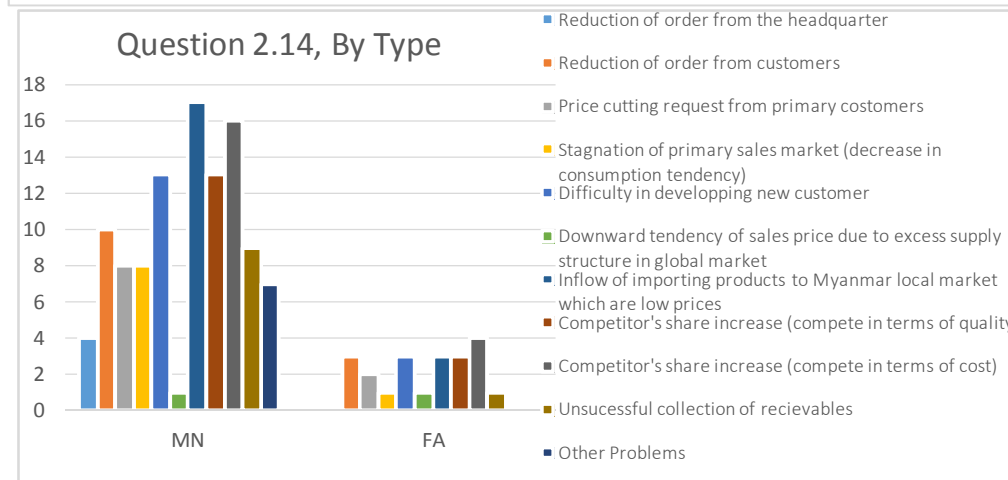
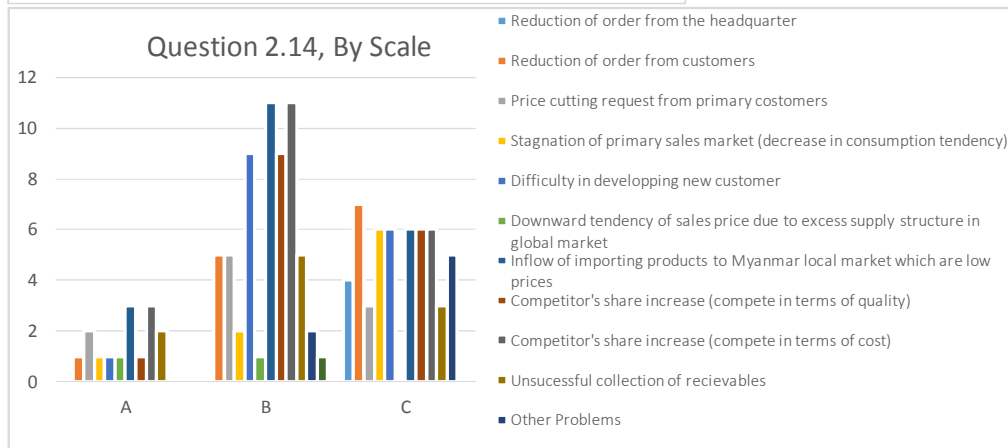
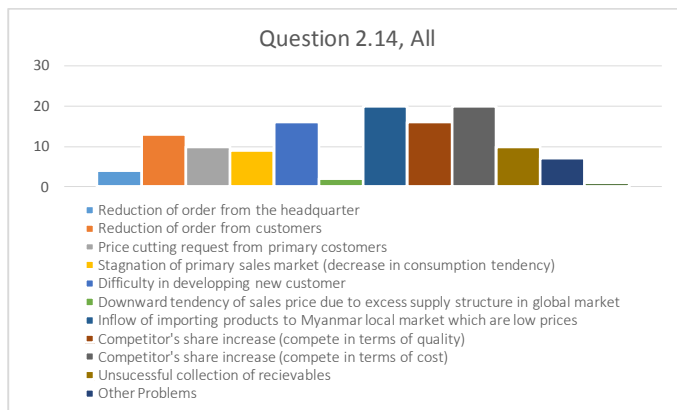


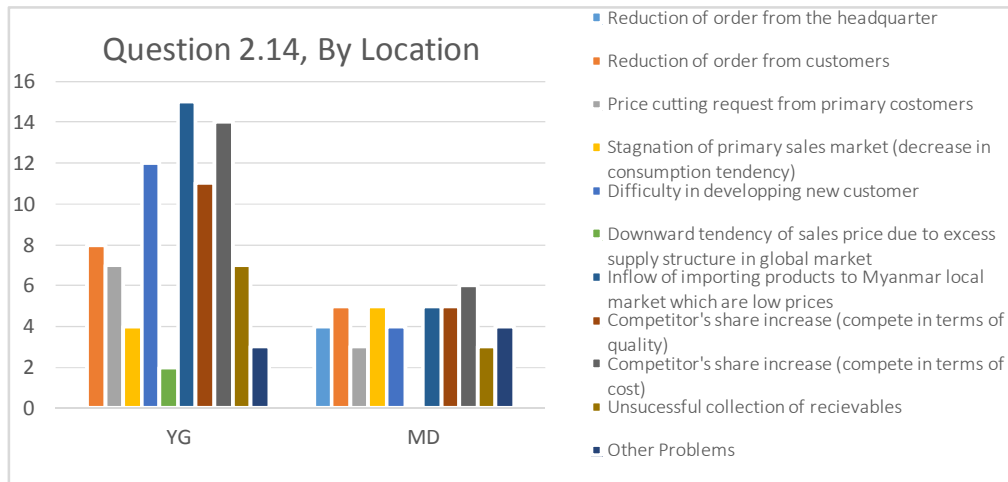
Q 2.13 What are your issues facing or to be facing for promoting goods and services to middle / low price segments in Myanmar local market?



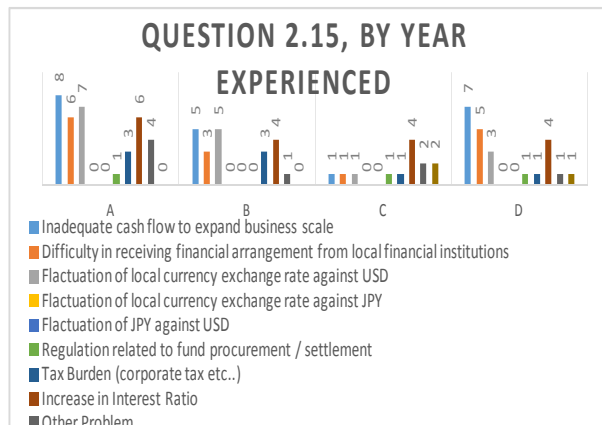
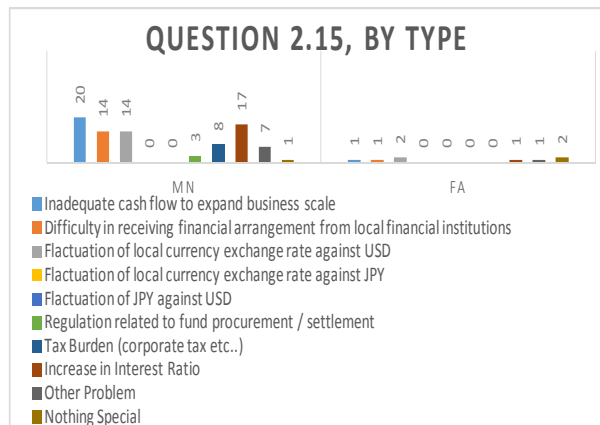
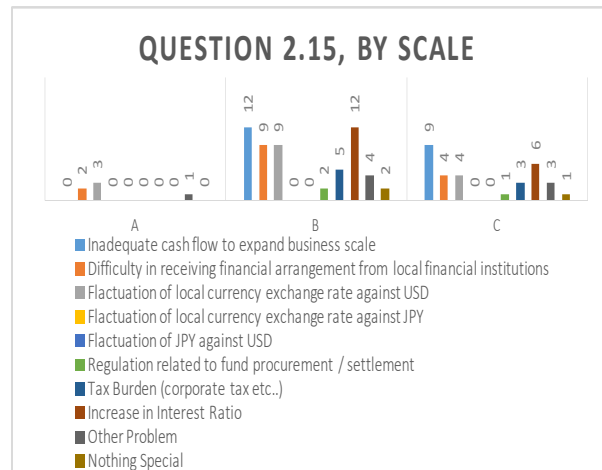
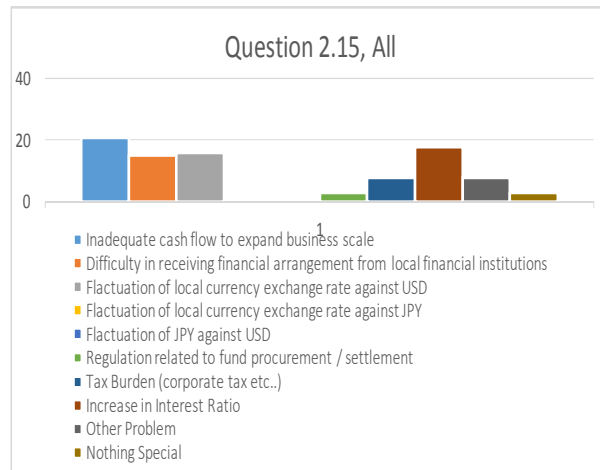


Q 2.14 What are your issues in Sales and Promotion?

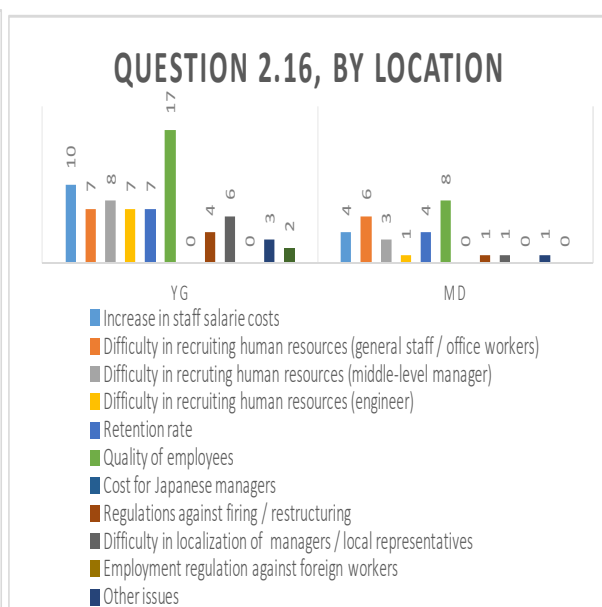
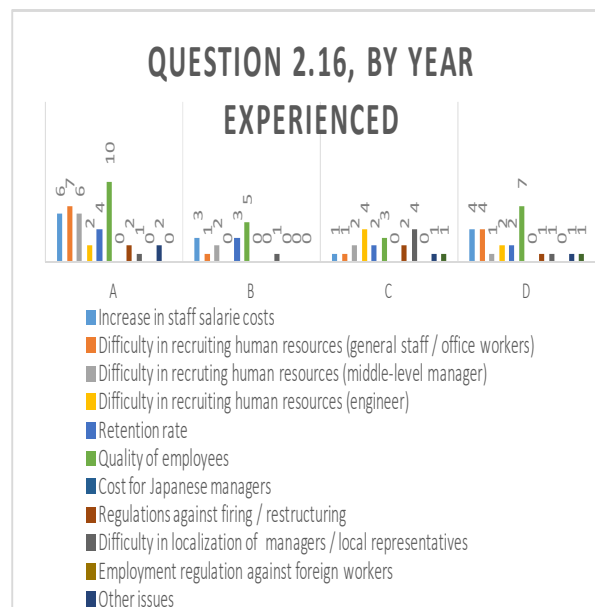
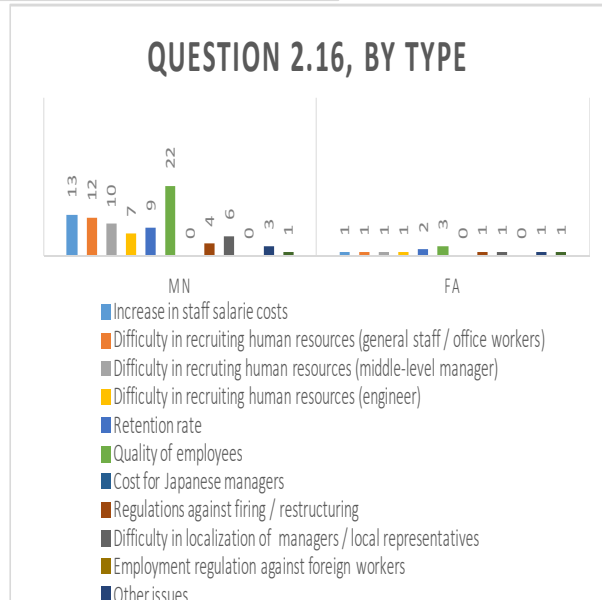
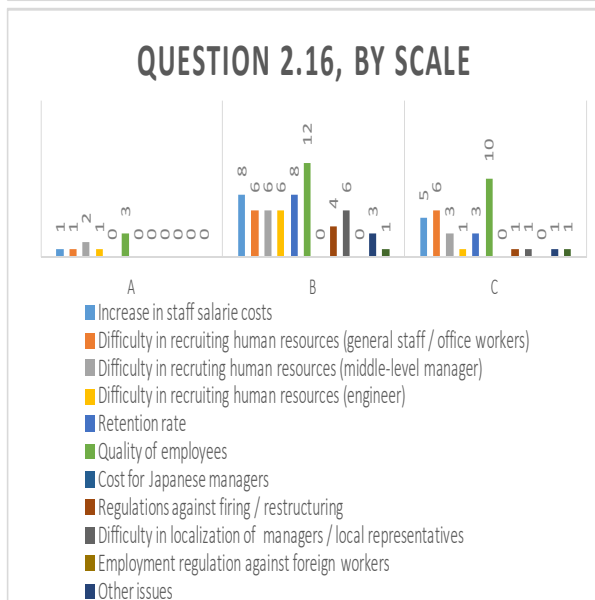
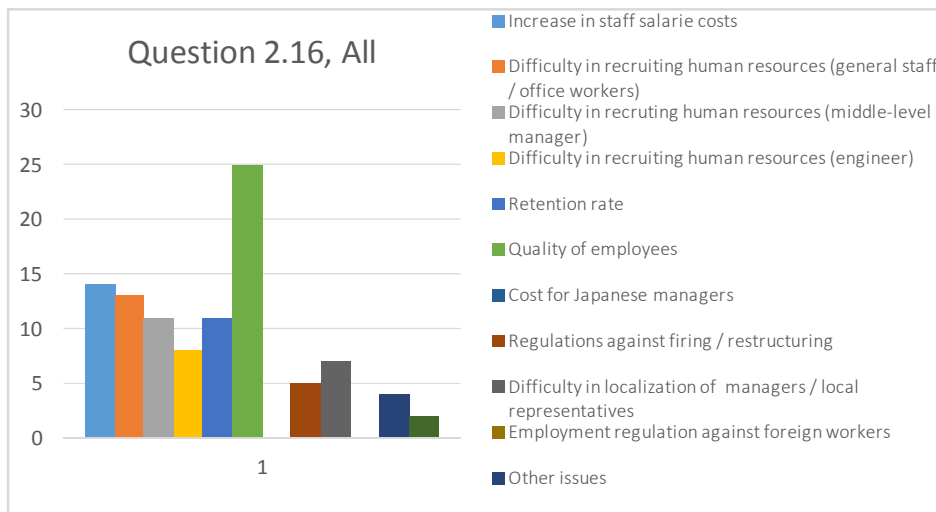




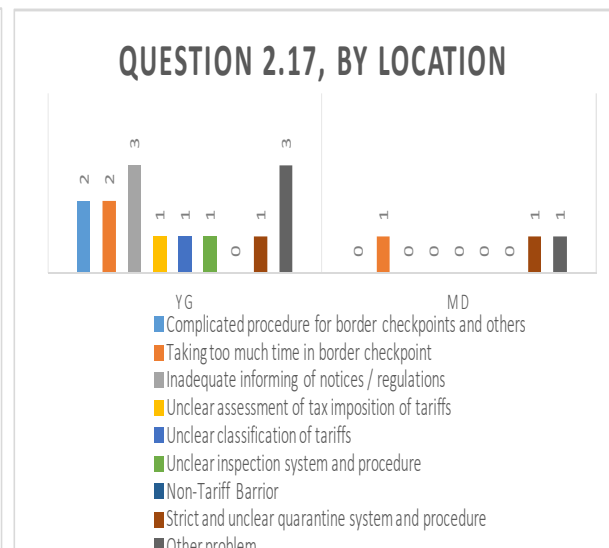
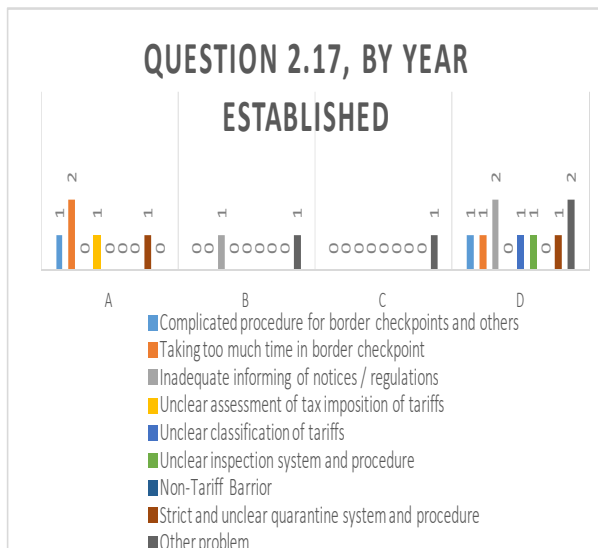
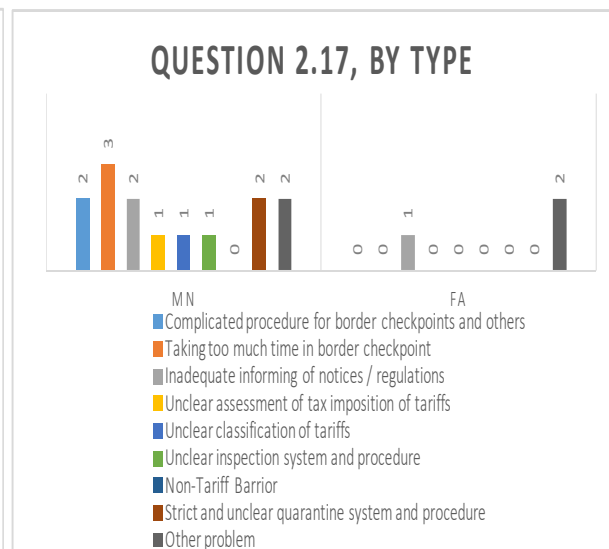
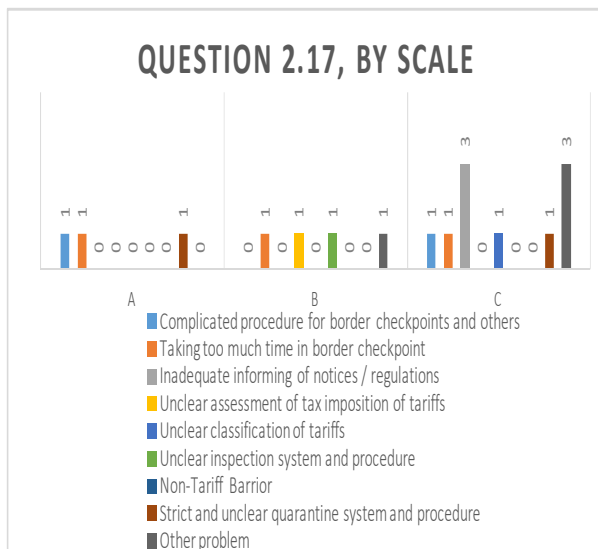
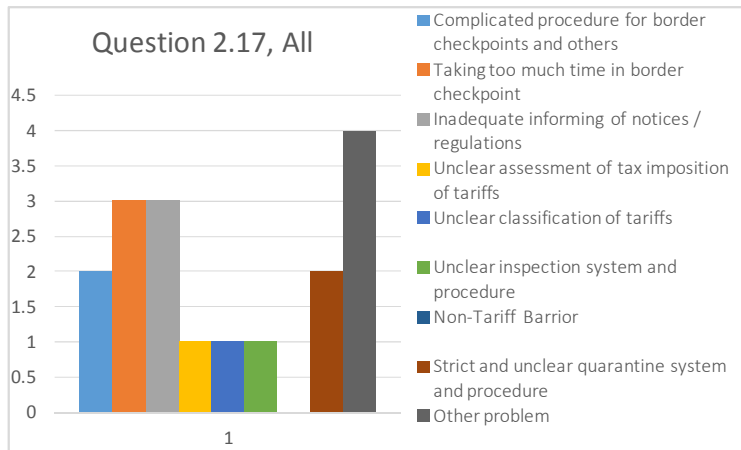
Q 2.15 What are your issues in finance, money, banking, exchange and order?



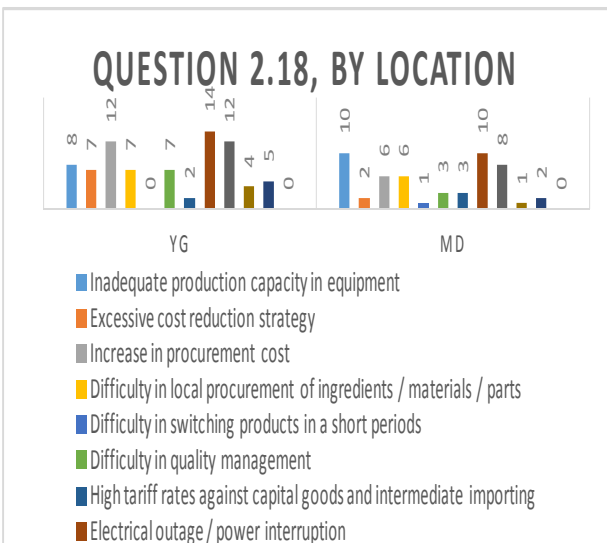
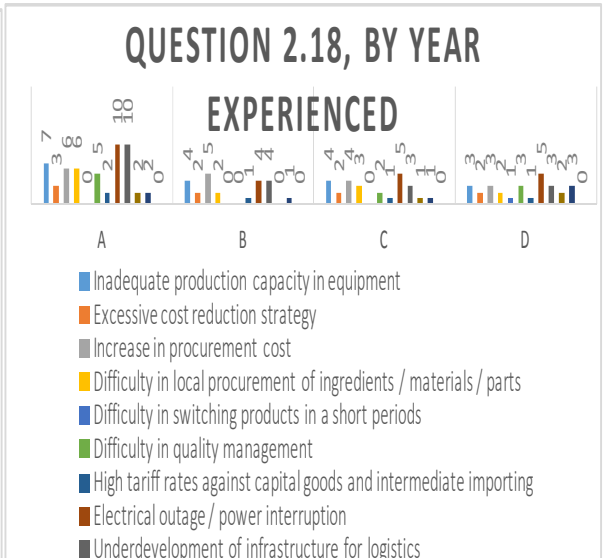
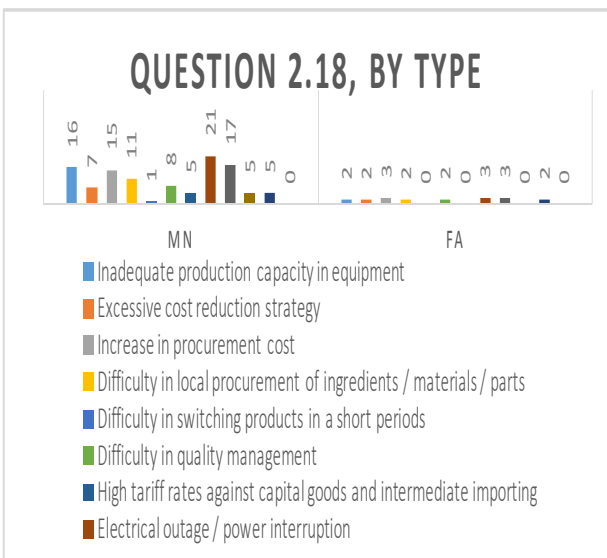
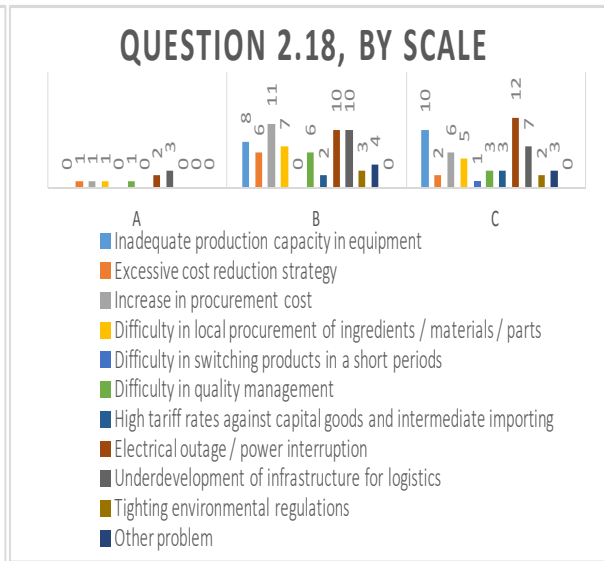
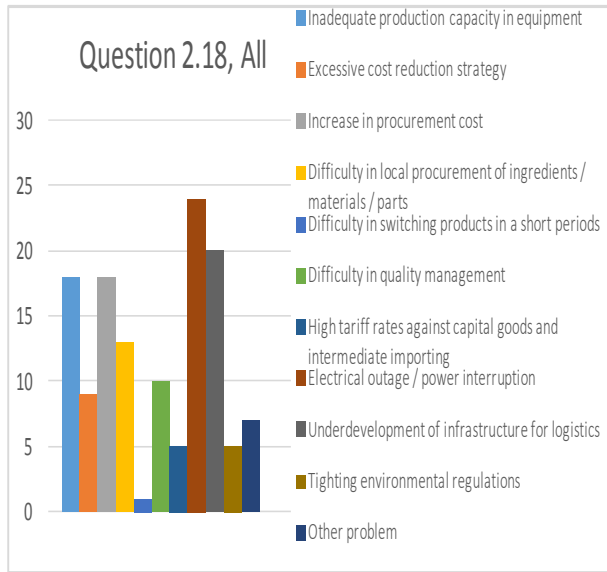
Q 2.16 What are your issues in employment / labor? (Multiple answers are Acceptable)



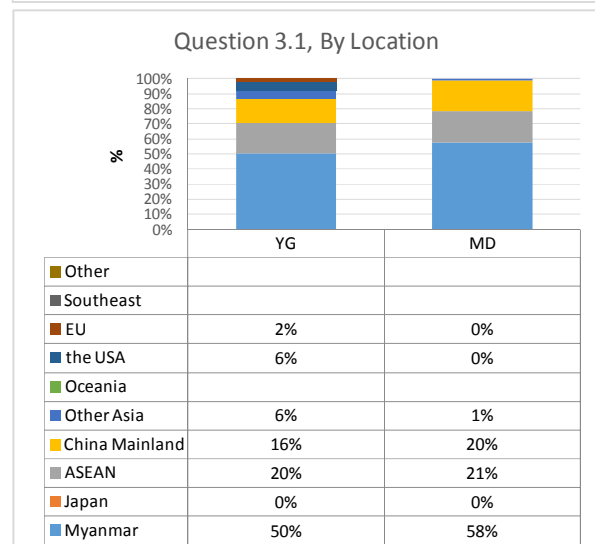
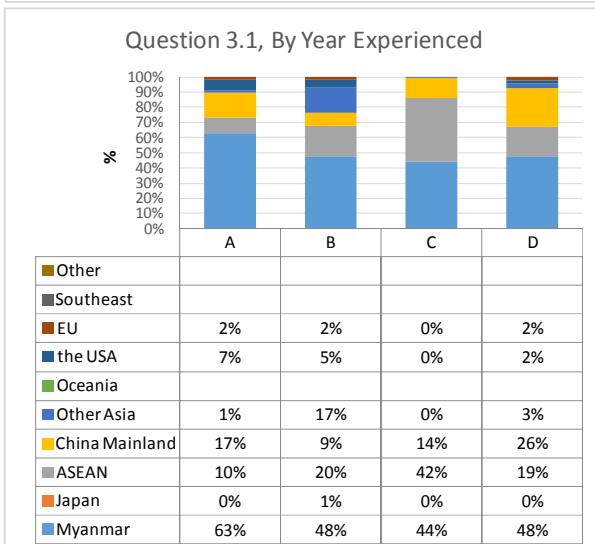
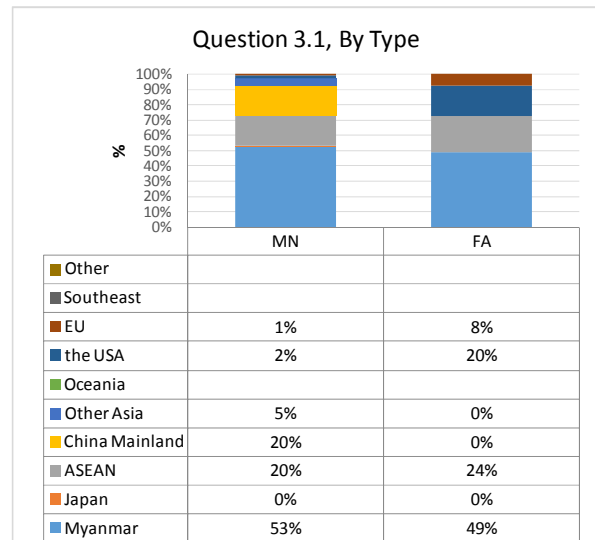
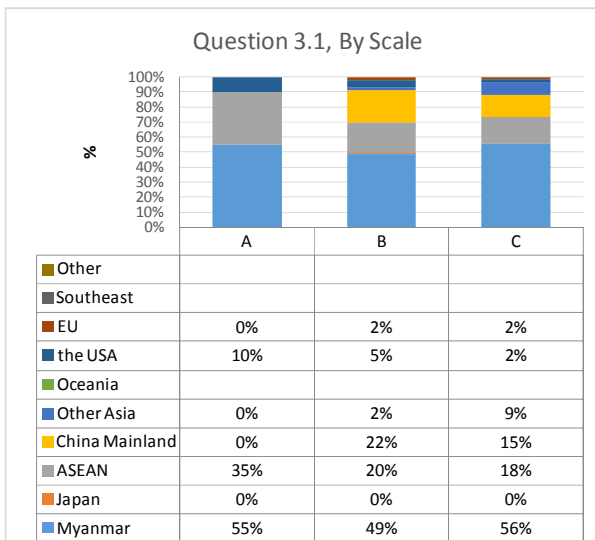
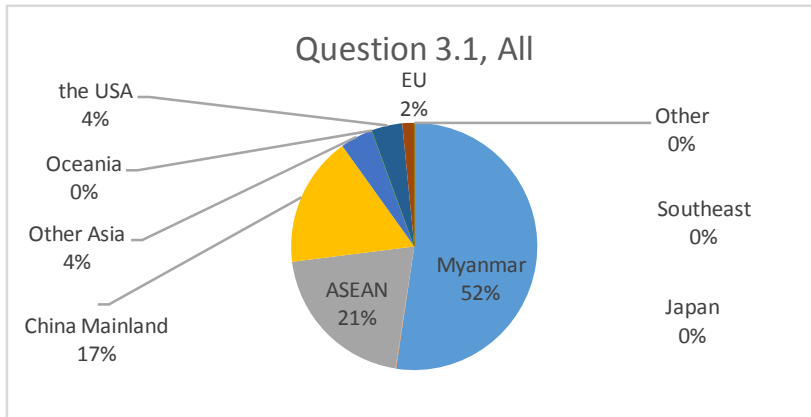
Q 2.17 .What are your issues in Trade Rules?



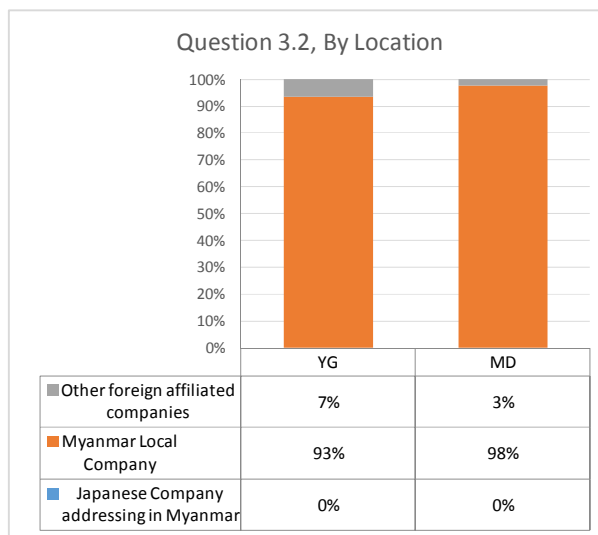
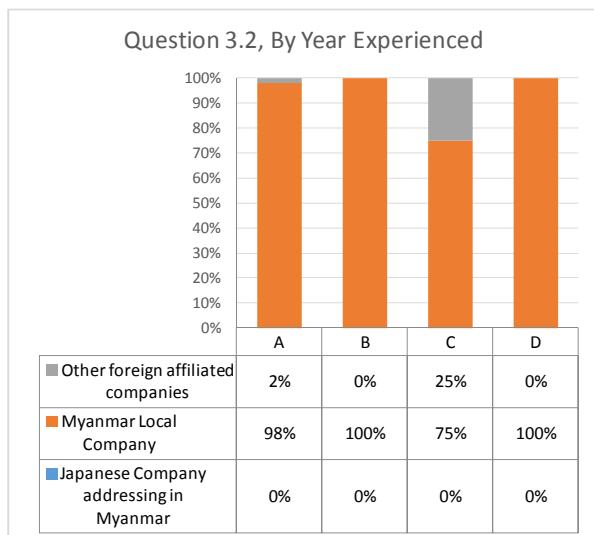
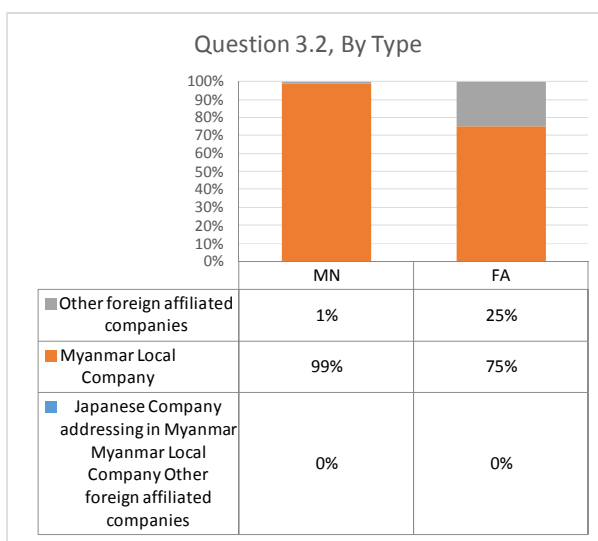
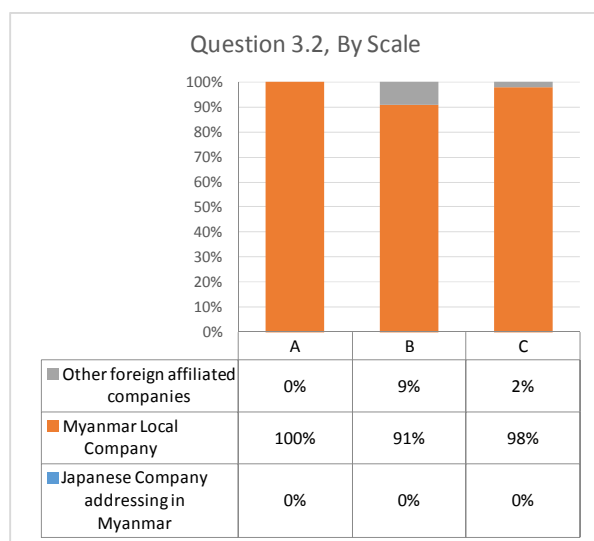
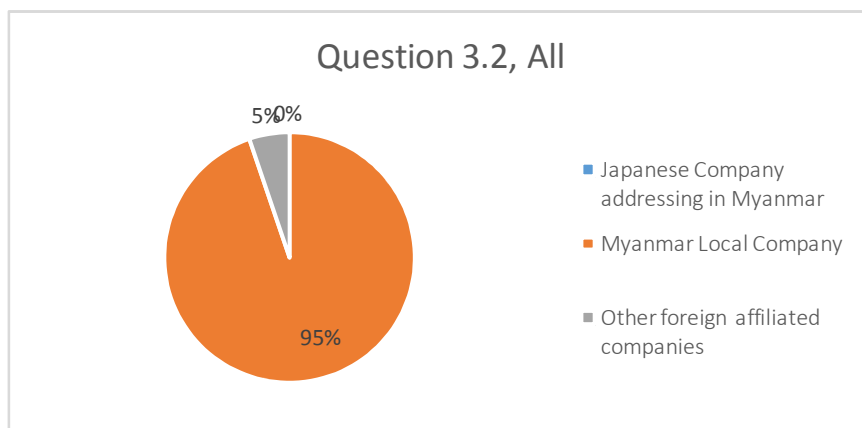
Q 2.18 What are your issues in Production?



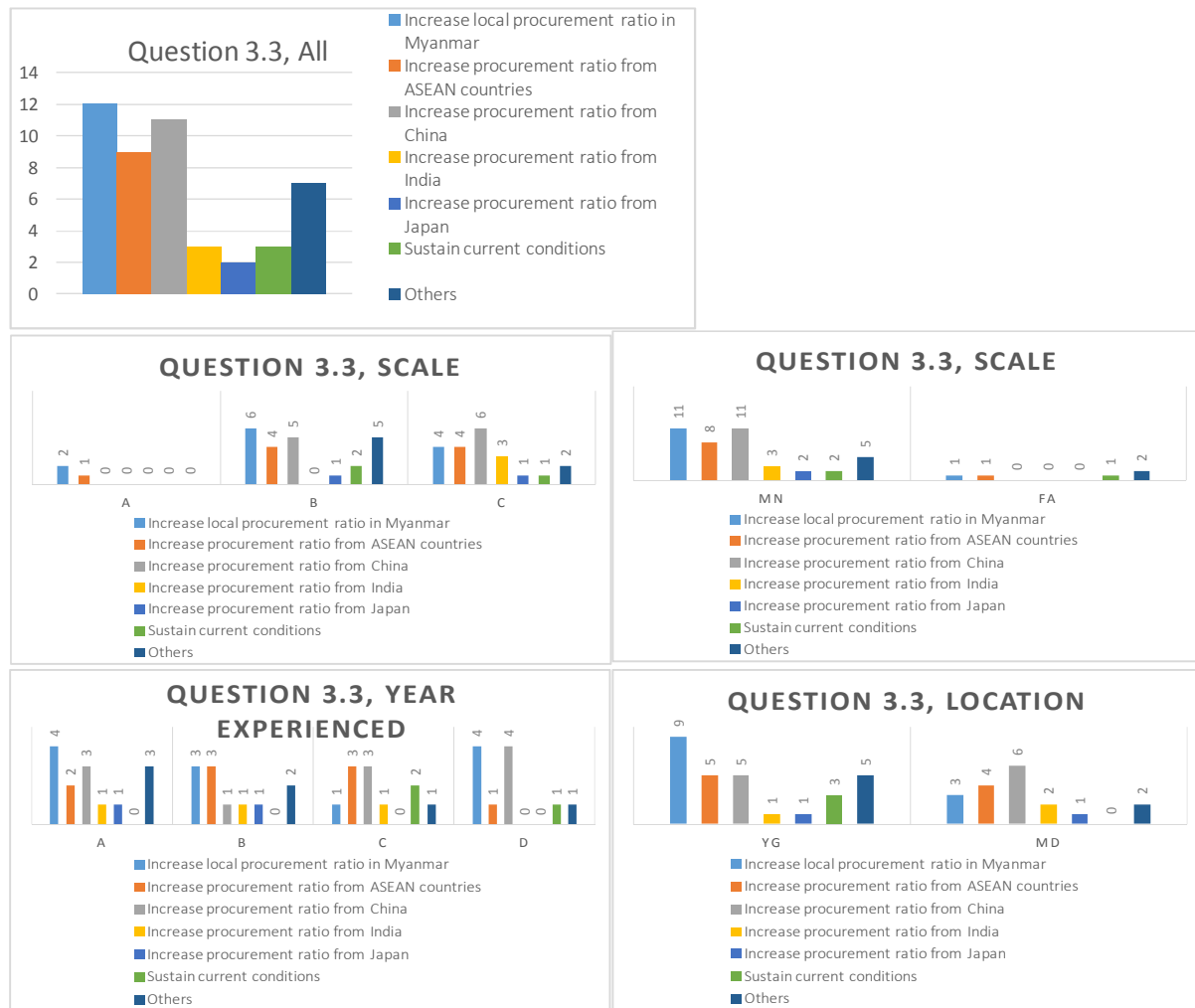
Q 3.1 Please describe the breakdown by procuring countries of materials / inputs.



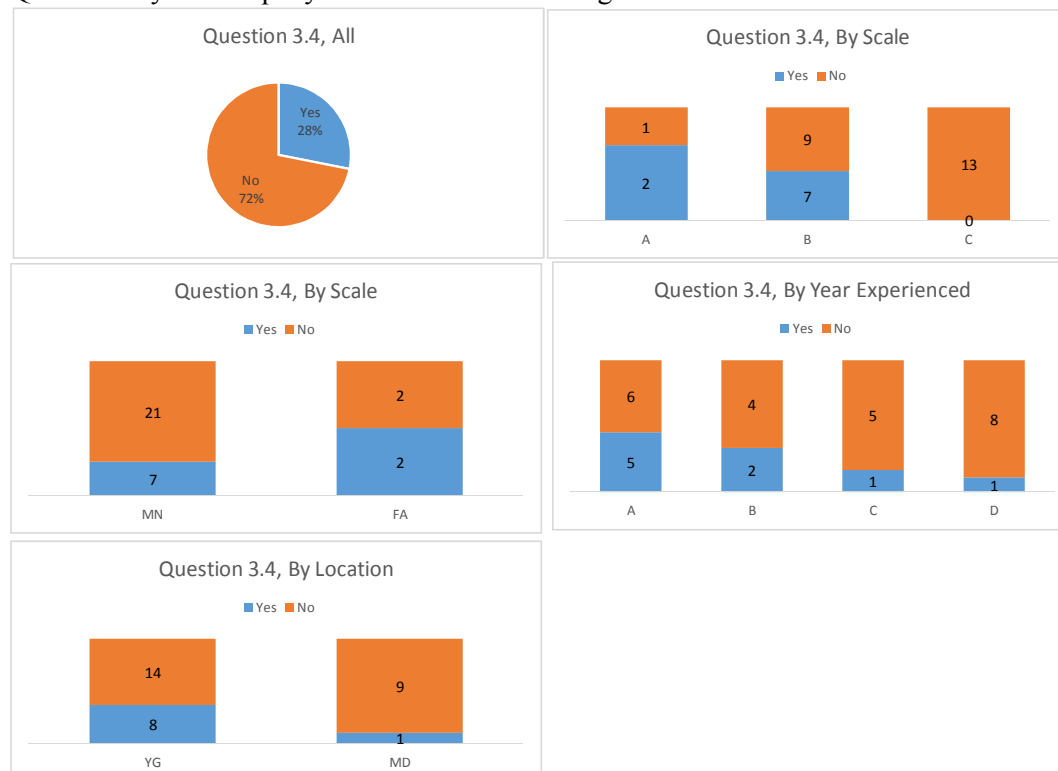
Q 3.2 Out of local (in Myanmar) procurement, please describe the breakdown by type of company.



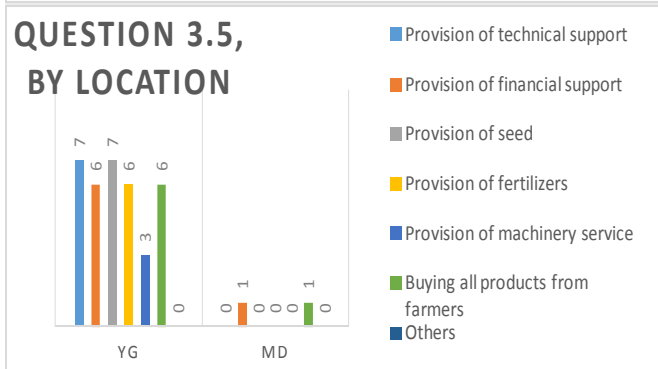
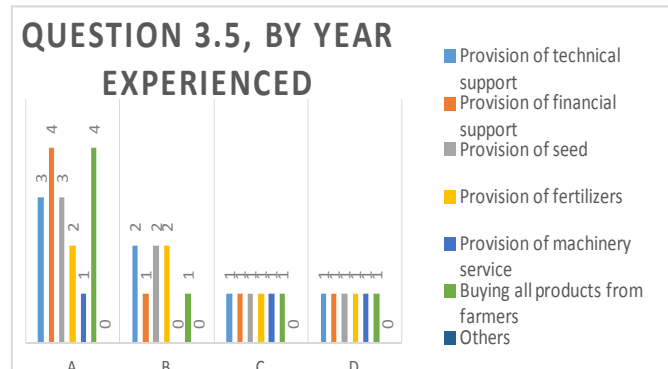
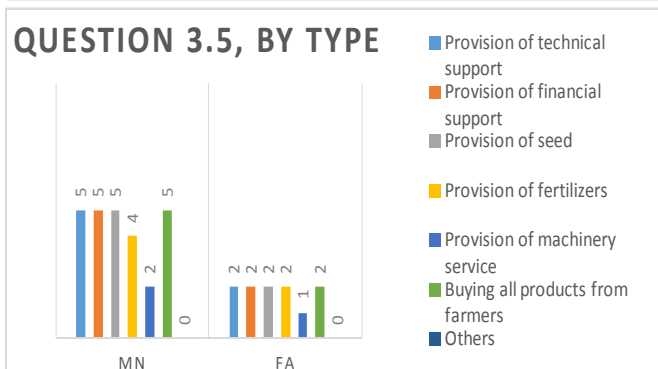
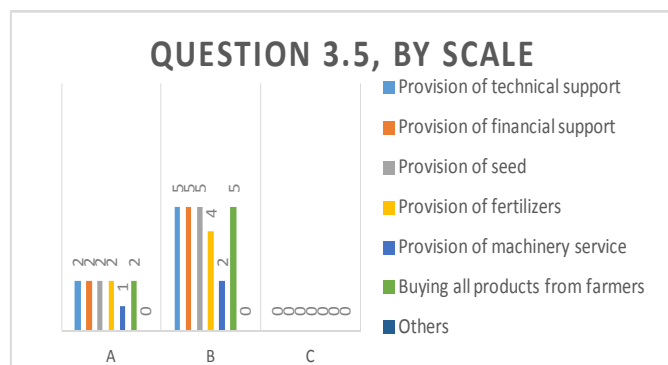
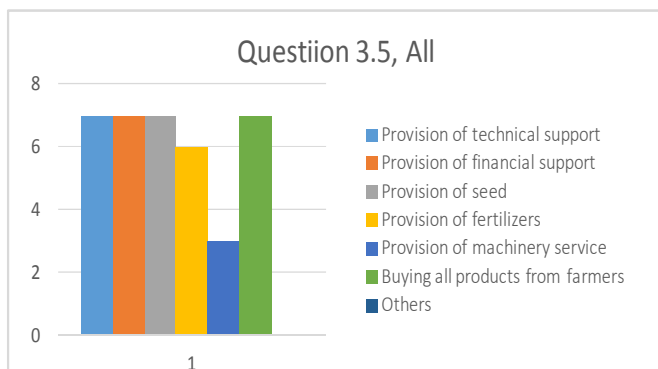
Q 3.3 Please select applicable answers to describe your companies' future procurement policy.



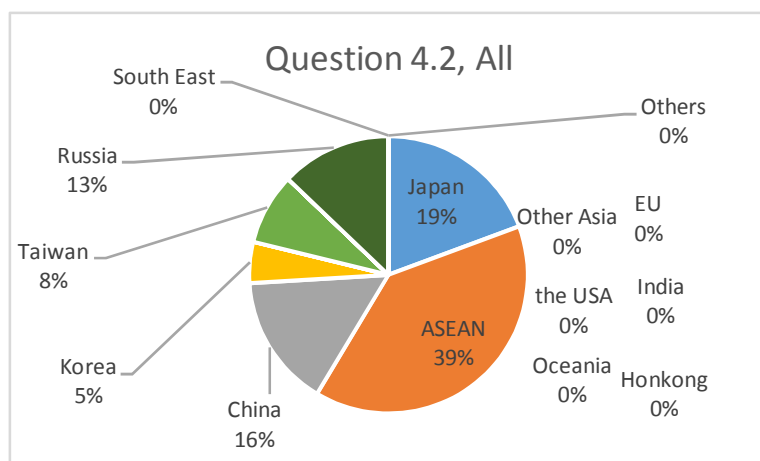
Q 3.4 Does your company make a contract farming with farmer?

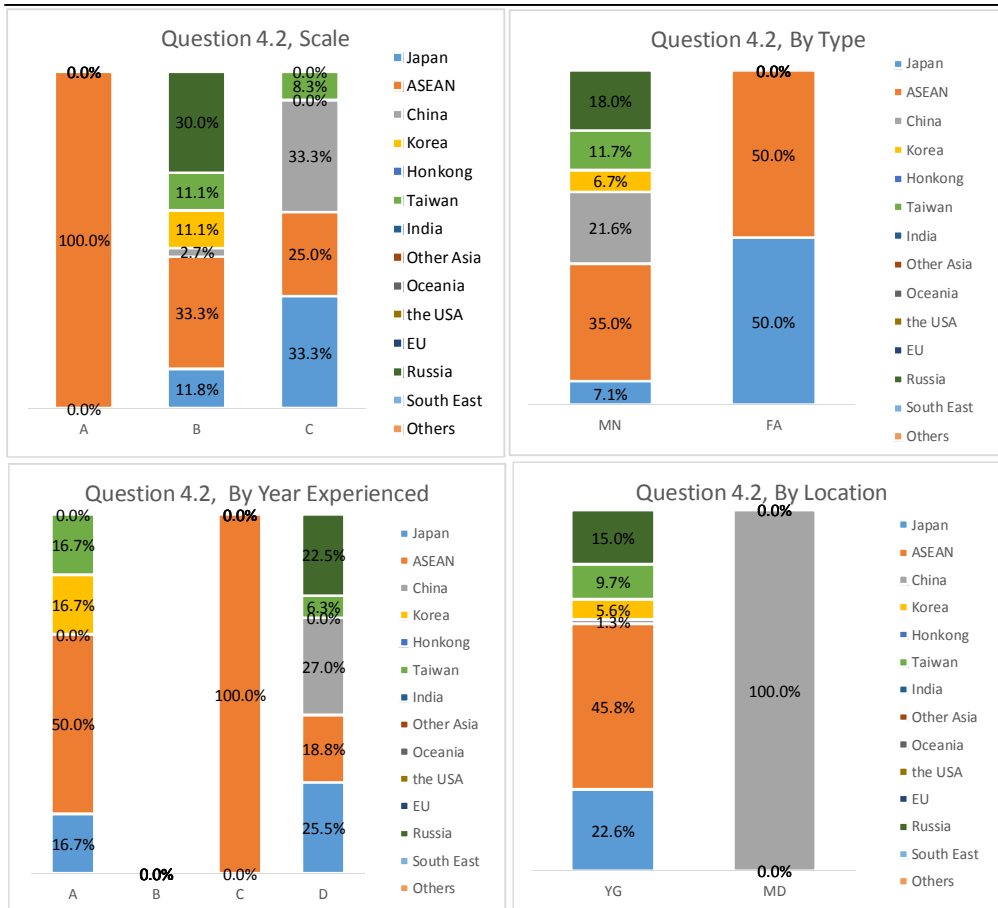


Q 3.5 If the answer 3.4 was "Yes", please select applicable answers to describe your companies' support to farmers.

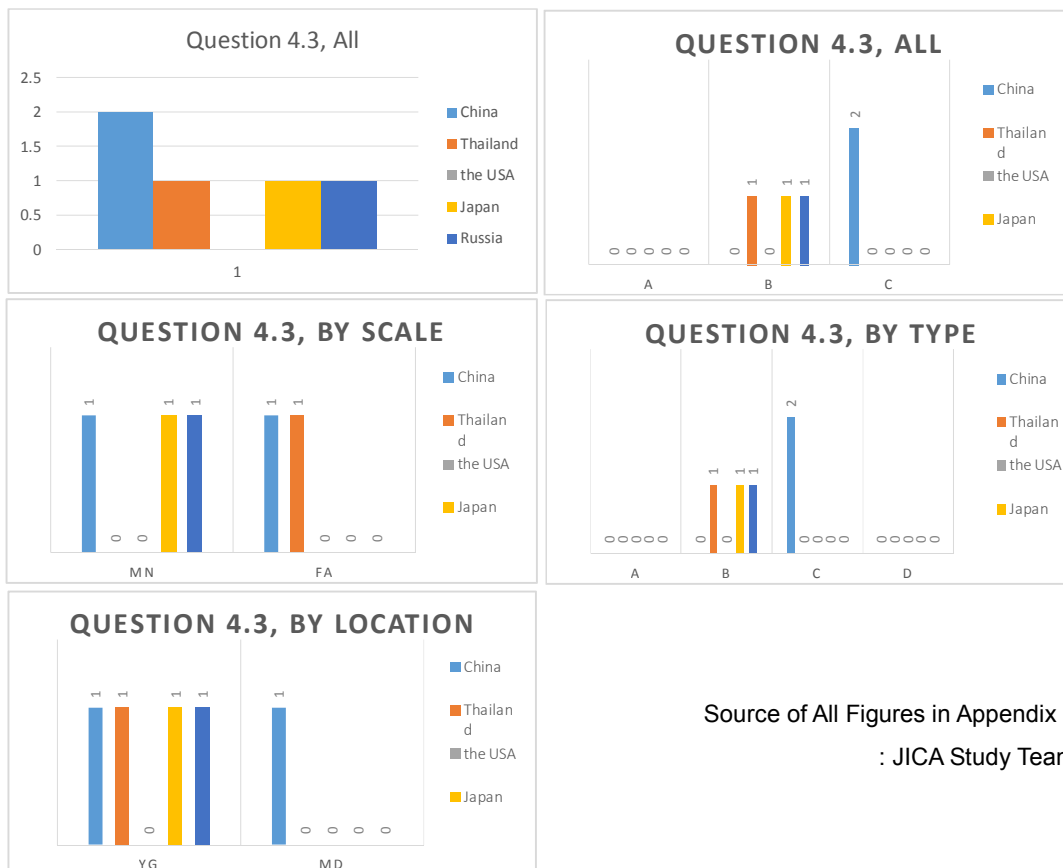


Q 4.1 Please describe the breakdown by exporting countries (cash basis; the total should equal to 100%).





Q 4.2 As an exporting market for your business / products for a short periods (1~3 years), which country / region you assess as a most potential market. Please select only one market from below.



Source of All Figures in Appendix 3 : JICA Study Team

Appendix 4
Value Chain (VC)
Workshops

APPENDIX 4 VALUE CHAIN (VC) WORKSHOPS

4.1 VC Maps of Agriculture Products

The Team conducted FVC analysis workshops in May 2018. The Team invited participants from several key organizations or groups of the FVC such as input suppliers, producers (farmers), processors, wholesalers, market retailers, exporters, and government agencies¹. The Team asked the chambers of commerce, the MOALI, and the Myanmar Livestock Federation (MLF) to introduce these key organizations or groups for involving various important actors to this Survey.

The covered products are; mango, carrot, tomato, cabbage, potato, beef, milk, dairy production (yogurt), pork, egg, chicken and maize for feeding livestock. Through the VC Workshops, “Value Chain Maps (refer to as VC maps)” were created as a tool for collecting information efficiently in a limited period. This FVC map positions the production sitd at the left end of the horizontal axis, and consumption sitd at the right end for analyzing the distribution way and relationships between production and consumption.

Also, the vertical axis shows i) places of stakeholders (Who, Where), ii) shape of products (What), iii) value in Kyat, iv) source of value (potential ways to increase the value), v) price maker, and vi) issues. Former three items are for observing the current basic situation, and the latter three items should be effective information for analyzing the issues which people are currently facing. The FVC maps are expected to be useful materials to discuss and consider the possible solution to implement higher value-added products at the target area. The results are shown in the following tables.

4.1.1. FVC Analysis in the Horticulture Sector

(1) VC Map of Mango

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Who & Where | Fertilizer- Private company (MDY) Pesticides - Private company (MDY) Labor (MDY) | Mango Farmer (MDY) | Collectors (MDL, Muse, YGN) | Yangon - Wholesale Market Companies Mandalay - crop stock Muse - 105 Miles Trade zone | Small Scale Retailer (MDL) Export - 105 Miles Muse Trade Zone Wholesale market (YGN) |
| What? (form of Product) | Fertilizer, Pesticides, Sprayer, Pump, Harrower, Nursery | Fresh Mangoes (Sein Ta Lone, Shwe Hinn Tar, Yin Gwel, Padamyar Nga Mauk) | Sizing, Choosing whether bad product or not | Fresh Mangoes, Pickles, Leather, Fermented Mango, Mango Pure, Dried Mango (Yangon and Mandalay) | Fresh Mangoes, Pickles, Leather, Fermented Mango, Mango Pure, Dried Mango (Yangon and Mandalay) |
| Value in Kyat | Nursery - 200,000/acre Fertilizer - 120,000/acre Pesticides - 100,000/acre | 300 Kyats/packs (Fresh Mango) Plant life - (10yrs-20yrs) Yield Per Plant - (2 ton- 4 ton) 3,000 packs = 1 ton | 500 Kyats/packs (Fresh Mango) | 700 - 800 Kyats per packs (Fresh mango) | 1,000 Kyats per packs (Fresh Mango) |

¹ Although the consumers did not join in the workshop, relevant information such as sale prices were obtained from the retailers.

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-----------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source of Value | Weather protection | Protection from damage, Storage, Sizing, Hot water treatment, Packaging with box, Packaging with basket | Size Sorting Choosing whether packaging or not | Size sorting and weighting each fruit (270-350 gram) | Size sorting and weighting of each fruit (350-400gram) |
| Price Maker | Nursery - Farmer Fertilizer - Fertilizer shop Pesticides - Pesticides shop | Collector/ Buyer | Collector (owning small warehouse) | Collector (owning small warehouse) | Exporter |
| Issue | Weather Lack of Quality Inputs High Price of Farm Machinery | Technology, Issuance of Certificate, Input, Skillful Labors, Loan, Farming Machinery (Pump, Harvester, Hand tractor, Sprayer) | Investment (Capital), Skillful Labors, Stable Market/Price, Broker Fee - 10% | Processing(chemologics), Marketing, Establishment of Wholesale Market (MDL) | Lack of Packing House, Cold storage, Lack of Postharvest Technologies Agreement of government to international marketing, exporting packaging fruit and vegetable. |

(2) VC Map of Carrot

| | Input | Production | Collector | Processor | Wholesaler / Exporter | Retailer |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------|-----------------------------------------------------|
| Who & Where | Seed - Farmer (local variety) Fertilizer - Private (Yangon, Mandalay) Pesticide - Private (Yangon) Labor - Local farmer | Farmer in Nan Hom village, Myin Ma Htek Village Tract, South Shan State | Collectors at Aungban | Aye Akery Wholesaler (Aungban) | Myanmar Bell Co.,LTD | Wholesaler at Aungban Yangon, Mandalay and Taunggyi |
| What? (form of Product) | Land Preparation (Seed, Fertilizer, Pesticide, Farm machinery) | Good quality carrot seed (local) | Cleaned and size sorted carrot | Red color Local variety China variety | Air drying (ad) Carrot | Red color Local variety China variety |
| Value in Kyat | 1 Pyi (2 kg) - 2,500 Kyats Urea -25,000Kyats Ploughing by machine - 60,000 Kyats Plot Making - 25,000Kyats Sowing - 50,000Kyats Fertilizer application - 20,000Kyats Harvesting - 100,000Kyats | 1 viss - 300 - 500 Kyats (Min) 1 viss - 1,800 Kyats (Max) | 1viss - 500 Kyats (min) 1biss - 1,800 Kyats (max) Connection between farmer and buyer. Negotiations Buyer get profit as percent (%) | 550 Kyats/viss | Testing period | 800 Kyats/viss Retail Price |
| Source of Value | Seed - for production Fertilizer- for production | Carrot (Depend on yield rate) | Cleaned and size sorted carrot Size - 3 types | Transportati on cost of car and train (Yangon, Mandalay) | Seedling date PHI Date Foliar spraying | Bag Packing by baskets |

| | Input | Production | Collector | Processor | Wholesaler / Exporter | Retailer |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| | | | | | Date Plant life on harvesting time | |
| Price Maker | Seed - Farmer Fertilizer - Company | Wholesaler | Wholesaler; buying and selling within one day | Local consumers Shopping centers | International Company's marketing Department (Buyers) | Local consumer |
| Issue | Shortage of seed from other country at sowing time. Local varieties are mixing with different variety (bad quality) Pesticide - high price Fertilizer - high price | Sowing and Harvesting Technologies Difficulty in Irrigation (lack of water pump). Bad weather - low germination Low yield and difficulty in harvesting. Poor farm road (manual transportation) Crops are damaged due to lack of drainage channel | Because of size sorting (small, medium and big) | No different variety | Lack of quality seed Needs of certain amount of product for exporting. Lack of local variety seed Needs of local seed productions | - |

(3) VC Map of Tomato

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Who & Where | Labor - Inlay Villages | Farmer - Inlay, Naung Shwe Township | Inlay Farmer | Start from Inlay Farmer Tomato wholesaler Aung Myanmar Tomato exchange center Toe Na Yar Tomato exchange center | Yangon - Thiri Mingalar Market Mandalay Market Mong Ywa Market Small exchange center in Township. |
| What? (form of Product) | East-West Seed (Red arrow) Agricultural input shop (Pesticides) Armo + Awba Awba + Agricultural Pesticides shop Seed, Fertilizer and Pesticide | Tomato (Dark Green) | Tomato (Dark Green) | Green Tomato, Pre-ripening stage, ripening stage Good , Better, Best , Excellent | Retail (from box to small amount) |
| Value in Kyat | Seed - 240,000Kyats/Acre Fertilizer - 480000Kyats/Acre Labor - 1,500,000Kyats/Acre Organic Fertilizer- 200,000Kyats/Acre Chemical Pesticides - 200,000Kyats /Acre Organic Pesticides - | 335 - 370 Kyats /viss 10,000 - 11,000 Kyats/basket | 11.500-12,50 0 Kyats/basket | Buying price - 10,000 - 15, 000 Kyats/30viss Selling price - 11,000 - 18,000 Kyats/20viss | 1,000-2,000 Kyats/viss (market price is quickly changing) |

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| | 250,000Kyats/Acre Bamboo for pole - 280,000Kyats/Acre Bamboo for shelf - 280,000Kyats/Acre General Cost - 800,000Kyats/Acre Total - 4,230,000/Ac | | | | |
| Source of Value | Seed - For production Fertilizer - For production Pesticides - For production | 720 Baskets / Acre 21,600 Viss /Acre | Buying, collecting and transportation | Store in Good ventilation place. Removing damage tomato. Packaging systematically to remove chemical residue. Size sorting in same size. Yield rate. Sowing with wrong seed.(different variety) Extreme weather conditions Labor cost - high | Mandalay - recycle tomato boxes Yangon - none recycle tomato boxes. |
| Price Maker | Seed - company/ shop | Broker, collector and market | Big crop exchange centers | Yangon market, Mandalay market and Mon Ywa Market, Kawthoung Market (distant transportation) Price Maker - Consumers, processors and wholesalers. | Price depend on crop exchange centers, wholesalers, retailers and consumers ,market and exporters |
| Issue | Bad seed quality Fertilizer - High price Labor storage Need research | Lack of knowledge and information. Unstable yield rate. Abnormal weather condition. None export market. None value added factory. | Do not cash down. While high yield production, wholesaler purchase with low price. | Different varieties (109,111,888,444) Lowland farm (Ye Chang) - Good quality Up Land farm (Khone Chang) - Low quality Problem - Mixing Low and up farm make low quality. Need technologies and capitals. Land price is high. Unstable market. Unable to export. High chemical residue. | Not enough packaging tools. Comparison with foreign markets. Eg - China and Thailand. |

(4) VC Map of Cabbage

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Who & Where | Seed - (Aungban market exchange center) Fertilizer (Armo) - (Aungban) Pesticides - (Aungban) | Farmer - Myin Ma Hteit Village Sown in South Shan State | Brokers in Aungban | Yangon, Mandala, Pyay, Thaton, Mawlamyaing, Japan, Korea | Yangon (Thiri Mingalar Market) Japan, Korea |
| What? (form of Product) | Aungban seed exchange center Can (2 kg of seed) - 15,000 - 18,000 plants Cabbage (588 variety) - Seed (Taraphu) Labor for transplanting. Armo - 16:16:16: (N,P,K) Pesticides Active Ingredients - Cyper, Acephats, Imida, Tractor | Cabbage Variety name - 558, Taraphu | Cabbage (558) Contract Farming (processors) | Selling unit - by weight Selling unit - by piece Air dried cabbage (AD cabbage) | Selling unit - by weight Selling unit - by pcs (1pcs,2pcs and 3pcs, etc..) Selling AD cabbage by weight (kg) |
| Value in Kyat | Seed - 55,000 Kyats/ Acre Fertilizer - 200,000 Kyats / Acre Pesticides - 200,000 Kyats/Acre Cow dung - 300,000 Kyats / Acre 558 Seed 2 kg - 55,000Kyats Taraphu 2 kg - 28,000 Kyats | 50 to 100 Kyats / piece (min) 100 to 200 Kyats / piece (max) | None ensure market 50 to 100 Kyats/ piece (min) 100 to 800 Kyats / piece (max) | 400 to 500 Kyats / piece | 500 Kyats / 0.1 viss 500 to 800 Kyats / piece |
| Source of Value | N.A | Depend on weather Depend on growing area 1,500 pcs / Acre (yield) | Coming and buying at the field Provided by trader for transportation | Clean the cabbage heads (removing the outer leave of cabbage). By using machinery Food processing 30 Tons / Month (Production rate) | Retailing Exporting |
| Price Maker | Fertilizer Shop | Collector | Collector | Wholesaler from Yangon | Retailer |
| Issue | Lack of fertilizer/pesticide at application time. | High Labor cost (daily) | No stable market. Losses when they selling (No-profit) | No stable market. (More profit for wholesalers if the production is successful) | Lack of Cold Storage |

(5) VC Map of Potato

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Who & Where | Seed - Share between Farmer to Farmer Fertilizer - Aungban (Shops) Pesticide – Shops nearby | Farmers in Myinmahtit Village | Wholesalers, Aungban | Potato Exchange Centers Yangon, Mandalay | Retailer and family processors |
| What? (form of Product) | Seed potato (Tuber) Pesticides Fertilizers Labor Tractor for transportation | Size sorting (Small size, A, Fair, S, S2, S3) | Size sorting | Already Selected potatoes | Potato curry Fried potato |
| Value in Kyat | Investments cost- 1,200,000Kyats/ Acre | 450 Kyats/ viss Income - 1,575,000Kyats/ Acre | Cost by collector - 470 Kyats / viss Invest Cost - 450 Kyats / viss | 580 Kyats / viss Transport charge - 80 Kyats / viss Damages - 5% Income – 1,928,500 Kyats | Fried potato 7,500 Kyats / viss |
| Source of Value | Prices of seed, fertilizers, Pesticides, Labor charges, Transport Charges | Size sorting | Increase price due to damages Weight losses Some Potatoes are mixed with good ones. Potato collectors have to remove damaged potatoes by using labors. So, collectors get decrease amount and extra labor cost. That is why collectors increase selling price. | High price due to transportation charges. | Fried potato |
| Price Maker | Price marking by input wholesalers | Price makers- Brokers | Depend on Yangon wholesale price | According to demand and supply | Family fried potato processors |
| Issue | Seed quality Increase input price None ensure market | Low yield No opportunity to choice market Wrong harvesting techniques | Unstable market | -Difficult controlling market price and potato amounts. -Time and places of potato production are different so the amount of potatoes fluctuate in wholesale places. So selling price also fluctuate. | Mixed varieties Price of raw materials Price of competitor |

4.1.2. FVC Analysis in the Livestock Sector

(1) VC Map of Beef

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Who & Where | Little Cow - Farmer Semen Straw – LBVD | Farmer in Mandalay Region | Collector who owned Slaughter license | Collector who owned slaughter license (MCDC) Exporter | Exporter (to China) Retailer (MCDC Market) |
| What? (form of Product) | Feeds Vaccine (protection, cure) Myo Chaung | Cow (Live animal) Beef (Frozen or Fresh) Dried Beef | Cow (Live animal) Beef (Freeze or Fresh) Dried Beef | Beef (Freeze or Fresh) Dried Beef | Fresh Beef Retailer in MCDC Market Frozen beef to China |
| Value in Kyat | Little cow (>1year old) - 30,000Kyats Food - Pasturing Labor -120,000Kyats Vaccine - 20,000Kyats | 1 cow - 500,000Kyats/100Vi ss Cow Farm Family Labor 1Kg = 3125 Kyats + Licensing Cost | - | 800,000Kyats/cow 9,000 Kyats/viss 5,600 Kyats/kg | 1,2000Kyats/viss 7,500Kytas/kg, |
| Source of Value | Little Cow, Feed, Vaccine, Myo Chaung | Pasturing (Natural Grain) Labor AI of animal Healthcare Service | - | Animal movement Important commodity act Licensing system (MCDC) | Animal movement Important commodity act Licensing system Cold chain |
| Price Maker | Farmers | Brokers | The person who owned Slaughter Licensing | The person who owned Slaughter Licensing | Exporter The person who owned slaughter license |
| Issue | Difficulty in getting good varieties. Labor shortage. Scarcity of pasture land Processing Plants or Factories should be privatized | Feed Conversion Rate FCR is high Time consuming. (Investment period is long) Important Commodity Act Animal Movement (Difficult) | Not permitting the slaughter house business | Slaughterhouse should be privatized. High licensing | Slaughterhouse should privatize. High licensing |

(2) VC Map of Milk

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------|
| Who & Where | LBVD Regional office Feed - Mandalay Vaccine - LBVD Labor – Mandalay | Companies (Happy Farm, Shwe Oh, December Farm) and (20 - 200) small scale farmers | Milk Merchant - Tadaoo Township (MDL) | December Farm - Pyin Oo Lwin Shwe Oh and Happy - Mandalay | Store, Retail Shop No export yet |
| What? (form of Product) | Cattle, Feed, Stalk, Grass and Supplement (ground nut cake and sesame cake) | Raw Milk - Small scale farmers Small cattle farm - raw milk Sterilized Milk | Raw Milk | Purified/ Sterilized milk | - |
| Value in Kyat | Cattle - 1,500,000 Kyats / cattle Feeds - 5,000 Kyats /cattle Labor - 10 Cattles need 1 labor, 200,000 Kyats/month/labor Cow healthcare - 2,000mmk/6month/cow | Raw Milk - 8,000 Kyats/10viss | Raw Milk - 10,000Kytas/10viss | Raw Milk - 10,000Kytas / viss | Retail price of raw milk - 900 Kyats/viss |

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-----------------|---------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------|
| Source of Value | Cattle, Feed, Vaccine, Production | Milk Production - feeding, vaccine injection, milking | Transportation / Collection | Packaging | - |
| Price Maker | Cattle Owner(Cattle price only) | Milk Merchants/Owner | Milk Merchants/Owner | Local buyer | - |
| Issue | Feed price tends to increase but milk price is stable. Land problem | Mastitis Installing milking machine is expensive | Unstable milking Collection price is expensive- 600/viss | Factory operation quality is low. need to help | Insufficient storage facilities. Irregular electricity supply. |

(3) VC Map of Dairy Products

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Who & Where | Cow - farmers (MDL) Feed - private company (MDL) Culture - private company (Italy) | Companies at MDL (Shwe Oh, Aye Aye, Happy Sunday, Mother, Happy Farm) | Brokers (MDY) | Processor, Owner, Ocean Super Market, Mini market | Tea and coffee Shop, Restaurant, Hotel, and Bakery (All are for local consumption) |
| What? (form of Product) | Dairy cow Stalk feed culture | Cow milk | Cow milk | Raw milk, boiled milk, cold milk, ice-cream and yogurt etc., | Boiled milk, coffee, tea, yogurt, cold milk and ice-cream |
| Value in Kyat | Raw milk - 1,000-1,100kyats/viss Culture - 20,000 kyats/pack Sugar-1,200/viss Container-160 kyats/litter, 52 kyats/350ml, 50 kyats/280ml, 50 kyats/200ml Milk - 750 kyats/viss, 260 kyats/viss, 210 kyats/viss, 150 kyats/viss Culture - 100 kyats/viss | Raw and boiled milk - 200-300 kyats/viss | Raw and boiled milk - 850 kyats/viss | Yogurt-1,600 kyats/Litter, 4,400 kyats/viss Milk - 1,200 kyats/litter, 1,800/viss Hot milk – 2000 kyats/viss | Yogurt - 1,900 kyats/Litter, 4,800 kyats/viss Milk - 1,500 kyats/Litter, 2,000 kyats/viss Hot milk - 2,200 kyats/viss |
| Source of Value | Labor | Container Bottle Price | - | - | Transportation Production knowledge |
| Price Maker | Raw milk - Producer Culture - Company Sugar – Company | Owner | Owner/Producer | Owner/Producer | Retailer / Shop Owner |
| Issue | Labor Shortage Difficult to get good quality varieties Low quality of feeds for local cow. Lack of funds for buying container. Lack of funds for buying different size of containers. Needs of purified water sources. | Low Yield Milk Lack of quality raw milk Lack of funds to buy machinery (e.g. Cooling machinery, Homogenizer and techniques for processing milk, Pasture) Need electricity | Difficulty in getting good quality milk. Lack of cooling tank at milk production areas. Lack of cooling tank car for transportation. | Difficulty in standard quality control Difficulty in controlling shelf-life. Difficulty in getting high quality raw milk. FDA permission | Competition with products from other countries. |

(4) VC Map of Pork

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Who & Where | Breeders - Thailand and Local (Yangon, Mandalay, Ayawaddy, and Mon state and Bago) | Nyaung Nat Pin Farm (Company) Hlaing Thar Yar Farm Zone (Individual Farms) Shwe Pyi Thar Farm Zone (Individual Farms) Township Farms | Township brokers (Magway, Mawlamyaing, Ayeyarwaddy, Bago) | Processors and Wholesalers at Meat Exchange Center, Yangon (Slaughterhouses) | Retailers / Exporters at YCDC Markets |
| What? (form of Product) | Piglets - Breeding in own farm Feed - broken rice and corn Farm Labor Vaccine | Pigs | Pigs | Slaughtered and cleaned pork (whole body or half body) | Chopped pork meat |
| Value in Kyat | Local (45-day piglet) - 60,000 kyats/head CP Breed - 100,000 kyats/head Cost for farm construction (15' x 15') - 1,000,000 kyats (in feet) (20' x 20') - 3,000,000 kyats (in feet) Feed cost for small farm (15'x15') - 10,000 kyats /month Feed cost for small farm (20'x20') - 25,000 kyats /month | Local pig - 150,000 kyats / pig Breeder pig - 200,000 kyats / pig | Local pig - 160,000 kyats / pig Breeder pig - 220,000 kyats / pig | Local pig - 220,000 kyats / pig Breeder pig - 280,000 kyats / pig | Pork (fat + Meat) - 8,000 kyats/viss Fat - 700 kyats /viss Meat - 10,000 kyats / viss |
| Source of Value | For buying breed (piglets) for food | Labor cost Farm management cost Feed cost Vaccination cost | Labor cost Feed cost Low transportation cost | Labor cost Feed cost High transportation cost | Labor cost Low transportation cost |
| Price Maker | Breeders | Negotiation between farmer and collector | Negotiation between collector and processors | Processor/ Wholesaler | Retailers |
| Issue | No big problems | High cost of feed and vaccine | High labor cost High transportation cost | High labor cost High transportation cost Negotiations relative departments on the way of transportation | Nothing Special |

(5) VC Map of Egg

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------------------------|
| Who & Where | CP Company ULB Company | Farmers Hlagu Township | Collecting by CP company 50 % Yangon Market share in Yangon | Bakery Collector (CP) | Retail to Market No export |
| What? (form of Product) | CP & ULB - DOC Farm (DOC = Day-old Chick) , Feed, Vaccine, Labor, Electricity | Egg | Egg after size sorting | Sized Egg Bakery | Retail to Market No export |
| Value in Kyat | 500- 1,100 kyats / DOC layer 80,000,000 kyats / Farm / 10,000 DOC Raising 16 weeks - 5,800 Kyats/DOC | 1,000 - 2,800 kyats/viss 28 - 32 egg/viss | 110 kyats/egg (According to size) | Egg- 110 kyats/egg Bread | 140 kyats/egg |
| Source of Value | Feed DOC Fuel Charges To protect diseases | Average- 7,000 egg/day /Farm | Collecting egg Size sorting Selling as retail | Egg Bread processing | Retailing |
| Price Maker | Companies (feed & egg) | Collector but depend on demand-sup ply balance and disease infection | Market Condition Collector | Processor/Wholesaler | Collectors |
| Issue | Farm Land Transportation Electricity Loan from Government or Bank | Unstable feed price Unstable DOC price | Decreasing Market price suddenly (disease infections) | — | Decreasing Market price suddenly (disease infections) |

(6) VC Map of Chicken

| | Input | Production | Collector | Processor/ Wholesaler | Retailer/ Exporter |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Who & Where | DOC - FDI Company Boiler Chicken DOC – Myanmar National Company, Yangon, Mandalay and Taunggyi | FDI company Myanmar National Company Farmers (Large, Medium and small scale) | Buyer, Company and Processor (Yangon - Mandalay, 3 Markets, Wet market) | YCDC Market, Township Market, Processing Plant or factory (small) (4 factories - (1,000 – 2,500 per day) A slaughter house - Group of farmers raise fund and established. (64 Farmers) | Retailers at Market (10 - 50 bird / shop) |
| What? (form of Product) | DOC Feed Medicine | DOC Starter feed, Grower Feed and Finisher Feed (All product are produced by FDI / National Company) -Live Bird | Live birds - 90 % Fresh Meat - 10 % | Fresh Meat Farm | Fresh meat, Value added |
| Value in Kyat | DOC - 400 - 700 Kyats Feed - 1250 - 1100 Kyats/viss Medicine - Less 150 Kyats/ birds labor - Less 200 Kyats / birds | Production Cost - less 2,800 – 3,000 Kyats/viss | Less 2,800 – 3,300 Kyats / viss (at wet market) | Less – 3,100 – 3,600 Kyat / viss (with feather) Less – 3,800 – 4,300 Kyats / viss (without feather) | -6,000 – 8,000 Kyats / viss (10 - 50 birds / shop |
| Source of Value | Feed & Breed to food | Live birds Processing Chicken (Meats, Sausage, Fried chicken) | – | - Fresh meat & Value added | – |
| Price Maker | Company (Doc Out) | Live Birds Markets Producer (Chicken Buyer) | Chicken - Buyer (Wholesaler) | - Wholesaler (fresh meat - buyer) | -Retail sector - Product buyer (KFC, Lottelia ,Mary Brown) |
| Issue | DOC Storage (sometime Breeder Farm problem and hatchary problem) (All that are loss) Import from foreign country.- Landuse policy for livestock (Because our country no land for livestock) - Raw feed material price are higher than that of other country. Not efficient (eg. company need good quality) -Disease Outbreak (A.I) Government should be changing Vaccine Policy | -Chicken sell to live bird market % (90 %) - Value added product (10%) -Price fluctuation is high | -Sometime loss (because of current selling price - reduce 200 - 300 Kyats) - Farm location so far. -Road Condition (Bad in rain season) - No cool storage room. -They cannot keep this product | -No cool storage room - They cannot keep (only small amount) so price is higher. They need to sell safely foods. | -Supply chain is too long -Have to be short market supply chain |

(7) VC Map of Maize for feed

| | Input | Production | Collector | Processor | Breeder |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Who & Where | Awba (Yangon headoffice) CP (Shwe Pyi Tar TS) Diamond Star (Shwe Pyi Tar TS) | Sim Min Company (Taik Kyi TS) Farmers around Taik Kyi Township | Kyaw Kyaw Sim Min Company Shwe Tha Zin Company | CP (Htant Kyount TS) Japfa (Hmawbi TS) Dehus (Hmawbi TS) | Chicken Breeders at Taik Kyi TS |
| What? (form of Product) | Seed (Varieties names are 621, 808, 301, 722, 222) Fertilizer (compound), P2O5, Urea, Labor | Maize (for feed) | Maize (for feed) | Crushing and rotabating for animal feed Packaging | Chicken |
| Value in Kyat | P2O5: 37,000 Kyats/50kg Urea 24,000 Kyats/50kg Labor 4,000 - 5,000 Kyats/day Seed (621) - 31,000 Kyats/1.5kg Seed (808) - 28,000 Kyats/1.5kg | 350 Kyats/kg | 400 Kyats/kg | 37,000 Kyats/50kg for DOC 32,800 - 35,500 Kyats/50kg for Chicken 26,200 Kyats/50kg for layer | 1) Egg - 90 ~ 120 Kyats/egg 2) CP Chicken Meat - 6,000 ~ 8,000 Kyats/viss 3) Myanmar Chicken Meat - 10,000 ~ 12,000 Kyats/viss |
| Source of Value | Capital gain from currency exchange Trading across border | Drying after harvesting Threshing and drying again to be 15% of moisture contents | Collecting from 100-120 farmers Transporting | Crushing Rotabating Packaging Transporting | Breeding Producing egg/meat |
| Price Maker | Input Company | Collectors with referencing of offered price from processor companies | Processor | Processor | Processor |
| Issue | 1) Selling product as loan to farmers but sometime farmer can't return loan because of low productivity 2) Low quality of agricultural inputs 3) Price fluctuates frequently (especially for imported products from Thailand) | 1) 120 lifetime variety takes too much time and unable to cultivate two times in a year 2) Need Technical Assistance for farmers start growing maize 3) Source of fund to investment (even JICA has been providing agricultural loan but interest rate is very high and can't effort to return when productivity is very low. 4) Lack of stable prices | Price fluctuation Difficulty in moisture control | N/A | Feeding costs are increasing year by year and other inputs as well. Production cost is high. |

4.2 Participants' Lists of VC Workshops

4.2.1 Participants List of VC Workshop in Mandalay

Date - 04.05.2018

Time: 13:00 - 17:00 pm

| No. | Name | Position | Organization |
|-----|-------------------------------------------|-------------------|---------------------------------------------------------|
| 1 | Mr. Win Kyi (Owner Name - Mr. San Hla) | Manager | December Dairy Farm |
| 2 | Ms. Aye Aye Mon | Deputy Supervisor | Department of Agriculture |
| 3 | Mr. Htun Chun | - | Myanmar Food & Vegetable Processor (Mango - Ctustor) |
| 4 | Mr. Kyaw Tint | - | Myanmar Food & Vegetable Processor (Mango - Ctustor) |
| 5 | Dr. Kyaw Htin | Chairman | Myanmar Livestock Federation |
| 6 | Mr Khin Maung Soe | - | Aye Aye Chang |
| 7 | Mr. Yan Kwel Kwel | Owner | Happy Dairy Farm |
| 8 | Mr. Kay Zin Win | Owner | Shwe Oh Dairy |
| 9 | Mr. Kyaw Soe Lin | Owner | Shwe Oh Dairy |
| 10 | Mr. Tun Shwe | Manager | Sunday Dairy Farm |
| 11 | Mr. Htet Nawin | Owner | Sunday Dairy Farm |
| 12 | Mr. Zaw Zaw Htet | Owner | Cattle Farm (Beef) |
| 13 | Ms. Chan Mya Nyein | Secretary | Mandalay (Myanmar Food & Vegetable Processor) |
| 14 | Mr. Kyaw Soe Naing | Owner | Kaung Thant (Mango Farm) |
| 15 | Mr. Kyaw Naun Tun | Owner | Mm Mya thant Co.ltd |
| 16 | Ms. Thida Myat | Owner | Mm Mya thant Co.ltd |
| 17 | Dr. Khin Mar Lay | Deputy Director | Ministry of Agriculture, Livestock and Irrigation |
| 18 | Mr. Ya Pyae | - | Cattle Dairy Farm |
| 19 | Mr. Khin Maung Thein | - | Cattle Dairy Farm |
| 20 | Dr. Aye Kyi | District Office | LBVD, Mandalay |
| 21 | Mr. Tin Win | Owner | Shwe Oh Dairy (Yoghurt) |
| 22 | Ms. Khin Nyein Nyein | JICA Assistant | JICA Myanmar Office |
| 23 | Mr. Myo Win | Owner | Mango Farm |
| 24 | Mr. Kyaw Kyaw Htun | Owner | Mother Milk |

Source: JICA Study Team

4.2.2 Participants List of VC Workshop in Southern Shan (Aungban)

Date - 15.05. 2018

Time: 13:00 - 17:00 pm

| No. | Name | Position | Name of Organization |
|-----|----------------------|--------------------------------|--------------------------------------|
| 1 | Mr. Annt Kyaw Oo | Deputy Staff Officer | DOA (Nyaung Shwe Township) |
| 2 | Ms. War War Khaing | Assistant Staff Officer | DOA (Nyaung Shwe Township) |
| 3 | Mr. Nyunt Win | - | Zayet Gyi Village, Inle |
| 4 | Mr. Aung Ngwe | - | Kay Lar Village, Inl |
| 5 | Mr. Myo Myint | - | Ngar Phaye Chaung Village, Inle |
| 6 | Ms. Poe Thandar Lin | Assistant Staff Officer | DOA (Kalaw Township) |
| 7 | Mr. Thet Htoo Aung | Deputy Assistant Staff Officer | DOA (Kalaw Township) |
| 8 | Mr. Sein Htun | - | Myin Ma Htee Village, Kalaw Township |
| 9 | Mr. Tun Tin | - | Myin Ma Htee Village, Kalaw Township |
| 10 | Mr. Hla Paw | - | Myin Ma Htee Village, Kalaw Township |
| 11 | Mr. Aung | - | Myin Ma Htee Village, Kalaw Township |
| 12 | Dr. Sonngaef | C. E | Kalay (DSG. Arentine) |
| 13 | Mr. Htet Lwin | Owner | Shwe Pyi Soe Shop, Aungban Township |
| 14 | Mr. Than Zaw Oo | Owner | Ang Pyae Zone Shop, Aungban Township |
| 15 | Mr. Nawda Aung | G.M | MBSF |
| 16 | Ms. Tin Tin Aye | P.M | MBSF |
| 17 | Mr.Zaw Moe Lin | | Myin Ma Htee Village, Kalaw Township |
| 18 | Mr. Ye Kyaw Thu Aung | M. D | Agro Power Company |
| 19 | Mr. Kyaw Kyaw Ngwe | Owner | Agro Shop |
| 20 | Mr. Naing Hin | Owner | Agro Shop |
| 21 | Mr. Kyaw Soe Jun | Owner | Agro Shop |
| 22 | Ms. Thet Thet Mar | - | - |
| 23 | Ms. Nan Nge Bar | - | - |
| 24 | Mr. Myo Zaw Thein | Township Officer | Aung Ban Township |
| 25 | Mr. Khun Zyar Maung | Deputy Township Officer | Aung Ban Township |
| 26 | Mr. Thein Oo | - | Aung Ban Township |
| 27 | Mr. Aung Aung | M. D | Inn Shwe Pyi Company, Inle |
| 28 | Mr. Kyaw Zin Latt | - | Inn Shwe Pyi Company, Inle |
| 29 | Mr. Aung Kyaw Moe | - | Inn Shwe Pyi Company, Inle |
| 30 | Mr. Min Min Tun | - | Inn Shwe Pyi Company, Inle |
| 31 | Ms. Thandar Soe | - | Inn Shwe Pyi Company, Inle |
| 32 | Ms. Aye Myint Than | Director | Agro Power Company |

Source: JICA Study Team

4.2.3 Participants List of VC Workshop in Yangon

Date - 04. 06. 2018

Time - 11:00 - 14:30

| No. | Name | Position | Name of Organization |
|-----|-------------------------|---------------|---------------------------------------|
| 1 | U Myint Aung | Chairman | Layer Association |
| 2 | Dr. Kyaw Wynn | Vice Chairman | Poultry Association |
| 3 | U Htoo Aung | - | License - C |
| 4 | U Myint Kyu | - | License - C |
| 5 | U Tin Win | - | License - C |
| 6 | U Than Soe | - | Sim Min Company |
| 7 | Daw Hla Thein (Oak Kan) | - | Oak Kan - Pesticide, Fertilizers Shop |
| 8 | U Aung | - | Aung Animal Feed |
| 9 | U Win Oo Htun | - | Breeder |

Source: JICA Study Team

Appendix 5
Donors' Projects along
with Food Value Chain
Development

APPENDIX 5 DONORS' PROJECTS ALONG WITH FOOD VALUE CHAIN DEVELOPMENT

Some other donors' projects are demonstrated in the main report. However, other projects including Public Private Partnership (PPP) are showed in the next table. It is provided by Department of Planning (DOP), and it was created along with "Road Map" and development of the food value chain.

| Measure | Sections | Medium Term Measures | | | | Main constituent | Project description | Present condition and Future plans | Task etc | |
|----------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| | | Contents | NO. | Project ,etc | Term | | | | | |
| Measures to be taken for individual products | Rice and Pulses | The Government of Myanmar(ODA) | Development of rice & pulses varieties | 1 | DAR Breeding Program | 2016-2020 | Myanmar Government | Evaluating use efficiency using low nitrogen tolerant rice varieties. | Evaluation of low nitrogen resistant varieties out of six rice varieties were already conducted. N 15 isotope will be used for effective nitrogen fertilizer management. | Use of isotope technology for effective fertility management. |
| | | | | NEW | Project for Strengthening Rice Breeding System based on Genomic Technology and Information in Myanmar (SATREPS) | 2018-2023 | ODA-Japan | DAR with collaboration with Japanese Universities (Kyushu University and Nagoya University) to conduct research activities in order to strengthen rice breeding system and develop promising lines of rice that would be adaptable to different natural and social environment in Myanmar. | Waiting for signing a Record of Discussion (R/D). The Project is expected to initiate in June, 2018. | To get approval on the R/D from both Myanmar side and Japanese side by March, 2018. |
| | Rice | Increase crop productivity and cropping intensity in selected irrigation scheme | NEW | DoA | 2017-2022 | Japan Grant | The Project on improvement on accessibility of rice certified seed. | Record of discussion was already signed by both sides. | Empower existing rice certified seed multiplication system together with seed farmers. | |
| | | | NEW | DoA | 2015-16 to 2017-18 | Korea Grant | Capacity building for improving seed quality assurance system of rice in Myanmar. | Capacity building for seed quality testing to be able to provided good quality seed and provide seed testing facilities. | Capacity building of seed growers as well as seed technologists. | |
| | Rice, green gram, sesame | Increase crop productivity and cropping intensity in selected irrigation scheme | NEW | DoA | 2017-18 to 2020-21 | The Netherland Grant | Integrated seed sector development via Early Generation Seed-EGS promote smallholder farmers to become seed producers. | Feasibility study to use partnership modality among farmers, seed companies and upstream research activities. | Seed industry development via partnership among all stakeholders. | |
| | | | NEW | IWUMD | 2015-16 to 2021-22 | World Bank Loan | Reducing poverty and boosting shared prosperity will entail by increasing access to essential services, economic opportunity and market. Investing in people and effective institution for people. Supporting in a dynamic private sector to create jobs, crops variety development and seed multiplication. | IRRI won procurement for technical advisory. | Upgrading seeds farms and TOT training, facilitate laboratory equipments. | |
| | Rice/ Pulses/ Oil seed/ Horticultural Crops | Inclusive Economic Growth | 2 | Project for multiplication of good quality seed(Phase I & II) | 2016-2020 (2011-2017) (2017-2023) | ODA-Japan | (Phase I) Production and supply system of quality certified seed of rice is improved through capacity building of DAR and DOA staff engaged in the whole seed flow from Breeder's Seed (BS), Foundation Seed (FS), Registered Seed (RS) and Certified Seed(CS) in Yezin and 3 T/S of Ayeyarwaddy. (Phase II) To expand the CS production by applying the improved system established in Phase I in all T/S of Ayeyarwaddy and Shwebo, Sagaing Region. Collaboration with market stakeholders such as rice miller and distributors and increasing awareness of farmers and other stakeholders toward CS are also strengthened in the Project. | The Phase I project has completed in March 2017. This project contributed to purification of seed and Improvement of rice mill yield by harvesting the rice of uniform quality. Project Phase II has started since October 2017. | <ul style="list-style-type: none"> To maintain of seed production system that has been established in this project. To Trade rice of high and uniform quality at a legitimate price. Private operators to enter. Promotion activities in a wide range of project target areas. | |
| | | | NEW | Irrigated Agriculture Inclusive Development Project | 2017 - 2022 | Myanmar Government& ADB, AFD, EU | The sector project will increase agricultural value added by improving irrigation and strengthening agricultural value chains in three regions of Myanmar's central dry zone (CDZ). It will support the development of district-wide agricultural value chains and the modernization of irrigation systems in Magway district of the Magway region, shwebo district of the Sagaing region, and Meiktila and Yamethin district in the Mandalay region during a 7 year implementation period. The irrigation system rehabilitation and modernization component will cover about 20,000 hectares (ha) and benefit about 24,000 households. Parallel to the Asian Development Bank (ADB) project, cofinancing from the Agence Fran aise de D veloppement (AFD) will strengthen local, regional and national capacity for integrated water resources management (IWRM). | Procurement of consultant firm. Need assessment survey at 2018. | | |
| | Rice/ Pulses/ Oil seed | Environmentally sustainable growth | NEW | Climate Friendly Agribusiness Value Chains Sector Project | Jan 2018 to Dec 2023 | Myanmar Government& ADB, FAO, UNOPs | The project will enhance rural household incomes and agricultural competitiveness by (i) providing improved critical production and post-harvest infrastructure, (ii) reducing energy costs by promoting bio-energy use and sustainable biomass management, and (iii) offering targeted agribusiness support services for selected value chains. | Still at design phase. | Preparation phase. | |
| | | | NEW | Project for multiplication of good quality seed | 2016-2022 | ADSP- World Bank | To investigate the adaptable and marketable varieties. To enhance the gap practice and seed multiplication in target area. To improve the cropping intensity. | Monsoon Rice (55) acre in 2017 has successfully complete to distribute the neighboring farmers by free of charge. Winter season chickpea(35)acre, blackgram(2.5)acre at present situation.Pre-monsoon summer rice(15)acre/Pre-monsoon sesame(10) acre / Pre-monsoon Geen Gram (5) acre have been planned to multiply and distribute with free of charge by DOA planning and arrangements. | To distribute good quality seed. Certified seed | |
| Rice | Farming System | NEW | Farming Systems for Sustainability Myanmar | 2017-2020 | Myanmar Government& Netherlands (WU& R) | DOA collaboration with Netherlands. (Wageningen University & Research) testing and developing in pertinent knowledge and technology for development of sustainable farming systems, with participation of all actors as basis for future further dissemination and implementation, and with a keen eye for facilitating and supporting agro-industry to support and develop new approaches and technology fitting to the challenge. | Stakeholders are aware of potential jeopardizes of current trends in farming (fact based assessments) and practices and increasingly willing to act on it. Stakeholders share vision on desired systems (region specific) and farm technology. The farming community is informed on key issues of the future challenge and possible fitting technology. Value chain partners and supporting organizations are involved in development of new approaches and innovation/ introduction of new technologies. Capacity is built for advanced agronomy for advanced agronomy for sustainable farming systems with education and extension. Stakeholder involvement in policy making process facilitated and supported. Improved alignment of efforts in projects involved in value chain and farming systems. | Waiting for signing a Plan of Operation (POP). | | |
| | | NEW | The Development of Rice-fish System (RFS) in the Ayeyarwady Delta, Myanmar | 2017-2021 | Myanmar, Government and WorldFish - IIRRI (ACIAR) | DOA collaboration with WorldFish -IRRI in the Ayeyarwady Delta testing variables as fish species and rice strains, fish stocking rates and pond/ditch configuration, optimal fish, rice areas, rice planting patterns and water/pesticide/fertilizer management options, benefitting from greater capacities to develop RFS and enhancing agricultural diversification and resilience and improve natural resources and ecosystem services. | Warp-up Meeting for RFF was done on September, 2017 in Bago Region. Necessary data collection has also been done accordingly. | <ul style="list-style-type: none"> To improve productivity and profitability of rice-fish systems in Myanmar, with a focus on favourable agro-ecological zones in the Ayeyarwady delta. To identify improvements in rice-fish production and management systems that optimise gender equitable income, food and nutritional outcomes. To strengthen the capacity and enabling environment for research, dissemination and uptake of improvements in rice-fish systems. | | |
| | | NEW | Project for multiplication of good quality seed | 2016-2022 | ADSP- World Bank | To investigate the adaptable and marketable varieties. To enhance the gap practice and seed multiplication in target area. To improve the cropping intensity. | Monsoon Rice (55) acre in 2017 has successfully complete to distribute the neighboring farmers by free of charge. Winter season chickpea(35)acre, blackgram(2.5)acre at present situation.Pre-monsoon summer rice(15)acre/Pre-monsoon sesame(10) acre / Pre-monsoon Geen Gram (5) acre have been planned to multiply and distribute with free of charge by DOA planning and arrangements. | To distribute good quality seed. Certified seed | | |

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| | | | 3 | Project for pulses multiplication of RS to CS by community based seed bank system development | 2016-2018 | Myanmar Government, ACIAR | The legumes project is one of five components of a multi-sector program, funded by the Department of Foreign Affairs and Trade (DFAT) and managed by Australian Centre for International Agricultural Research (ACIAR), to improve food security and small-holder farmer livelihoods in the Central Dry Zone (CDZ) and Ayeyarwady Delta of Myanmar. The program is focussed on legume-based systems, livestock and fisheries with an overarching socio-economic/extension component. The specific objectives of the legumes project, involving Department of Agricultural Research (DAR), Department of Agriculture (DoA) and Yezin Agricultural University (YAU) in Myanmar, from the international Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India, and from the University of New England (UNE) and University of Adelaide (UA) in Australia are to; | Seed multiplication of pignonpea has 1294 acre in Mandalay, Sagaing, Magway and Kayah. Seed multiplication of Chickpea has 349.5 acre in Mandalay, Sagaing, Magway and Naypyitaw. Seed multiplication of Groundnut has 96 acre in Naypyitaw, Sagaing, Bago, Mandalay, Magway and Shan. Involving participation of the total farmer are about (1200). | It is affective community base seed bank system to farmer. Thus, those kind of the community base seed bank system project need to continues to the Myanmar farmer. |
| | | Technical Coop | 4 | West Bago TCP(Income-UP) | 2016-2021 | ODA-Japan | To establish profitable irrigated agriculture model with private sector involvement by strengthening Public-Private-Producers (Farmers) Partnership, improving Profitability of farmers in the model site, and developing guidelines for Participatory Irrigation Management. | Rice Quality Seed is being promoted in collaboration with Private Companies and some field trial on crop selection, soil management, and agriculture machinery are also going-on. Summer Sesame is introduced to some pilot farmers as profitable crop substituting summer rice. Summer sesame will be expanded in next season based on the needs from Japanese trading companies. Water users groups and water users association are being established to jointly manage water distribution and conduct maintenance of irrigation facility. | <ul style="list-style-type: none"> To establish functional extension system to promote identified technique and crop to maximize the profit of famers, possibly by utilizing water users group and association. To promote private investment. To integrate harvest and transportation. |
| | | Mechanization and High value-added | 5 | SME Two Step Loan for Service Providers and Agriculture and Rural Development Two Step Loan | 2016-2020 (2017-2020) | ODA-Japan | (Agriculture and Rural Development Two Step Loan Project) To improve agricultural productivity and agricultural income by promoting capital investment through medium- and long-term loan for farmers and farmers' groups. (SME Two Step Loan for Service Providers) To promote private sector activities including agriculture-related sector by providing medium- and long-term loan for small- and medium-sized enterprises. | (Agriculture and Rural Development Two Step Loan Project) In July 2017, three farmers in Bago district Peu district received loans and bought a tractor and a combine harvester. Loan application is now being examined in 5 state/area, and the target area will be expanded to other state and regions. (SME Two Step Loan for Service Providers) Phase I project is completed and Phase II is expected to be started in 2018. 64 rice millers received loan under the phase I. From now on, Myanma Economic Bank and Participating Financial Institutions will keep considering use of loans for investment in rice mills and food processing plants. | <ul style="list-style-type: none"> Flexible implementation of loan screening. Strengthen MADB's(Myanna Agricultural Development Bank) screening ability. |
| | | Irrigation systems | 6 | Introduction of irrigation systems in the Bago and other regions , IFDA project , World Bank Project, ADB Project | 2016-2020 | ODA-japan, Other donors | To increase agricultural productions by developing irrigation systems by utilizing different development partners (Japan, World Bank, ADB, India etc). | (West Bago) 4 irrigation schemes are being rehabilitated under Japanese ODA loan and will be completed in FY2018-19. More than 100 water users group were formulated. (WB) Irrigation rehabilitation project started targeting Bago East, Nay Pyi Taw, Mandalay, and Sagaing. (ADB) Irrigation rehabilitation project also started in Magway and Mandalay. (IFAD) IFAD is implementing land consolidation of 10,000 acres in Nay Pyi Taw but is currently behind schedule facing difficulties with farmers. (India) Indian Irrigation and Agriculture Machinery project is scheduled to start in 2017 including procurement of machinery and construction of 2 irrigation networks in Bago East. | <ul style="list-style-type: none"> To share the experience of West Bago with other agencies. To renovate the existing irrigation system by improving water management (facility, system, capacity of staff, and Participatory Irrigation Management). To make better arrangement to avoid the delay of schedule of land consolidation. |
| | | | | (deletion) | | | | | |
| | | | 7 | Agriculture Income Improvement Project (under preparation) | 2018-2024 | ODA-Japan | To improve agricultural income by incresing agricultural production and profitability through rehabilitation of irrigation and distribution infrastructure and promotion of land consolidation, agricultural mechanization, agricultural extension in Shwebo, Sagain Region. | This project was pledged in August 2017. Expected to sign on E/N and L/A in Feb 2018. To achieve this, prompt action in Myanmar side is required such as parliamentary approval for the project. | To accelerate consultant procurement |
| | | Rice and Pulses milling,etc | 8 | Training related to post harvest treatment for rice | 2016 | MAFF-Japan | To confirm the situation of post-harvest processing. To implement workshops for technical guidance and technology dissemination for local farmers and agricultural stakeholders. | To taught the importance of moisture control and how to use dryers properly for prevent the loss of quality such as yellowed rice and mold. Rice millers became able to prevent cracked grains, select cracked grains, remove foreign substances and remove weedy red rice and yellowed rice. | Incentives such as an increase in purchase price when proper moisture control is implemented. |
| | | | 9 | Training related to post harvest treatment for upland crops | 2016-2020 | Myanmar Government, Other donors | Pan Asian Project | Capacity building of farmers for organic farming. Conducting trail for seed potato project. Demonstration plots for drought tolerant rice variety. | Capacity building and empower farmers for quality assurance. |
| | Private Sector | Rice and Pulses seed production | 10 | Production and marketing of rice and pulses seed(Include hybrid varieties) | 2016-2020 | - | - | Local trading companies involves in marketing of rice, pulses and oilseeds in downstream. Most of these companies are also seed suppliers for farmers although they don't have seed production system. The way they do is thy buy raw (grain) and store seeds after primary grading, and distributes to farmers before sowing time. Some local companies establish systematic seed production. Regarding with hybrid rice seed production, seed companies distribute hybrid seeds in domestic market as well as China market. | Encourage both formal and informal seed system |
| | | Mechanization | 11 | Import from surrounding countries (Japanese or foreign investment) Local assemblage and marketing | 2016-2020 | - | - | Kubota Myanmar Co., Ltd and YANMAR MYANMAR CO., LTD has started their operation at Thilawa SEZ. They are expanding their sales network with Myanmar local dealers, then expected to contribute to agricultural mechanization in Myanmar. | <ul style="list-style-type: none"> Extension of Loan Scheme for mediaum and long term investment, such as TSL. Improvement of Infrastructure in Rural areas and farmland consolidation to promote agricultural mechanization. |
| | | | 12 | (local enterprises) promotion of cultivation service providers | 2016-2020 | - | - | Cultivation of service providers can be found in perennial crops likes rubber, coffee and oil palm. | farm consultation system by private sector should be empowered. |
| | | Agriculture insurance | 13 | Development and dissemination of Agricultural insurance for paddy cultivation. | 2016 | - | - | Weather Index Insurance scheme, which targets paddy drought in Shwebo Township, Sagaing Region and Pyay Township, Bago Region during rainy season is under examination by Insurance Business Regulatory Board of Ministry of Planning and Finance. | Observation period of proposed WII scheme is from July to October. Approval of WII scheme is necessary as soon as possible to apply the WII to next coming rainy season with take promotion and sales period into account. |

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| | | Rice milling & pulses processing | 14 | (Japanese or foreign investment) establishment of rice milling plants , management , rice processing , etc | 2016-2020 | - | | MOU was signed between Japan Project-Industry Council (JAPIC) and MRF on July, Business expansion between both side. | | |
| | | | 15 | (domestic enterprises) renovation of rice milling facilities , marketing , export | 2016-2020 | - | | This area needs investment to improve milling quality and market access. | Funding and long term concessional loan should be initiated to Improve rice industry. | |
| | Oil Crops, industrial Crops and other Upland Crops | The Government of Myanmar(ODA) | Management Policy | 16 | Operational management – make new clear policy Mechanism for sugarcane production (M) | 2016-2020 | Myanmar Government | Sugar Act is now final draft stage. | Re-export of sugar had serious impact on sugar industry. Private sugar millers are going to expand milling capacity describe the situation by Myanmar side. | Final consultation for Sugar Act is to be organized. |
| | | | Seed and Seedling | 17 | Water-Saving Project (OJ) (Groundnuts seed) | 2016-2018 | ODA-Japan | To establish water saving agricultural technologies that adaptable to the Central Dry Zone in Myanmar. | *Recommendable varieties in groundnut, sesame, pigeon pea, greengram have been identified, and at the stage of disseminating to the farmers in the target area. *Seed production (groundnut, sesame, pigeon pea, greengram) techniques have been transferred to the target farmers. | |
| | | | | 18 | Supply of Sugarcane seedling by Sugarcane Research and Seeds Development Farm | 2016-2020 | Myanmar Government | No foreign funded projects. | Renewing of cane sugar as well as newly released varieties are done by collaboration among sugarcane research farms and millers and farmers. | Promulgating sugar act as well as forming of sugar board. |
| | | | Cultivation | 19 | Water Saving Project | 2016-2018 | ODA-Japan | To establish water saving agricultural technologies that adaptable to the Central Dry Zone in Myanmar. | Crop cultivation techniques using water saving agricultural technologies have been identified by the Project and it is at the stage to disseminate to the farmers in the target area. | |
| | | | Loan | 20 | SME Two Step Loan for oil extract facilities | 2016-2020 | ODA-Japan | To promote private sector activities of industries such as agriculture-related sector by providing medium- and long-term loan for small- and medium-sized enterprises. | Phase I project is completed and Phase II is expected to be started in 2018. 9 oil millers received loan under the phase I . From now on, Myanma Economic Bank and Participating Financial Institutions will keep considering use of loans for investment in rice mills and food processing plants. | |
| | | Private Sector | Seedling and cultivation (Sugarcane) | 21 | Introduction of new varieties, Contract Farming | 2016-2020 | - | | | |
| | | | Agricultural insurance (Sesame) | 22 | Development and dissemination of Agricultural insurance for sesame | 2016 | - | | Crop Insurance for Sesame has not been developed. | Fisrt Weather Index Insurance, which for paddy drought should be approve as soon as possible and desseminated for farmers in targeted area. |
| | | | Processing (Sesame) | New | Sesame Oil Production | 2017- | - | | Iwai Sesame Oil Co.,Ltd, Japanese sesame oil processing company, has a business plan that making high-value added sesame products by high-quality sesame oil production technology in Myanmar. Their feasibility study, funded by JICA shceme, is going to start within this fiscal year. | |
| | | | Export | 23 | Producers' Associations for Oilseed Crops | 2016-2020 | - | | Oilseeds producer assocaiton were formed at villages and township level . | |
| | Horticulture | The Government of Myanmar(ODA) | Development of varieties | 24 | Selection of tropically-adapted lines of vegetables to improve productivity of the vegetable value chain in Myanmar and Vietnam (DAR and AVRDC) | 2016-2018 | Myanmar Government,MAF F-Japan | To improve productivity of the vegetable value chain in Asian countries by supporting introduction of new varieties of vegetables to Asian countries in collaboration with the World Vegetable Center (AVRDC), an international nonprofit research and development institute and research institutes of Asian countries including DAR of Myanmar. | Growing tests of tomato, pepper, bitter gourd and pumpkin were conducted in DAR and found some promising disease resistance varieties. | Details of the project after 2018 is under consideration. |
| | | | Seed multiplication | 25 | BOP/FS Investigation, Introduction of nurseries for medicinal plants | 2016-2020 | ODA-Japan | | Describe in no,38 | Describe in no,38 |
| | | | Production | 26 | Functional Extension System | 2016-2020 | ODA-Japan | Food Value chain survey is conducted being supported by Agriculture Policy Advisor and provide recommendation for further steps. Also, Agriculture Policy Advisor supports drafting Agriculture Extension Policy which indicate the direction and mandate of extension system of Myanmar. | Food Value Chain Survery started in October 2017 and will continue until August 2018. | Reallocation of human resources and budget, based on new agricultural extension policy is needed for sustainability. Otherwise, the policy would be just plan. |
| | | | | 27 | Protected Horticulture System(DAR) | 2016-2020 | Myanmar Government | To introduce proper land use and land treatment system for better health of plants which leads to less use of chemicals and better products to meet the requirement of markets and benefits. Implementation of technical transfers with model projects for efficient use of irrigation water especially from ground water and drainage for sustainable use of irrigation. | Food Value Chain Survery for horticulture has been started in October 2017 and will continue until March 2018. | Institution,HR and Capacity Building. |
| | | | | 28 | Protected Horticulture System (The Netherlands-SAI, Pinyinmana) | 2016-2020 | Other donors | Expecting follow up projects of Ground Water Irrigation Project 1 in Chaung Oo, Monywa and Budalin by World Bank implemented in 1990s. KOICA is also proposing a new Ground Water Irrigation Project in central dry zone of Myanmar. First season cherry tomato was cultivated in greenhouses by cooperation with experts from Netherland and Myanmar and staff from SAI in 2016. Second season cherry tomato was cultivated in greenhouses under supervision of SA staff in 2016. | Food Value Chain Survery for horticulture has been started in October 2017 and will continue until March 2018. Field days were conducted for SAI students and farmers. | Project Formulation with objectives. |
| | | | Land Management | 29 | Support to management environment such as land use | 2016-2020 | Myanmar Government | Monitoring and Evaluation Activities by concern departments for better land use and irrigation of Ground Water Irrigation Project 1 in Chaung Oo, Monywa and Budalin by World Bank implemented in 1990s. | Food Value Chain Survery for horticulture has been started in October 2017 and will continue until March 2018. | Project Implementation and M and E. |

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| | | Post-Harvest | 30 | Post-Harvest Technology Training Center for Horticultural Crops (KOICA) | 2016-2020 | Other donors | Contribute to improvement of capacity building and institutional capacities through advanced technical assistance and educational infrastructure required in the postharvest technology. Contribute to increase farm income through improvement of productivity and competitiveness of the agriculture products. Friendly bilateral cooperation between Korea and Myanmar. | Postharvest technology trainings were conducted government staffs (ToTs) and growers. Food processing such as mango jum, pineapple jum, fresh fruits juice and dried vegetables were made at the centre. In the future, trainings, applied researchs and processing food will be continued. | Dessimination of technology/ Improve infrastructures for post-harvest handling more specifically dryers and grading system |
| | | | 31 | Post-Harvest Research Institute for Horticulture (KOICA) | 2016-2020 | Other donors | Contribute to improve research capabilities for postharvest handling of cereals, fruits, and vegetables through advanced knowledge of the postharvest technology. Contribute to increase farm income through improvement of productivity and competitiveness of the agriculture products in Myanmar. | Administrative officers, Senior researchers and junior researchers already attended the trainings in Korea. Opening ceremony of postharvest research institute will be celebrated in February 2018. Triangular cooperation in postharvest technology with Myanmar, Vietnam and Korea will be carried out. | |
| | | | 32 | Post-Harvest and Processing of Horticultural Crops (Mokpo National University, Korea at YAU) | 2016-2020 | Other donors | Promotion of mutual understanding and friendship, advanced academic excellence at YAU and Mokpo National University, Korea. YAU and MMU will carried out joint research and academic activities in the area of Post-Harvest and Processing of Horticultural Crops. To improve the efficiency of research and training in conduction with national programs mainly in Korea and Myanmar. | Cultivation technology, Post-Harvest and Processing of Horticultural Crops Trainings are provided to YAU students and farmers. | |
| | | Scientist/ Students Exchange Program | 33 | (JICA/ Mokpo National University, Korea) | 2016-2020 | ODA-Japan , Other donors | To enhance capacity of agricultural R/D sector and promote relationship with overseas. | Academic exchange and student exchange is being undertaken under JICA/ Mokpo National University. Advanced Centre for Agricultural Research and Extension (ACARE) funded by India government was launched in 2017. | Master programme on Plant Biotechnology is initiated with the total number of 30 candidates. |
| | | Food Safety & Quarantine | 34 | International SPS Harmonization (TCP) | 2016-2020 | Other donors | Regional Diaganosis Network. ASEAN -China SPS Cooperation. | A series of capacity building workshop and training programmes are being implemented in ASEAN and GMS countries. | |
| | | Distribution | 35 | Market Study | 2016-2017 | Myanmar Governmen | Project on Agricultural Transformation and Market Integration in the ASEAN Region: (ATMI-ASEAN) | Market studies are mostly conducted by Yezin Agricultural University. Market Information Service is on-going activity in Department of Agriculture. New mechanism of market system should be developed. Collaborative market study will be doned among SEARCA, MOALI and CESD. | |
| | Private Sector | Production | 36 | Construction of perilla field (under consideration) , protected cultivation of strawberry, cultivation under contract | 2016-2020 | - | | | |
| | | | 37 | Vegetable seed production and marketing | 2016-2020 | - | | Japanese Seed Companies, Kurume Seed Co.,LTD and Yamato Noen, have been conducting survey on vegetable seed production skill by JICA funding. Through this survey they will make a investment plan to realize efficiency high quality seed production and breed improvement, suitable for Myanmar's climate as well as exprot seed. As a result, they will be able to contribute to development of Seed Industry of Myanmar. | |
| | | | 38 | Cultivation crops for high-valued functional agricultural products | 2016-2020 | - | | Japanese Companies have been implementing projects to develop FVC on high value and functional crops by JICA fundation as below. (1) Ohimaya conducted feasibility survey on potential of Rush cultivation and processing in upper Myanmar. (2) Boderless Japan Co., Ltd has been implementing social business project which includes herbs cultivation in village and development of processing, distribution and export system. (3) Increased cropping area of Hatomugi to 500 hectares. Shipment of Hatomugi are arrived at Japan in Jan, 2017. Experimentally cultivate crops that except HAtomugi. | (3) To train farmers(techniques of cultivation , consciousness of cultivation etc). |
| | | Distribution | 39 | Expand domestic and cross border Cold Chain Network | 2016-2020 | - | | The volume of low temperature distribution is increasing with economic growth. Activities of Japanese companies are below. (1) KOSPA's deal, which based on cold storage in Yangon and is between Yangon-Mandaly, Myawadi, has been increasing. They are planning to increase deal and establish simple basement of container in Mandaly and Myawadi. (2) SENKO Co., Ltd and Singapole entity established JV company of low tempreture distribution in 2016. They have a cold storage in Yangon. (3) Ryobi holdings has decided to make investment in Thelawa SEZ. Large scale distribution storage is under construction. (4) Premium Sojitz Logistics has been distributing vegetables and fruits, which they deal with farmers in Shan State and Mandaly Region. to hotels, restaurants and supermarkets in yangon. Their business is growing so that they plan to increase refer trucks. | All relevant player (including retailer and consumer) need to recognize that missing of linkage among relevant player in the process of cold chain system results loss of value chain. Hence, measures of raising awareness are needed. |
| | | | 40 | Introduction of a modernized whole sale market(Mandalay) | 2016-2017 | - | | Modernized whole sale markets is now under construction. The construction of wholesale market is managed by Mandalay Green City Co Ltd and constructed by Mann Myanmar incorporated more than 10 construction companies. | To improve the market conditions of Upper Myanmar. |
| | | Processing | 41 | (foreign investment + joint venture) , processing of vegetables in the Shan State (frozen vegetables, factory in Nay Pyi Taw (in operation since July 2016) | 2016-2020 | - | | First shipment of frozen vegetables toward Japan was done in Dec, 2016. | *To increase and stabilize the production of vegetabes and to improve the products quality. *To increase the number of extension staff. |
| | | | 42 | Introduction of facilities for high-valued functional foods and row materials of medicine | 2016-2020 | - | | Barefoot Doctors Myanmar Star has started Star Anise Peace Project. Star Anise nut inculdes shikimic acid which is row material of Tamifuru. They opened nursery station in Mon State and planting sites in Mon State , Kayin State, Shan State Kayah State, Chin State and Mandaly Region. Goal of the project is to improve livelihood in rural areas by establish access to shikimic acid market. | |

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| Livestock | The Government of Myanmar(ODA) | Animal Production | 43 | Establishment of a system for the supply of high- productive animal breeds through the use of artificial insemination techniques (supply of liquid nitrogen and frozen semen straw), training for Artificial Insemination, animal feeding | 2016-2020 | Myanmar Governmen | Establishment of Liuid Nitrogen plant and AI center at Mandalay, Sagaing and Magway. | At presnt, LBVD established only two Liuid Nitrogen plant at Yangon and Nay Pyi Taw. We can not provide enough liquid nitrogen for all states and regions. We also need to provide vehicles and the Liuid nitrogen tank to all Veterinary officials for supporting the AI services. | Providing liquid nitrogen as well as tank. Distributing the vehicles to all Veterinary official for AI services. | |
| | | Animal Feeding | 44 | Improvement of productivity of feedstuff such as maize, grass and legumes | 2016-2020 | Myanmar Governmen | Encourage the management and proper use of pasture land and to grow the nutrient rich grass for animal feed. | In Myanmar, currently, pasture land is not managed by LBVD. Production of maize and legumes is mainly resposible by department of agriculture. | Need to clarify the management of pasture land. | |
| | | Processing and Distribution | 45 | Establishment and management of animal markets | 2016-2020 | Myanmar Government, Other donors | Ensure the health and safety of animals and people through the development and enforcement of new legislation based on best practices on food safety HACCP as well as SPS measures. | LBVD is preparing the development of GAHP. | Capacity building for lab staff regarding GAHP/ SPS measures. Awareness and training for farmers. Providing the incentives for farmers who follow the best practice and guidelines. | |
| | | | 46 | Enhancing School milk programme and promoting milk and milk-products market. | 2016-2020 | Myanmar Government, Other donors | Expanding the school milk programme at nation wide. | Although LBVD is perfromg the school milkd programme, it is not covered the nation wide. We need to expand this programme. | Encourage the School Milk Programme by Donars and increase the amount of national budget. | |
| | | | 47 | Improvement of Livestock Markets in sanitary and health | 2016-2020 | Myanmar Governmen | Promoting Good Animal Husbandry Practice for Food Safety. | To promote GAHP in Livestock Sector ensuring Food Safety. To increase awareness on GAHP. To promote the GAHP activities at project areas. | LBVD is preparing for the development of GAHP for poultry. | |
| | | Animal health | 48 | Strengthening the capacity of diagnosis and vaccine production for various animal diseases including Foot and Mouth Disease, dissemination of vaccines, increase of the number of veterinary officials at the scale of producing vaccine at the sale to control the spread of FMD at specific areas | 2016-2017 | ODA-Japan | To improve the Foot-and-Mouth Disease control ability of the National Foot-and-Disease Laboratory in Yangon by constructing of facilities and providing of equipment for Foot-and-Mouth Disease dignosis conducted by the labolatory, thereby contributing to the improved sability of agricultural and livestock proction in Myanmar | Pre-Qualification has benn done for facility construction, but not for equipment provision. Waiting for tax exemption principles by Myanmar Government for the Grant Aid Projects. | To settle the tax exemption policy by the Myanmar Government for the Grant Aid Projects. | |
| | | | 49 | Technical Cooperation Project for Diagnostic Capacity Development | 2018-2020 | ODA-Japan | To strengthening capacity building and institutional development of the National Foot-and-Disease Laboratory in Yangon, Mandalay Region LBVD Office, Mandalay Veterinary Diagnostic Laboratory, and selected LBVD Township Offices in Mandalay and/or nearby Regions. | Waiting for the Record of Disssusoin (R/D) to be signed. Expected to sign on the R/D by March, 2018. | LBVD is negotiating with MOPE (fiancila department) for tax exemption. | |
| | | | 50 | Strengthening the implementation of the Animal Husbandry and Animal Health Law (Management of slaughterhouses, meat quality and hygiene control) | 2016-2020 | Myanmar Governmen | Development of a new integrated policy on livestock sector development and promoting modern meat and dairy industries including delivery of improved veterinary services. | LBVD is revising the animal health and husbandary Law 15 times accordign to Union Atrorary General Office and submitted to Parliamen for discussion. Additionally, the new strog legal framework also needs. | LBVD is revising the law 15 times and submitted to parliament. | |
| | | Private Sector | Animal Production | 51 | Promotion of chicken/pig and goat farm management under contract | 2016-2020 | - | - | About 4,000 commercial layer chicken farms, About 600 broiler chicken farms, 570 fattening pig , 120 sheep and goat farms. | Animal census, market access and price stability and disease control, vaccination. |
| | | | Animal Feeding | 52 | Introduction of improved maize varieties, pasture grass and legumes, extension and training for pasture development | 2016-2020 | - | - | hybrid maize varieties are widely used by farmers about 80 % of maaize are hybrid variety. Pasture development is important but only limited attempts was made for pasture. Non-government organization involve in pasture developpment via community development agenda. | strengthen meaningful and functional linkages between research, extension and primary producers of the sector. |
| | Processing & Distribution | | 53 | Introduction of the cold chain, production and marketing of processed meat and milk products | 2016-2020 | - | - | Myanmar's Premium Distribution Co. (PDC) Ltd to provide cold chain logistics services from three-temperature logistics warehouses in Myanmar. Myeik has a well-developed fishery business that has cold storage for fish at Pa Htaw island, which is approximately 2km from Myeik across the water. Cold chain belongs to aquaculture is 116 factories. Twenty factories out of 116 have recognized by EU. | Development of cold chain in Livestock and aquaculture sector will be done first. | |
| | Animal health | | 54 | Cooperation with private sector (Private veterinarians) | 2016-2020 | - | - | - | - | |
| | Fisheries | The Government of Myanmar(ODA) | Resource management | 55 | Scientific surveys to grasp the volume of utilizable aquatic resources and their status | 2016-2020 | Myanmar Governmen | - | Marine resources in Myanmar have been exploited largely beyond their Maximum Sustainable Yield (MSY).Based on a trawling survey in continental shelf undertaken in 1981 - 1983, biomass value of the demersal resources was recorded at 784,850 tonnes. The highest biomass values were found off the Ayeyarwady Region (286,650 tonnes), followed by Rakhine (264,850 tonnes) and Tanintharyi (233,350 tonnes). Projected MSY values for the three regions are | - |
| | | | Aquaculture | 56 | Improvement of the productivity of inland aquaculture (aquaculture techniques, aquaculture infrastructure, seed production, disease control, extension services) | 2016-2020 | Myanmar Governmen | Small scale aquaculture Extension for promotion of Livelihood of Rural Community in CDZ project. Project for developemnt of inland fish farming technology JTF Chemical & Drug Residues in Fish & Fish products in SEA- Biotoxins Monitoring in ASEAN. Small-scale Fisheries and Aquaculture in Myanmar: Institutional Support for Dissemination of European Regulations and Best Mediterranean Practices (MyanMed). Improvment of Data Collection on fisheries and Aquaculture prodution: Pilot system for the Yangon Region (FAO-3601). | In 2016-2017, the area of Aquaculture ponds is (487525 acre) and the production of Aquaculture ponds is (1048.69 Thousand Metric Ton). The respsibilities for the development and management in fisheries are conservation and rehabilitation of fisheries resources, promotion of fisheries reserach and surveys, collection and compilation of fisheries statistics and information. extension services, supervision services and sustainability of fishery resources. | - |
| | | 57 | Draft a new framework Aquaculture Law for integrated land/water management | 2016-2020 | Myanmar Governmen | Final Darft was sent to Attorney General Office. | - | - | | |

| Measure | Sections | Medium Term Measures | | | | Main constituent | Project description | Present condition and Future plans | Task etc | | |
|------------------------------------------|-----------------------------------------------------------|--------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| | | Contents | NO. | Project ,etc | Term | | | | | | |
| | | | Export | 58 | Incubation of HACCP certified factories | 2016-2020 | Myanmar Governmen | 99 establishments including dried products warehouse and chilled product site have been registered AQSIQ with China. 50 fatories are qualified for HACCP certification. | | | |
| | | Private Sector | Resource management | 59 | Raise awareness of relevant laws | 2016-2020 | - | | Marine Fishery Law. | | |
| | | | Aquaculture | 60 | Improvement of the productivity of inland aquaculture (aquaculture techniques, aquaculture infrastructure) | 2016-2020 | - | | Some Japanese companies are conducting feasibility study of fish and prawn aquaculture business and requesting DOF support. | | |
| | | | Export | 61 | Establishment of a stable supply system of fresh fish for processing | 2016-2020 | - | | Some Japanese companies are conducting feasibility study of fish and prawn processing business and requesting DOF support. | | |
| Horizontal measures | Agricultural Finances | The Government of Myanmar(ODA) | Seasonal Loan | 62 | MADB primary loan scheme (2016)1,700Billion kyat , (2017)2,158 , (2018)2,248 , (2019)2,344 , (2020)2,439 | 2016-2020 | Myanmar Governmen | | | | |
| | | | Term Loan | 63 | Additional preparatory study | 2016 | ODA-Japan | Survey intends to re-formulate the plan of two step loan in Agriculture and Rural Development based on the situation under the current government. | Project was formulated and started. | | |
| | | | | 64 | Fund Disburse for Agriculture & Rural Development TSL (Attn: the repayment period of the TSL is 40 years with the 10-year grace period) | 2017-2020 | ODA-Japan | To improve agricultural productivity and agricultural income by promoting capital investment through medium- and long-term loan for farmers and farmers' groups. | In July 2017, three farmers in Bago district Peu district received loans and bought a tractor and a combine harvester. Loan application is now being examined in 5 state/area, and the target area will be expanded to other state and regions. | •Flexible implementation of loan screening. •Strengthen MADB's(Myanma Agricultural Development Bank) screening ability. | |
| | | | | 65 | Capacity Building for MADB | 2016-2020 | ODA-Japan | To strengthen the capacity of MADB to be able to conduct credit analysis of applicants and others for smooth implementaiton of term loan. | Project facilitation consultant is conducting training with operational manual and checklist for credit analysis. | | |
| | | Private Sector | Farmer Association | 66 | Collaboration with Farmer Association | 2016-2020 | - | | | | |
| | | | Banks and Insurances | 67 | Development of Credit Guarantee Insurance and Weather Index Insurance for agricultural sector | 2016-2020 | - | | Situation of WII is as same as above. Approximately 170 Loans were provided by private banks with CGI through Myanma Insurance, but no agricultural project include. TSL projects of Japanese ODA were formulated to collaborate to CGI and Myanmar government is proceeding the preparation of drafting Law that regulate institutions other than MI able to deal CGI. | To accelerate discussion in Myanmar side. | |
| | | Agricultural Machineries | The Government of Myanmar(ODA) | Shared use | 68 | IDACA (Project for the collective purchase and use agricultural machines through building farmers' organizations) | 2016 | ODA-Japan | Capacity Building and development of farmer's group with dissemination of agricultural machinery. | Village level farmer's group in Yangon and Mandaly region has established. They acquired knowledge and skill for group farming and group management through workshops. | To extend this model activities to other villages, DRD support is needed. |
| | | | | Introduction of agricultural machines | 69 | Agricultural Two Step Loan (MADB medium term loan.) | 2016-2020 | ODA-Japan | same as the above | same as the above | same as the abobe |
| | | | | | 70 | AMD distribute with installment payment system and Cooperative Department distribute the farm machineries valued at 100million USD loan | 2016-2020 | Myanmar Government, Other donors | No Project in AMD,Departmental Budget only. | AMD distributed farm machinery by Departmental budget. If AMD gets India EXIM Bank Loan(45.87US\$million),it will distribute farm machinery through installment payment system. | - |
| | | | | Safety Examination System | 71 | Machinery Examination System. (M& D) | 2016-2020 | Myanmar Government, Other donors | Nil | Establishment for Agricultural Machinery Testing Center by AIIP with JICA loan. | |
| 72 | Need to modernize the operation and maintenance training. | | | | 2016-2020 | Myanmar Government, Other donors | Upgrading for Meikhtila Training Center by ADSP Project of World Bank loan and Yezin Training Center Supported by KOICA. | In future, Training for satellited frontline center operation and maintenance , repair and maintenance will be conducted by ADB's loan in Meikhtilar & Agricultural Mechanization Station | | | |
| Research Center with Testing Body Center | 73 | | | Establishment of research center which is included with testing body center for local and imported farm machineries before introduce and sell to the farmers | 2016-2020 | Myanmar Government, Other donors | AMD still apply to get research center by JICA in Mandalay. | AMD has (2) Agricultural Mechanization Research Workshop. But, there is no testing center here. | Nil | | |
| Private Sector | Introduction of agricultural machines | 74 | Introduction of paid service providers(tractors, combines, etc.) | 2016-2020 | - | | AMD reduces to hire service of farm machinery for farmers such as tractor, and combine harvester. AMD organized service provider organization in current and future . | | | | |

| Measure | Sections | Medium Term Measures | | | | Main constituent | Project description | Present condition and Future plans | Task etc |
|------------------------------------------------------------------------------------------------|--------------------------------|----------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Contents | NO. | Project .etc | Term | | | | |
| | | | 75 | Establishment of import and sale's network In Tilawa, distribution centers have been established or being established. | 2016-2020 | - | | same as the above | same as the above |
| | | After Sale Services | 76 | Establishment of after sale services for agricultural machinery | 2016-2020 | - | | Japanese companies (Kubota Myanmar Co., Ltd and YANMAR MYANMAR CO., LTD) guarantees regulatory maintenance service after sales. AMD established service application of farm machinery for AMD amd farmers. AMD implemented after sale service for base workshop (2)Nos and medium workshop (8)Nos. Now, Agricultural Mechanization Station (30) are already facilitated into workshops. Remaining Agricultural Mechanization Station will be installed completely in next five years. | Agricultural Mechanization is urgent issue in rural areas. To extend mechanization nationwide, improvement of rural road, connecting village to village and village to farmland. GOM should show the medium/long term plan for rural road improvement. |
| Agricultural Inputs | The Government of Myanmar(ODA) | Pesticides | 77 | Law &management system will be improved. Functional laboratories for pesticide analysis in place | 2016-2020 | Myanmar Governmen | The knowledge bank will be established to deliver practical plant health information. It is a free, open access source of locally relevant knowledge.Extension will be done by PPD and AED as weel as private and public. Research will be conducted. From supply side, Agro-input dealer association will cooperate with public sector. | Renovate existing lab facilities. Capacity building and awareness raising. Develop an effective PHS with all stakeholders. | |
| | | Fertilizer | 78 | Law & regulation will be improved. Functional laboratories for fertilizer analysis in place | 2016-2020 | Myanmar Governmen | Myanmar Soil Nutrient Management Strategy is formulating. | | |
| | | Usage | 79 | Appropriate use direction for each pesticide will be determined based on scientific data by PPD. | 2016-2020 | Myanmar Governmen | Quality control centre will be established within 3 years. Quarantee stations for live animal is going to be established. | | |
| | | | 80 | Training by Functional Extension System will be conducted. | 2016-2020 | Myanmar Governmen | Training of Plant Doctor, Revitalization of Myanmar Agricultural Extension and Research System is now final draft. | Resturcturing of Extension system, Private extension agency will be encouraged. | |
| | Private Sector | Pesticides | 81 | Contents of labels will be improved and stewardship activities will be conducted | 2016-2020 | - | | | |
| | | Fertilizer | 82 | Same as above | 2016-2020 | - | | | |
| | | Usage | 83 | Fertilizer Factories will be constructed. | 2016-2020 | - | | | |
| Promotion of the conservation and utilization of plant genetic resources and the seed industry | The Government of Myanmar(ODA) | Vegetable varieties | 84 | Support for Plant Variety Protection area through the East Asia Plant Variety Protection Forum | 2016-2020 | MAFF-Japan | To promote mutual cooperation for members to develop and implement PVP system, the "East Asia Plant Variety Protection (EAPVP) Forum" was established in 2007, consists of ASEAN member states and China, Japan and Korea. Through the Forum, cooperation activities related to awareness raising and human resource development were conducted to facilitate establishment of PVP system in Myanmar. | Since the establishment of EAPVP Forum in 2007, training courses for DUS test to improve examination ability and awareness raising seminars have been conducted cooperated with UPOV Office. In July 2016, Japan invited high level officials from ASEAN countries including Deputy Minister of Ministry of Agriculture, Livestock and Irrigation (MOALI) of Myanmar and demonstrated that PVP system contributes to the improvement of farmer's income. In December 2016 and January 2017, a training course for DUS test and an awareness raising seminar were held in Nay Pyi Taw. As a result of these activities, the Council of UPOV held on October 26, 2017, confirmed the conformity of the "Draft Law on New Plant Variety Protection" of Myanmar with the provisions of the 1991 Act of the UPOV Convention. The 10th Annual Meeting of the EAPVP and the National Awareness Raising Seminar for Myanmar were held in Nay Pyi Taw on 11 and 12 September, 2017 participated by the Minister, Dr. Aung Thu and the Permanent Secretary, Dr. Tin Htut of MOALI. The Annual Meeting decided to discuss the future direction of the EAPVP Forum for the Next Decade. The Permanent Secretary requested Japan technical cooperation in PVP area. | |
| | | Genetic resources | 85 | Project for the Promotion of the Use of Genetic Resources in the Fields of Agriculture, Forestry and Fisheries" | 2016 | MAFF-Japan | Organize joint research programs between Myanmar and Japan for collection, conservation and evaluation of plant genetic resources. | Visit Department of Agricultural Research to confirm national systems about plant genetic resources in Myanmar. | |
| | Private Sector | Vegetable seed | 86 | Technology transfer for quality vegetable seed production in cooperation with private seed companies (JICA schemes for cooperation with private companies) | 2016-2020 | - | | same as the above | same as the above |
| Food Industry | The Government of Myanmar(ODA) | Support Policy | 87 | Implement SME Development Policy | 2016-2020 | Myanmar Government | | Supporting technology and finance to produce value-added products; Enhancing the development of the production capacity of agricultural sector and agro-based industries in rural area; Encouraging to practice "One-village, one-product" system; Encourage for the development of cottage industry; Assist in development of education, health, social, availability of electricity, energy and transportation in rural areas. | Overlap in No. 108. |

| Measure | Sections | Medium Term Measures | | | | Main constituent | Project description | Present condition and Future plans | Task etc |
|------------------------------------|--------------------------------|---------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| | | Contents | NO. | Project, etc | Term | | | | |
| | | Tax | 88 | Relief and exemption for SMEs | 2016-2020 | Myanmar Government | | Tax relief and exemption may be placed in line with the following legal procedures for the development of SMEs and increasing their competitiveness - (a) Giving tax relief for the business enterprises that trying to produce new product, producing new product through research, producing finished product with by-products and wastes; modifying the factor for the effective and efficient use of energy; (b) Giving long term relief and exemption for SMEs which include in the priority list which establish in the least economic development areas; (c) Granting tax relief and exemption for SMEs which establish in developed economic area in line with the expression contained in SME Development Law; (d) Granting profit tax exemption on SMEs with appropriate recover duration which that suffered enormous losses due to natural disasters ; (e) Prescribing simple taxation procedures and providing trainings on taxation and dissemination of information; | |
| | | Finances | 89 | SME-TSL | 2016-2020 | ODA-Japan | same as the above | same as the above | |
| | | Capacity Building | 90 | AOTS Schemes | 2016-2020 | Others-Japan | | | |
| | Private Sector | Food safety | 91 | MFPEA food analysis | 2016-2020 | - | | | |
| | | Processing | 92 | Construction and planning of factories for food manufacturing and processing, through foreign investment | 2016-2020 | - | | Some Japanese food and beverage manufacturing companies decided to make a investment in Thilawa SEZ and their factory is under construction. | |
| | | | 93 | Construction of factories for instant noodle through foreign investment | 2016-2020 | - | | Acecook Myanmar has been started operation in Thilawa SEZ since July, 2017. So far they focus on Yangon Region but they have a plan to expand sales network to cities of other Regions and States. | |
| | | | 94 | Operation of Frozen Vegetable Factories | 2016-2020 | - | | same as the above | same as the above |
| Formation of Farmers' Organization | The Government of Myanmar(ODA) | Finance | 95 | China EXIM Loan Project (Micro Finance) | 2016-2020 | Other donors | Financing to co-operatives members. | The China Exim bank financing project covers only 526725 cooperative members. | |
| | | Capacity Building | 96 | Seminar, Workshop & Training for farmers related to FVC issues, Dispatch cooperative members to model cooperative in foreign countries | 2016-2020 | Myanmar Government, Other donors | Food Value chain sworkshop on Coffee by Winrock, Mango, other fruits and vegetables Value Chain are done by GIZ. NGOs initiated FVC are now being undertaken on some selected commodities. | In 2016, MOALI dispatched the candidates to attend the workshop and study tour in foreign. In 2017, Union Minister and other members have been attended the Siner Official Meeting in Japan. The Union Minister from MOALI, Myanmar and Minister from MAFF, Japan was already signed the Minutes of Meeting on Food Value Chain Roamap formulation. And also other cooperative members have been attended the workshop, training and study tour in foreigners. MOALI has been arranged the workshops concernig FVC with FVC task force members and other concerned departments in 2017. In 2018, MOALI has a plan to dispatch the candidates to Thailand for Food Value Chain study visit. | |
| | Private Sector | Capacity Building | 97 | Participate in Capacity Building Programs by Government or NGO | 2016-2020 | - | | Smallholder commercialization through empowering producer association is key element. Ngo and private sector have to contribute through community based approach. | |
| | | Management | 98 | Develop credit and other business management skill | 2016-2020 | - | | | |
| Research and Extension | The Government of Myanmar(ODA) | Research | 99 | National Agricultural Research System (NARS), Research Strengthening Program | 2016-2020 | Myanmar Government | Not yet establish. | | |
| | | Extension | 100 | Establishment of Functional Extension System | 2016-2020 | ODA-Japan | Agriculture Policy Advisor supports drafting Agriculture Extension Policy which indicate the direction and mandate of extension system of Myanmar. | Agriculture Extension Policy draft work will start in 2018. | |
| | | | 101 | IFAD project is developing Knowledge Centers to provide extension services. | 2016-2020 | Other donors | Fostering Agricultural Revitalization Project. | At the present, 15 knowledge centers were constructed in the project area. Extension and technical supports are provided through Knowledge Center. | To expand more extension activities using knowledge centre, farmer field school and mobile application. |
| | | Plant Health | 102 | Implement Myanmar Plant Health System Development Strategy | 2016-2020 | Myanmar Government | Myanmar Plant Health System Strategy. | MPHSS is already issued and it is placed in farm level . | The system should cover all crops and areas. |
| | Private Sector | Agricultural input material companies | 103 | Strengthening of education on GAP in cooperation with the Government | 2016-2020 | - | | ASEAN GAP guidelines and modules are adopted for some commodities i.e 9 horticultural crops and 5 upland crops and coffee. | Support farmers to make profit from farming, quality consistency, compliment with food safety. |
| | | Contract | 104 | Contract farming to provide farming technique | 2016-2020 | - | | Contract companies provides inputs, cost of production and technologies to contracted farmers. Some Japanese companies also provide agricultural technique to farmers through their contract. Standard Operating Procedures for contract farming system should be developed. | Assessment study should be conducted for better understanding of farmer perception. |

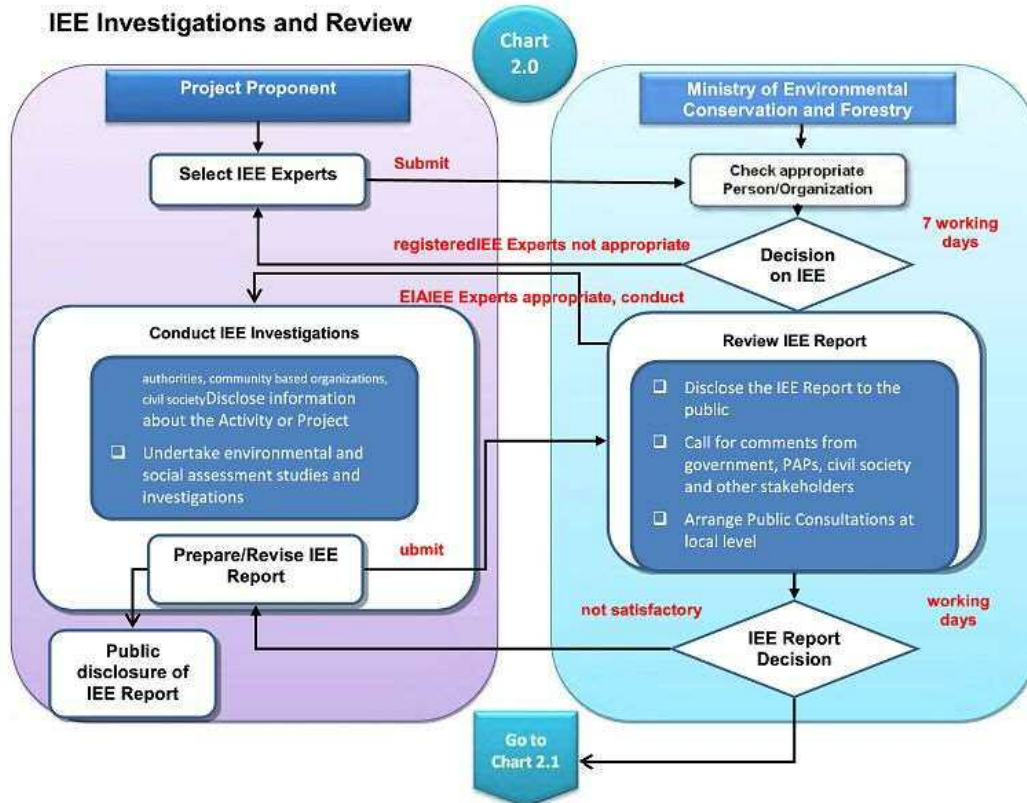
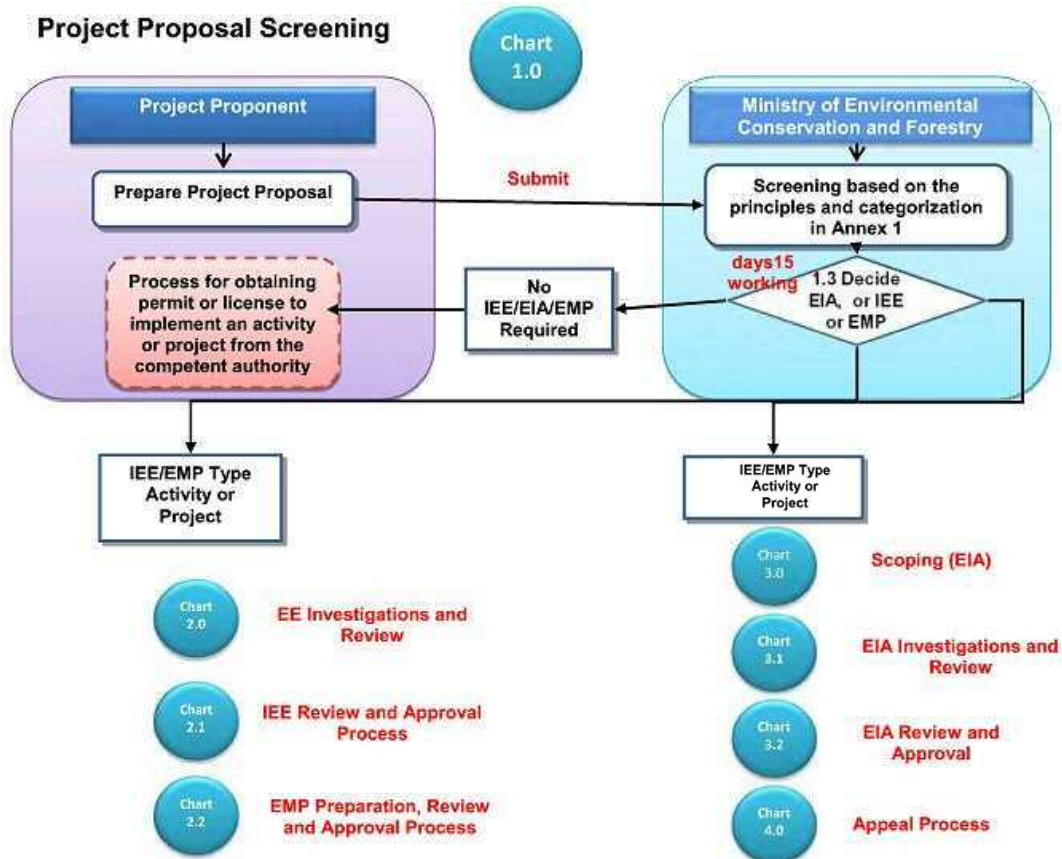
| Measure | Sections | Medium Term Measures | | | | Main constituent | Project description | Present condition and future plans | Task etc. | | |
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| | | Contents | Project No. | Project title | Term | | | | | | |
| | | Service Centers | 105 | MAPCO provide extension services for farmers in MAPCO business activity areas. | 2016-2020 | - | MAPCO involves in contract farming in rice. It may take time to disseminate the contract system to cover major rice growing areas. | Contract Farming System should be developed on commodity basis. | | | |
| | Fisheries Research and Extension | The Government of Myanmar(ODA) | Resource Management | 106 | Support to scientific surveys to grasp the volume of utilizable aquatic resources and their status | 2016-2020 | Myanmar Government | Improvement of Data Collection on fisheries and Aquaculture production: Pilot system for the Yangon Region (FAO-3601). | Marine resources in Myanmar have been exploited largely beyond their Maximum Sustainable Yield (MSY).Based on a trawling survey in continental shelf undertaken in 1981 - 1983, biomass value of the demersal resources was recorded at 784,850 tonnes. The highest biomass values were found off the Ayeyarwady Region (286,650 tonnes), followed by Rakhine (264,850 tonnes) and Tanintharyi (233,350 tonnes). The average pelagic standing stock biomass estimated from the 2013 and 2015 in Myanmar waters was estimated at only 190 000 tonnes. The average demersal standing stock biomass in 2013-2015 survey was estimated at 320 000 tonnes. | Scientific survey should be conducted for Maximum sustainable yield. | |
| | | | | 107 | Develop and ecosystem-based fishery management plan for the Myeik Archipelago and begin to establish (Locally Manage Marine Area-LMMAs) at key sites | 2016-2020 | Myanmar Government | Marine conservation in Myanmar. Activities of Fish Bio-diversity Survey and Establishment of Locally Managed Marine Areas-LMMAs at Done Pale Aw village, Lin Lon-parawah village on the Thawathadangi Island, Tanintharyi and Langann village on Langann Island on Myeik. | Marine resources are an integral part of Myanmar's future development. Our country is already heavily dependent on fish and other marine products for our daily livelihoods as well as for lucrative export markets. Two marine priority "Conservation Corridors", namely the Rakhine and Tanintharyi Marine Corridors. Marine mapping are being produced to use of the resources with community, identify the zoning system within LMMAs and develop rules and regulation for LMMA. | Conservation of marine resources and biodiversity. | |
| | | | | Aquaculture | 108 | Improvement of the productivity of inland aquaculture (aquaculture techniques, aquaculture infrastructure, seed production, extension services) | 2016-2020 | Myanmar Government | Small scale aquaculture Extension for promotion of Livelihood of Rural Community in CDZ project. Project for development of inland fish farming technology. JTF Chemical & Drug Residues in Fish & Fish products in SEA- Biotoxins Monitoring in ASEAN. Small-scale Fisheries and Aquaculture in Myanmar: Institutional Support for Dissemination of European Regulations and Best Mediterranean Practices (MyanMed). Improvement of Data Collection on fisheries and Aquaculture production: Pilot system for the Yangon Region (FAO-3601). | In 2016-2017, the area of Aquaculture ponds is (487525 acre) and the production of Aquaculture ponds is (1048.69 Thousand Metric Ton). The responsibilities for the development and management in fisheries are conservation and rehabilitation of fisheries resources, promotion of fisheries research and surveys, collection and compilation of fisheries statistics and information, extension services, supervision services and sustainability of fishery resources. | |
| | | | | | 109 | Promotion of marine aquaculture techniques and research center improved | 2016-2020 | Myanmar Government | Project for Marine and Coastal Aquaculture Technology Development is under negotiation with KOICA. | Conduct academic research and applied researches on marine aquaculture as well as biodiversity conservation. | Take necessary action to proceed the project. |
| | | | | | 110 | Establish extension programme for sustainable aquaculture management. | 2016-2020 | Myanmar Government | | The various training for fishery taskforce skill development in (2016-2017) fiscal year has been conducted with 58 trainings and 1722 trainees in total. | |
| | | | | | (deletion) | | | | | | |
| | | | | Export | 111 | Incubation of HACCP certified factories | 2016-2020 | Myanmar Government | same as the above | | |
| | | | | Private Sector | (deletion) | | | | | | |
| | | | | Resource Management | 112 | Carry out detailed feasibility assessments and public consultations at priority sites for establishing new LMMAs and MPAs | 2016-2020 | - | | | |
| | | | | Aquaculture | 113 | Develop alternatives to fish feed for domestic aquaculture, including soy based feed | 2016-2020 | - | | Encourage the production and extensive application of qualified compound feed in aquaculture sub-sector. | |
| | | Export | 114 | Establishment of a stable supply system of fresh fish for processing | 2016-2020 | - | | Systematic implementation of fishery co-management and eco-system approach to improve have consistent raw material supply. The implementation of research and development, extension and awareness service and human resource development. | | | |
| | Agricultural Education | The Government of Myanmar(ODA) | SAI | 116 | 1 New Institutes | 2017 | - | Homemalin | New State Agricultural Institute will be established but still taking necessary actions such as recruitment of staff, budget request. | Budget and financing process should be finished. | |
| | | | Capacity development for teachers of SAI | 117 | Program (15 staff) to study the Vocational Education System in foreign countries | 2017-2020 | - | Strengthening of Vocational Education and Training. | Total number of 7 staff from State Agricultural Institute were sent to The Netherland to study Vocational Education System study. In 2017, the workshops were held in country concerning with End of Inception Phase, Transition of Occupational Profile and Regional Baseline study. And also Educational Support Team were organized in May, 2017 for the all SAIs. | Eight more staff will be sent for study tour. | |
| | | | (deletion) | 118 | | | | | | | |
| | | | (deletion) | 119 | | | | | | | |
| | | | 120 | Program (15 staff) for pedagogical and didactical training in foreign countries | 2017-2020 | - | The project design was revised and more in-country trainings will be conducted instead of outcountry training. | Six staff from SAI were sent foreign country for pedagogical and didactical training. | | | |

| Measure | Sections | Medium Term Measures | | | | Main constituent | Project description | Present condition and Future plans | Task etc |
|---------|----------|-------------------------------|-----|--------------------------------------------------------------------------------------------------------------------|-----------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| | | Contents | NO. | Project ,etc | Term | | | | |
| | | | 121 | In country training on subject matters and pedagogical and didactical training | 2017-2020 | - | Strengthening of Vocational Education and Training. | In country training were conducted 3 times in Pinyinmana and 1 time in Heho. | |
| | | Facilities development of SAI | 122 | (deletion) | | | | | |
| | | | 123 | Improvement of teaching and learning materials | 2017-2020 | - | | Improvement of Vocational Education by providing accesstment information technology facilities. | |
| | | | 124 | (deletion) | | | | | |
| | | Capacity development | 125 | Students Exchange program (30 students) for short term training | 2017-2020 | - | Strengthening of Vocational Education and Training. | total number of 15 staff from State Agricultural Institute were sent to attend the short term training. | 15 more staff will be sent for short term training. |
| | | SAHS | 126 | - | - | - | - | - | - |
| | | Capacity Development | 127 | Program(15 staffs from MOALI) for long term training | 2016-2020 | ODA-Japan | To Strengthening the capacity of core human resources in the Government and academic institutions in Myanmar agricultural sector through studying post-graduate programme of Japanese Universities. | (Phase I)15 MOALI officials dispatched to Japan in FY2016 (Phase II)GoM submitted request letter to embassy. Now, under the procedure for start project. | Selection of candidates from the Myanmar side |
| | | YAU | 128 | Expanding Organization Structure, Extending the new department and building one more University | 2016-2020 | Myanmar Government | Food Processing Department, Micro-biology Department, Department of Applied Zoology, Department of Applied Chemistry, Department of Applied Botany, Department of Food Sciences. | | |
| | | | 129 | Technical Cooperation for YAU capacity building (dispatch long & short term experts) | 2016-2020 | ODA-Japan | To strengthening the capacity development of academic staff of Yezin Agricultural University through the introduction of more practical education system, such as reinforcement of the curriculum, lectures, experiments in the laboratories and practices in the fields, and management abilities. | The capacity development of the university staff in the management system to promote research and education, teaching capacity, and research capacity is ongoing with the implementation of the project activities. | |
| | | | 130 | Project for Human Resource Development in Food-related Areas through Partnership with Universities in ASEAN Region | 2016-2020 | MAFF-Japan | The project, commenced in 2015, aims at establishing a partnership program in the food-related areas with major ASEAN universities. Yezin Agricultural University for Myanmar is the partner university in Myanmar, and Japanese experts have dispatched to the YAU to educate the students on knowledge/technology in food-related areas. | The Food Value Chain courses were organized by the YAU in August 2015 , November 2016 and November 2017. The second phase project is supposed to start in January 2017, aiming to enhance partnership with universities and to conduct intensive human resources development through academic/professional seminars on food value chain (FVC) and research cooperation between the ASEAN universities and Japanese companies. | |

Appendix 6

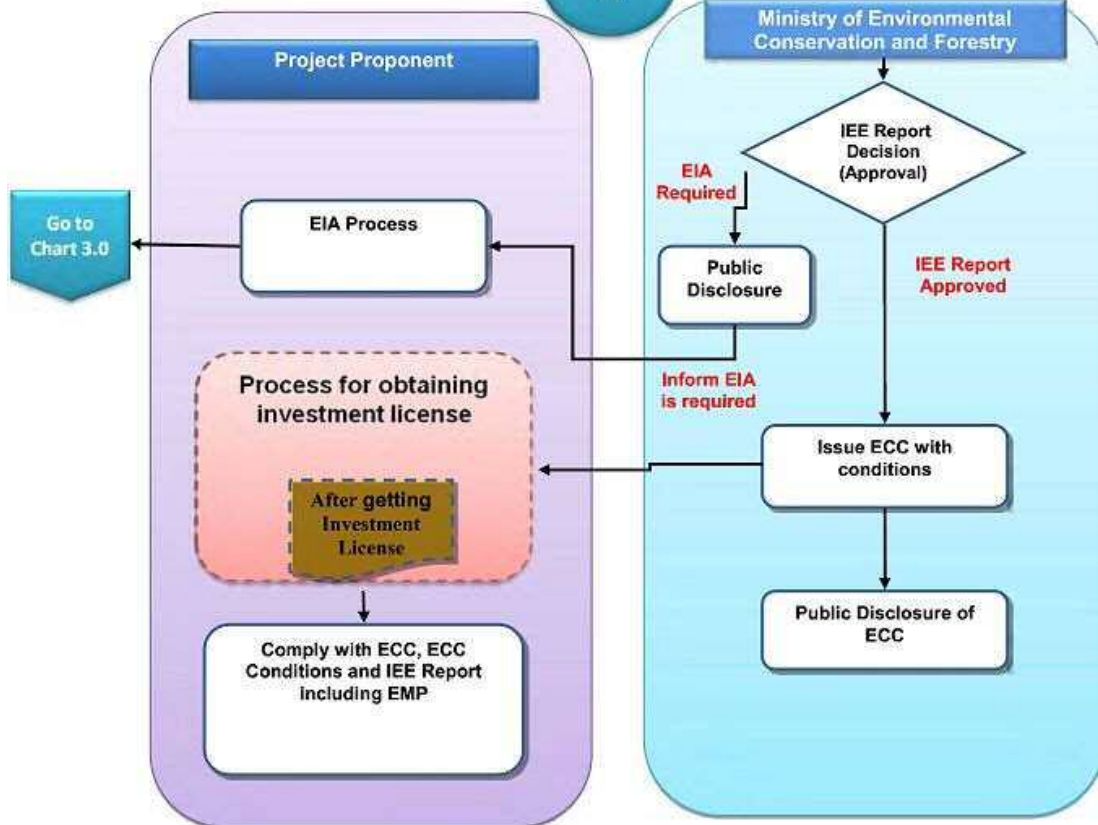
Procedure of IEE/EIA

APPENDIX 6 PROCEDURE OF IEE/EIA



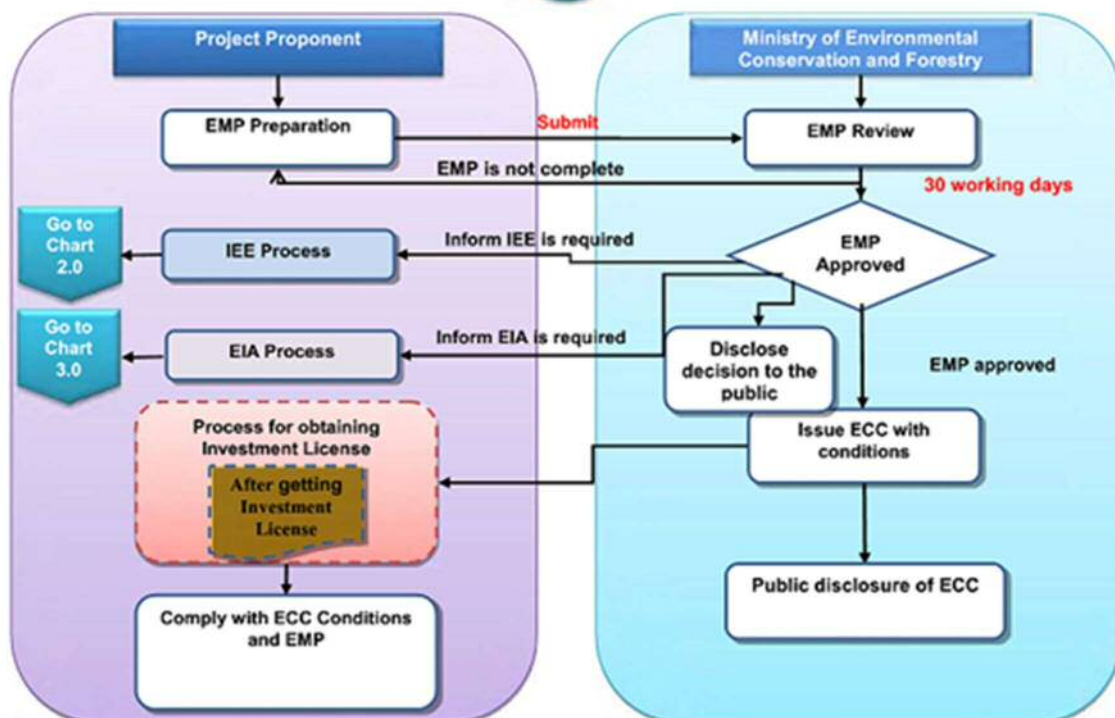
IEE Review and Approval

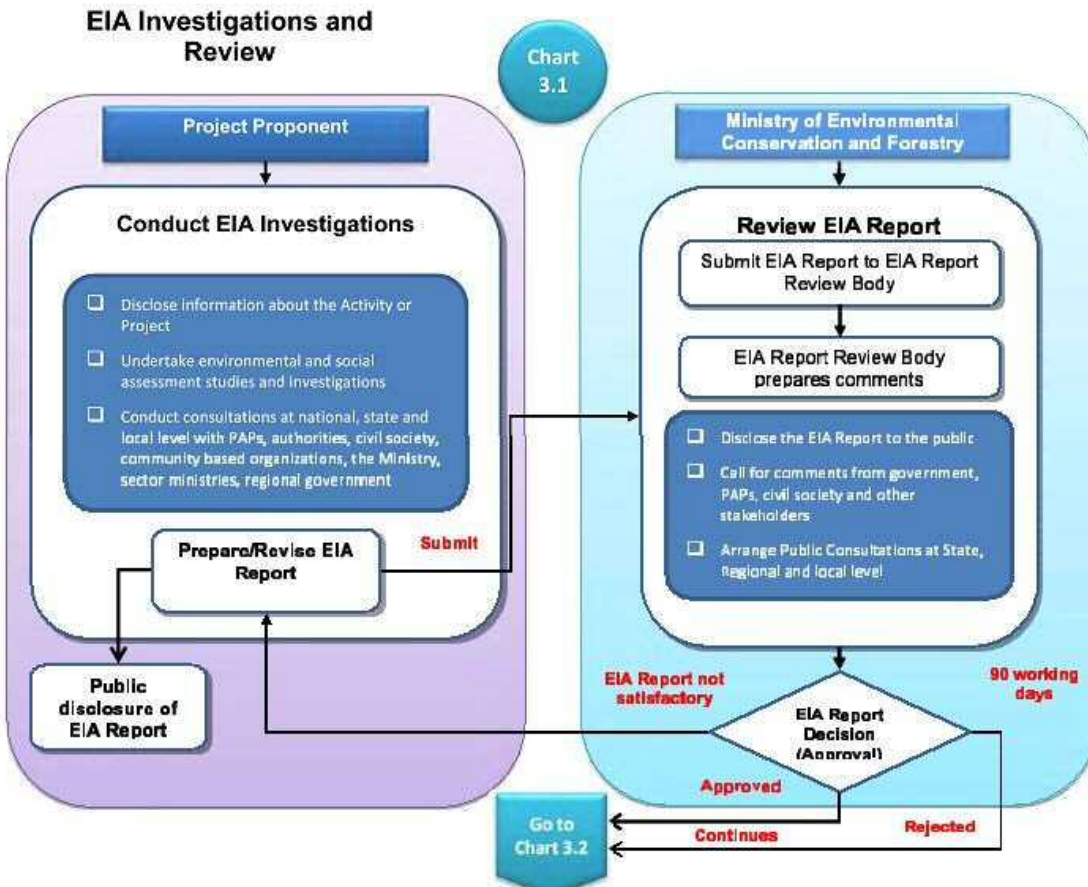
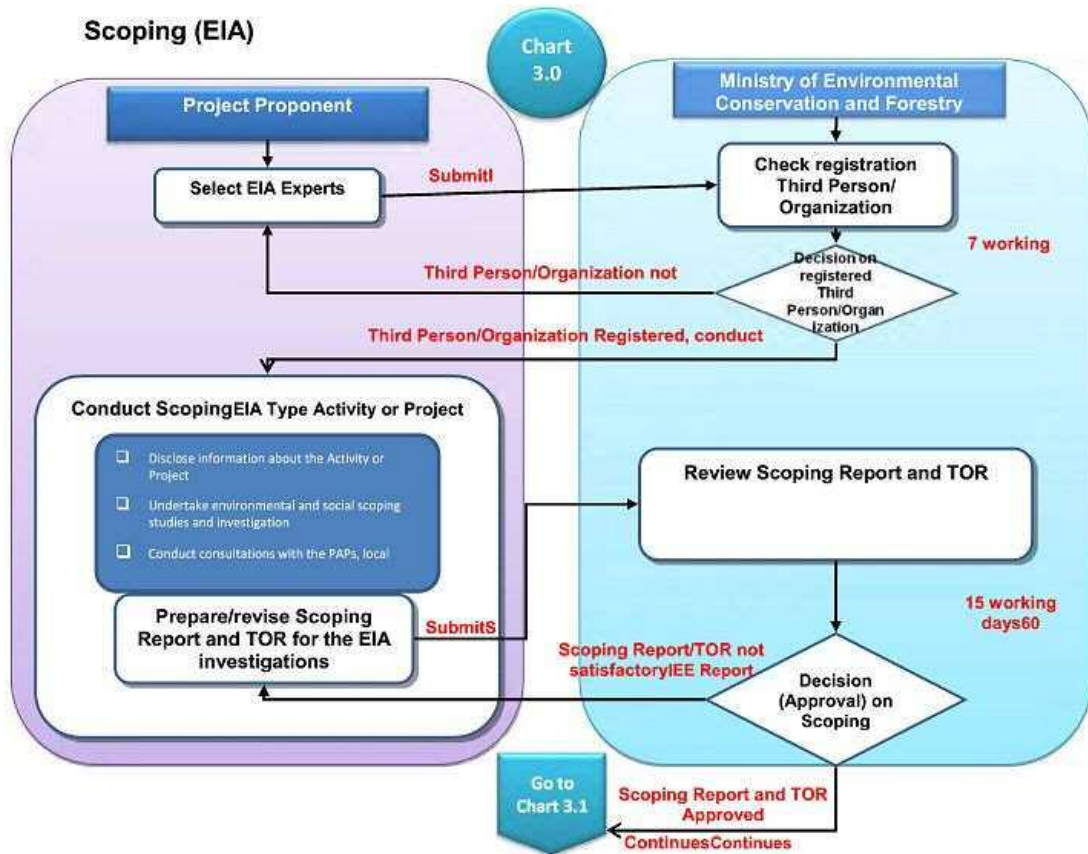
Chart 2.1

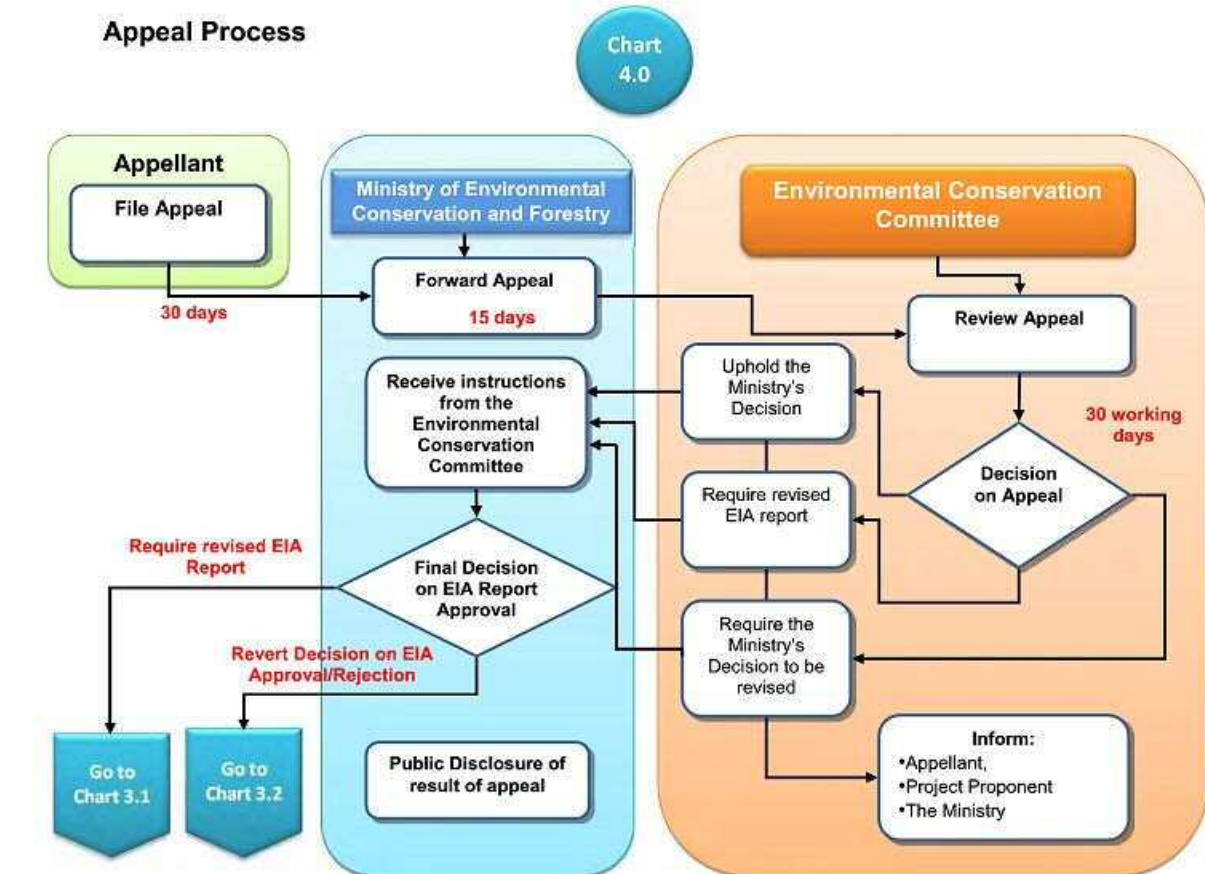
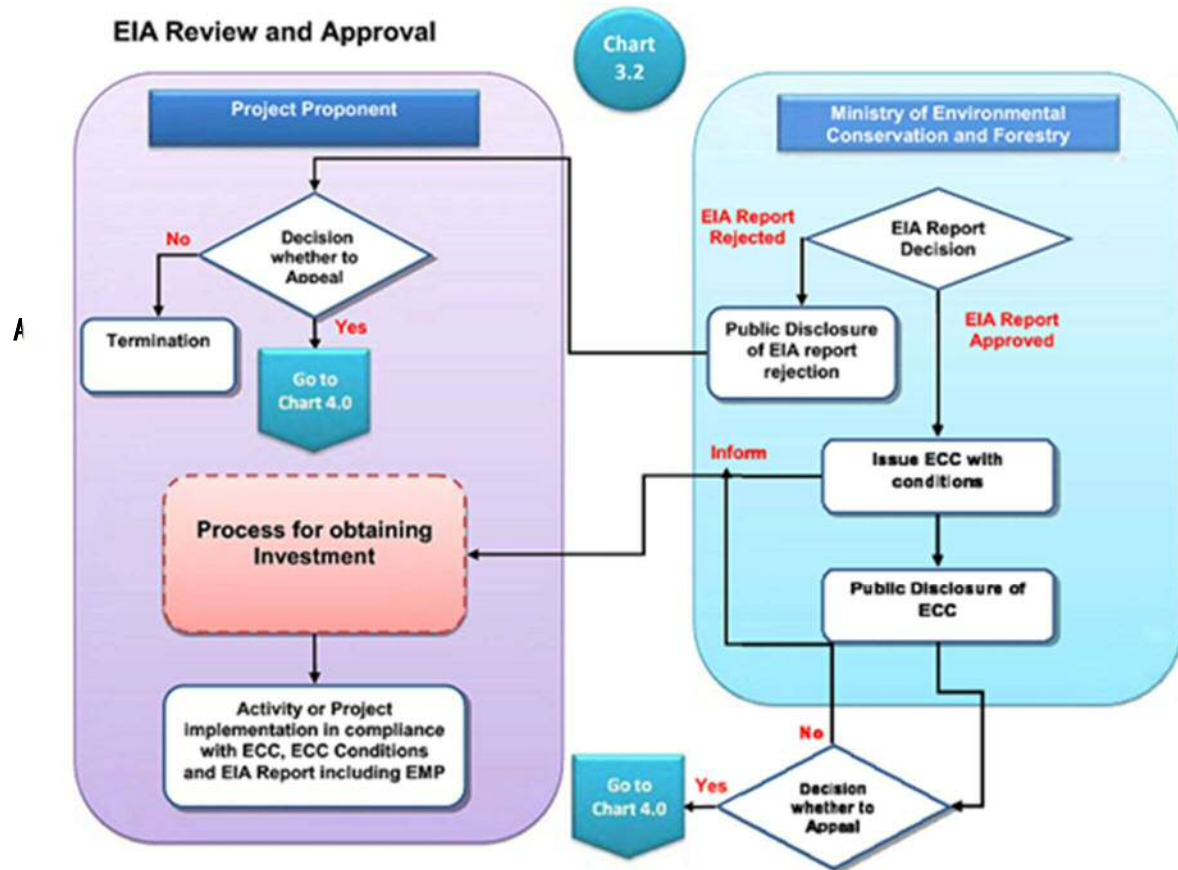


EMP Review and Approval

Chart 2.2







Appendix 7

Proposed Projects

APPENDIX 7 PROPOSED PROJECTS

7.1 Project for Strengthening Safe Horticulture Value Chain

Basic analytical equipment and other laboratory facility required for the PAL (Pesticide Analytical Laboratory) are shown in the table below with the cost estimated.

7.1.1 Equipment Required for the PAL

(1) Basic Analytical Equipment for the PAL

| No. | Equipment name | Donated by World Bank | Unit price | Quantity | Total Amount (JPY) |
|-----|--------------------------------------------------------|-----------------------|------------|----------|--------------------|
| 1 | Electric Balance | | 450,000 | 1 | 450,000 |
| 2 | Balance table | | 300,000 | 1 | 300,000 |
| 3 | Drying Oven | 2 | 174,000 | 1 | 174,000 |
| 4 | Incubator | | 300,000 | 1 | 300,000 |
| 5 | Tap type sieve shaker | | 490,000 | 1 | 490,000 |
| 6 | Rotary Evaporator | 3 | 1,950,000 | 3 | 5,850,000 |
| 7 | Freezer | | 340,000 | 1 | 340,000 |
| 8 | Ultrasonic washing machine | 1 | 90,000 | 1 | 90,000 |
| 9 | Freezer for sample preservation | 2 | 900,000 | 1 | 900,000 |
| 10 | Laboratory glassware | | | | |
| | Graduated cylinder with glass stopper | | | | |
| | Graduated cylinder with glass stopper 5ml 5pcs/case | | 5,600 | 2 | 11,200 |
| | Graduated cylinder with glass stopper 10ml 5pcs/case | | 5,800 | 2 | 11,600 |
| | Graduated cylinder with glass stopper 20ml 5pcs/case | | 7,200 | 2 | 14,400 |
| | Graduated cylinder with glass stopper 25ml 5pcs/case | | 7,700 | 2 | 15,400 |
| | Graduated cylinder with glass stopper 50ml 5pcs/case | | 8,000 | 2 | 16,000 |
| | Graduated cylinder with glass stopper 100ml 5pcs/case | | 10,100 | 2 | 20,200 |
| | Graduated cylinder with glass stopper 200ml 5pcs/case | | 10,900 | 2 | 21,800 |
| | Graduated cylinder with glass stopper 250ml 5pcs/case | | 11,400 | 2 | 22,800 |
| | Graduated cylinder with glass stopper 500ml 2pcs/case | | 8,900 | 2 | 17,800 |
| | Graduated cylinder with glass stopper 1000ml 2pcs/case | | 13,800 | 2 | 27,600 |
| | Beaker | | | | |
| | Beaker 30ml 72pcs/case | | 19,700 | 1 | 19,700 |
| | Beaker 50ml 72pcs/case | | 15,100 | 1 | 15,100 |
| | Beaker 100ml 36pcs/case | | 6,900 | 1 | 6,900 |
| | Beaker 200ml 36pcs/case | | 8,000 | 1 | 8,000 |
| | Beaker 300ml 24pcs/case | | 6,400 | 2 | 12,800 |
| | Beaker 500ml 12pcs/case | | 4,900 | 2 | 9,800 |
| | Beaker 1000ml 12pcs/case | | 9,200 | 2 | 18,400 |
| | Erlenmeyer flasks | | | | |

| No. | Equipment name | Donated by World Bank | Unit price | Quantity | Total Amount (JPY) |
|-----|---------------------------------------------------------|-----------------------|------------|----------|--------------------|
| | Erlenmeyer flasks 100ml 48pcs/case | | 14,800 | 1 | 14,800 |
| | Erlenmeyer flasks 200ml 24pcs/case | | 7,700 | 1 | 7,700 |
| | Erlenmeyer flasks 300ml 24pcs/case | | 9,200 | 1 | 9,200 |
| | Erlenmeyer flasks 500ml 12pcs/case | | 6,600 | 2 | 13,200 |
| | Erlenmeyer flasks 1000ml 6pcs/case | | 6,100 | 2 | 12,200 |
| | Round-bottom flasks 300ml 20pcs/case | | 12,800 | 2 | 25,600 |
| | Separating funnel | | | | |
| | Separator funnel, Globe shape, 100ml | | 6,500 | 2 | 13,000 |
| | Separator funnel, Globe shape, 200ml | | 7,600 | 2 | 15,200 |
| | Separator funnel, Globe shape, 300ml | | 8,100 | 2 | 16,200 |
| | Separator funnel, Globe shape, 500ml | | 9,100 | 2 | 18,200 |
| | Separator funnel, Globe shape, 1000ml | | 14,100 | 2 | 28,200 |
| | Funnel stand | | 1,900 | 5 | 9,500 |
| | Funnel | | | | |
| | Glass funnel 30mm | | 600 | 2 | 1,200 |
| | Glass funnel 45mm | | 650 | 2 | 1,300 |
| | Glass funnel 60mm | | 800 | 2 | 1,600 |
| | Glass funnel 75mm | | 900 | 2 | 1,800 |
| | Glass funnel 90mm | | 1,400 | 2 | 2,800 |
| | Pipette | | | | |
| | Measuring Pipette 0.5ml 10pcs/case | | 3,700 | 2 | 7,400 |
| | Measuring Pipette 1ml 10pcs/case | | 2,200 | 2 | 4,400 |
| | Measuring Pipette 2ml 10pcs/case | | 2,300 | 2 | 4,600 |
| | Measuring Pipette 3ml 10pcs/case | | 2,700 | 2 | 5,400 |
| | Measuring Pipette 5ml 10pcs/case | | 2,900 | 2 | 5,800 |
| | Measuring Pipette 10ml 10pcs/case | | 3,500 | 2 | 7,000 |
| | Volumetric pipets 15ml 5pcs/case | | 2,000 | 3 | 6,000 |
| | Volumetric pipets 20ml 5pcs/case | | 2,200 | 3 | 6,600 |
| | Volumetric pipets 25ml 5pcs/case | | 2,500 | 3 | 7,500 |
| | Volumetric pipets 30ml 5pcs/case | | 3,000 | 3 | 9,000 |
| | Brush for pipette 10pcs/pack | | 800 | 3 | 2,400 |
| | Pipette stand | | 7,800 | 3 | 23,400 |
| | Volumetric flasks | | | | |
| | Volumetric flasks, with glass stopper 5ml 10pcs/case | | 10,400 | 1 | 10,400 |

| No. | Equipment name | Donated by World Bank | Unit price | Quantity | Total Amount (JPY) |
|-----|--------------------------------------------------------|-----------------------|------------|----------|--------------------|
| | Volumetric flasks, with glass stopper 10ml 10pcs/case | | 10,400 | 1 | 10,400 |
| | Volumetric flasks, with glass stopper 20ml 10pcs/case | | 10,400 | 1 | 10,400 |
| | Volumetric flasks, with glass stopper 25ml 10pcs/case | | 10,400 | 1 | 10,400 |
| | Volumetric flasks, with glass stopper 50ml 10pcs/case | | 10,400 | 1 | 10,400 |
| | Volumetric flasks, with glass stopper 100ml 10pcs/case | | 11,400 | 2 | 22,800 |
| | Volumetric flasks, with glass stopper 200ml 5pcs/case | | 7,300 | 2 | 14,600 |
| | Volumetric flasks, with glass stopper 250ml 5pcs/case | | 8,600 | 3 | 25,800 |
| | Volumetric flasks, with glass stopper 500ml 2pcs/case | | 3,900 | 3 | 11,700 |
| | Volumetric flasks, with glass stopper 1000ml 2pcs/case | | 4,700 | 3 | 14,100 |
| | Glass rod | | | | |
| | Glass rod (ROD) 3mm 10pieces/case | | 2,270 | 2 | 4,540 |
| | Glass rod (ROD) 5mm 10pieces/case | | 3,200 | 2 | 6,400 |
| | Glass rod (ROD) 10mm 5pieces/case | | 4,320 | 2 | 8,640 |
| 11 | Cabinet | | 120,000 | 5 | 600,000 |
| 12 | Expendable materials | | 2,000,000 | 1 | 2,000,000 |
| | Subtotal 1 | | | | 12,205,280 |

(2) Other Laboratory Facility for the PAL

| No. | Equipment name | Donated by World Bank | Unit price | Quantity | Total Amount (JPY) |
|-----|----------------------------------|-----------------------|--------------------------|----------|--------------------|
| 13 | Storage room | | 225,000 | 3 | 675,000 |
| 14 | Fume hood with exhaust fan | | 4,240,000 | 5 | 21,200,000 |
| 15 | Laboratory table | | 900,000 | 12 | 10,800,000 |
| 16 | Laboratory table for instruments | | 500,000 | 6 | 3,000,000 |
| 17 | Water purification system | | 330,000 | 1 | 330,000 |
| 18 | Backup generator | | 2,577,143 | 1 | 2,577,143 |
| | Subtotal 2 | | | | 38,582,143 |
| | Total Amount | | (Subtotal 1 +Subtotal 2) | | 50,787,423 |

*Almost all of the cost were provided by one of Japanese private company.

*Several of them were collected from internet.

(<https://axel.as-1.co.jp/asone/g/NC61-9169-49/?cond=35-193798&cfom=A0011200&cate=AD>)

Furthermore, basic analytical equipment and other equipment for pesticide residue analysis in FSTLAP (Food Safety Testing Laboratory for Agriculture Product) are shown in the next table.

7.1.2 Equipment Required for the FSTLAP

(1) Basic Analytical Equipment for the FSTLAP

| No. | Equipment name | Unit price | Quantity | Total Amount (JPY) |
|-------------------|---------------------------------|------------|----------|--------------------|
| 1 | Food processor | 45,000 | 2 | 90,000 |
| 2 | Grain crusher | 20,000 | 2 | 40,000 |
| 3 | Homogenizer | 55,000 | 4 | 220,000 |
| 4 | Kiriyama Funnel | 10,500 | 10 | 105,000 |
| 5 | Filtration Flask, Bell Jar | 24,000 | 4 | 96,000 |
| 6 | Rotary Evaporator | 1,950,000 | 4 | 7,800,000 |
| 7 | Freezer for sample preservation | 900,000 | 2 | 1,800,000 |
| 8 | Ultrasonic washing machine | 90,000 | 2 | 180,000 |
| 9 | Laboratory glassware | | 1set | 711,280 |
| 10 | Expendable materials | | | 2,000,000 |
| Subtotal 1 | | | | 13,042,280 |

(2) Other Equipment for Pesticide Residue Analysis

| No. | Equipment name | Unit price | Quantity | Total Amount (JPY) |
|---------------------|-----------------------------------------------------------|---------------------------------|----------|--------------------|
| 11 | Gas chromatography/ Flame Photometer Detector(FPD) | 10,456,320 | 1set | 10,456,320 |
| 12 | Gas chromatography/Nitrogen phosphorus (NPD)or GC(FTD) | 9,896,880 | 1set | 9,896,880 |
| Subtotal 2 | | | | 20,353,200 |
| Total amount | | (Subtotal 1 +Subtotal 2) | | |

*Almost all of the cost were provided by one of Japanese private company.

*Several of them were collected from internet.

(<https://axel.as-1.co.jp/asone/g/NC61-9169-49/?cond=35-193798&cfrom=A0011200&cate=AD>)

7.2 Infrastructure Improvement Program for the Food Value Chain

Table 7.2.1 summarizes the length of rural roads controlled by Department of Rural Road Development (DRRD), as of the end of March 2018. Of the total length of 89,310.79 km, the majority is earth road with 52,566.33km (58.9%), followed by Macadam road with 12,386.95 km (13.9%), and motor bike track with 11,357 km (12.7%), and so on.

Table 7.2.1 Road List and Total Miles in all Region and State

| No | Region/ State | Concrete (km) | Asphalt (km) | Macadam (km) | Hard Road (km) | Earth (km) | Motor Bike Track (km) | Total (km) |
|-------------------|------------------|------------------|-----------------|------------------|-------------------|------------------|-----------------------------|------------------|
| 1 | Naypyitaw | 12.55 | 99.54 | 270.56 | 667.21 | 948.67 | 637.85 | 2,626.38 |
| 2 | Kachin | 11.72 | 147.27 | 543.15 | 349.35 | 1,927.56 | | 2,975.05 |
| 3 | Kayah | 10.70 | 67.10 | 193.54 | | 245.21 | 201.83 | 718.38 |
| 4 | Kayin | 32.98 | 149.84 | 241.55 | 192.68 | 1,294.84 | | 1,911.89 |
| 5 | Chin | 0.60 | 38.21 | 81.86 | | 3,844.50 | 3,710.36 | 7,675.53 |
| 6 | Sagaing | 61.90 | 446.10 | 1,653.45 | 1,248.93 | 8,992.12 | | 12,402.50 |
| 7 | Tanintharyi | 77.60 | 286.51 | 797.96 | 117.97 | 1,887.82 | | 3,167.86 |
| 8 | Bago | 60.68 | 240.44 | 970.69 | 1,865.05 | 3,649.64 | | 6,786.50 |
| 9 | Magway | 7.67 | 232.71 | 1,183.38 | 1,297.48 | 6,140.43 | 1,677.03 | 105,348.70 |
| 10 | Mandalay | 41.66 | 552.85 | 2,283.81 | 1,025.32 | 4,663.90 | | 8,567.54 |
| 11 | Mon | 127.53 | 372.16 | 80.63 | 189.30 | 787.72 | | 1,557.34 |
| 12 | Rakhine | 153.66 | 85.58 | 932.54 | | 1,325.73 | 344.66 | 2,842.17 |
| 13 | Yangon | 626.06 | 62.05 | 343.85 | 279.80 | 1,385.76 | 438.32 | 3,135.84 |
| 14 | Shan (South) | 1.29 | 329.96 | 892.51 | | 3,402.82 | 2,516.56 | 7,143.14 |
| 15 | Shan (North) | | 342, 5.00 | 503.01 | 342.31 | 6,568.54 | | 7,756.59 |
| 16 | Shan (East) | 0.40 | 88.80 | 190.08 | 9.51 | 924.79 | 1,831.04 | 3,044.62 |
| 17 | Irrawaddy | 345.88 | 47.41 | 1,224.38 | 256.81 | 4,576.28 | | 6,450.76 |
| Total | | 1,527.88 | 3,585.26 | 12,386.95 | 7,841.72 | 52,566.33 | 11,357.65 | 89,310.79 |
| Percentage | | 1.7% | 4.0% | 13.9% | 8.8% | 58.9% | 12.7% | 100.0% |

Source: DRRD head office, July, 2018 (Data as of March 2018)

The Team considers earth paved rural roads to be upgraded/ improved. The length of earth road in each potential area is shown in the second row of Table 7.2.2 from the left. Type of improvement / upgrading has to be identified by each target route through the Feasibility Study. So far, for rough cost estimation, the Team considers upgrading with highest unit cost; from earth to concrete pavement. Because of time constraint, it is difficult to estimate construction cost by each of potential project sites. Instead, the Team refers to unit cost of a similar project. There is on-going agriculture and rural development project in Shwebo area of Sagaing region supported by JICA, titled “Agriculture Income Improvement Project (AIIP)”. In the feasibility study of the AIIP project, unit construction cost of asphalt pavement was estimated based on the design standards of DRRD (See Attachment 7.1). Note that the unit cost is not

uniformly applicable for other regions in strict meaning, because there is region specific cost factors such as availability of construction materials. However, the Team applies the unit cost 122.61 million kyat per mile (equivalently 0.0586 million USD per km) for each of potential areas for this rough estimation. The third row from the left in Table 7.2.2 demonstrates the cost in the case of all earth roads to be upgraded to asphalt pavement.

Table 7.2.2 Rough Estimated Construction Cost per Potential Project Area

| | Length (km, Earth) (A) | Unit Price (Million USD/km) (B) | Construction Cost (million USD) (A) x (B) |
|--------------------|------------------------------|---------------------------------------|-------------------------------------------------|
| Bago (West + East) | 3,649.6 | 0.0586 | 213.9 |
| Magway | 6,140.4 | 0.0586 | 359.9 |
| Mandalay | 4,663.9 | 0.0586 | 273.3 |
| South Shan | 3,402.8 | 0.0586 | 199.4 |

Source: JICA Study Team

However, the total length of rural road should not include the roads that are not used as agriculture produce distribution. To exclude the length of roads using for non-agriculture purposes, the Team assumes that the ratio of highland and gardening place against the covered area is proportional to the length of rural roads that are used as horticulture crop distribution.

Table 7.2.3 Calculation of Highland and Garden Place Ratio Concerning Horticulture Crop Cultivation

| Potential Project Area | Total Covered Area (Sq km) *1 (A) | Cultivable Land (Sq km)*1 (B) | Coefficient of Horticulture Crop*2 (C) | Estimated Ratio of Highland and Gardening Place Concerning Horticulture Crop (A) x (B) x (C) |
|------------------------|--------------------------------------|----------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------|
| Bago (West + East) | 39,403 | 13,472 | 0.18 | 0.062 |
| Magway | 44,819 | 12,302 | 0.18 | 0.049 |
| Mandalay | 29,954 | 13,561 | 0.18 | 0.081 |
| Shan State | 155,796 | 14,034 | 0.18 | 0.016 |

Source: JICA Study Team

*1: Myanmar Agricultural Statistics (2006-2007 to 2015-2016); *2: Team's Calculation

For example, the Team estimated that around 0.062 point (6.2%) of the total road length with 3,649.6 km of earth road in Bago region, is related to horticulture transportation. Then, approximately 226.3 km (3,649.6km x 0.062) might be potential target earth roads of the Infrastructure Improvement Program of the FVC. Rough estimated construction costs of the Program is derived in the first row from the right in Table 7.2.4. The costs are ranging from 312 million Yen to 2,652 million Yen, on the average, 1,365 million Yen (11.0 million USD).

Table 7.2.4 Summary of Estimated Total Length and Construction Cost for Improvement/Upgrading of Rural Roads Related to Horticulture Crop Transportation

| Potential Project Area | Total Length, DRRD Controlled, Earth Pavement, (km) (A) | Unit Cost (million USD/km) (B) | Construction Cost (million USD) (A) x (B) | Construction Cost (million Yen) |
|------------------------|------------------------------------------------------------|-----------------------------------|----------------------------------------------|---------------------------------|
| Bago (West + East) | 226.3 | 0.0586 | 13 | 1,596 |
| Bago (Pyay) | 43.9 | 0.0586 | 3 | 312 |
| Magway | 300.9 | 0.0586 | 18 | 2,112 |
| Mandalay | 377.8 | 0.0586 | 22 | 2,652 |
| South Shan | 54.4 | 0.0586 | 3 | 384 |
| Average | 194.3 | - | 11 | 1,365 |

Source: JICA Study Team

Attachment 7.1: Unit Construction Cost of Asphalt Road (per mile)**[Rural Road in Shwebo Township]**

| Work Item | Quantity | Unit | Unit Price (kyat) | Cost (kyat) |
|----------------------------------------------------------------------------------------|---------------|----------------------------|-------------------|--------------------|
| 1. Road Work | | | | |
| 1-1. Asphalt Pavement | | | | |
| 1-1-1. Pavement of 5th Layer | | | | |
| (1) Volume Quantity of Material | | | | |
| a) Volume Quantity of 2" to 4" Chipping | 101 | sud | - | |
| b) Volume Quantity of 6" to 9" Chipping (before breaking into 2" to 4" chipping) | 121 | sud | 60,000 | 7,260,000 |
| c) Volume Quantity of Filling Material | 25 | sud | 96,000 | 2,400,000 |
| (2) Breaking 2" to 4" Chipping from 6" to 9" Chipping at Construction Site (by Manual) | 121 | sud | 10,000 | 1,210,000 |
| (3) Spreading and Mixing of 2" to 4" Chipping & Filling Material (by Manual) | 120 | sud | 2,500 | 300,000 |
| (4) Compaction of 2" to 4" Chipping & Filling Material (by Road Roller) | 120 | sud | 32,623 | 3,914,760 |
| 1-1-2. Pavement of 4th Layer | | | | |
| (1) Volume Quantity of 1" to 2" Chipping | 350 | sud | 75,000 | 26,250,000 |
| (2) Spreading of 1" to 2" Chipping (by Manual) | 333 | sud | 2,500 | 832,500 |
| (3) Compaction of 1" to 2" Chipping (by Road Roller) | 333 | sud | 32,623 | 10,863,459 |
| 1-1-3. Asphalt Coating of 3rd Layer | | | | |
| (1) Hot Bitumen Surface Dressing (1st Coat: 40Lb per %sq-ft) | 1.0 | mile | 8,116,990 | 8,116,990 |
| (2) Hot Bitumen Surface Dressing (2nd Coat: 30Lb per %sq-ft) | 1.0 | mile | 6,086,990 | 6,086,990 |
| 1-1-4. Pavement of 2nd Layer | | | | |
| (1) Volume Quantity of 1/2" to 3/4" Chipping | 58 | sud | 100,000 | 5,800,000 |
| (2) Spreading of 1/2" to 3/4" Chipping (by Manual) | 56 | sud | 2,500 | 140,000 |
| (3) Compaction of 1/2" to 3/4" Chipping (by Road Roller) | 56 | sud | 32,623 | 1,826,888 |
| 1-1-5. Asphalt Coating of 1st Layer | | | | |
| (1) Hot Bitumen Surface Dressing (1st Coat: 30Lb per %sq-ft) | 1.0 | mile | 6,086,990 | 6,086,990 |
| 1-2. Shoulder | | | | |
| (1) Volume Quantity of Kanker | 656 | sud | 25,000 | 16,400,000 |
| (2) Laying and Compaction of Shoulder | 625 | sud | 7,500 | 4,687,500 |
| 2. Other Related Works | 1 | set | - | 20,435,215 |
| | | | | 122,611,292 |
| Unit Construction Cost = | 122.61 | (million kyat/mile) | | |

Source: Feasibility Study of Agriculture Income Improvement Project