Eastern Indonesia-Agribusiness Development Opportunities

Stakeholder Consultation Workshop

Maize

Kuta, Bali, Indonesia

25th April, 2013

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Collins Higgins Consulting

Eastern Indonesia Agribusiness Development Opportunities (EI-ADO)

- Research commissioned by ACIAR, implemented by Collins Higgins Consulting and Indonesian partners
- EI-ADO project objectives:
  - Identify five commodity value chains linked to NTB, NTT and East Java with most potential to increase income of poor farmers
  - Identify opportunities and interventions with most potential for improving the efficiency, competitiveness and income of poor farmers
- Information and recommendations from EI-ADO study to inform DFAT in the design of the Australia Indonesia Partnership for Decentralisation – Rural Economic Development Program (AIPD-Rural).
  - $112 million DFAT funded development program targeting Eastern Indonesian

AIPD-Rural

- **Goal:** Increase the net income of 1 million poor male and female farmers by at least 30% by 2022 (300,000 of which should be reached by 2017)
- **Objective**: to increase the competitiveness of poor male and female farmers
- **Strategy:** To address the “systematic” constraints of the agricultural sectors that are important to the poor in selected districts
- **Outcomes**:
  - Improved farm practices
  - Increased access to input and markets
  - An improved sub-national business enabling environment
- Approach: Market Development or M4P

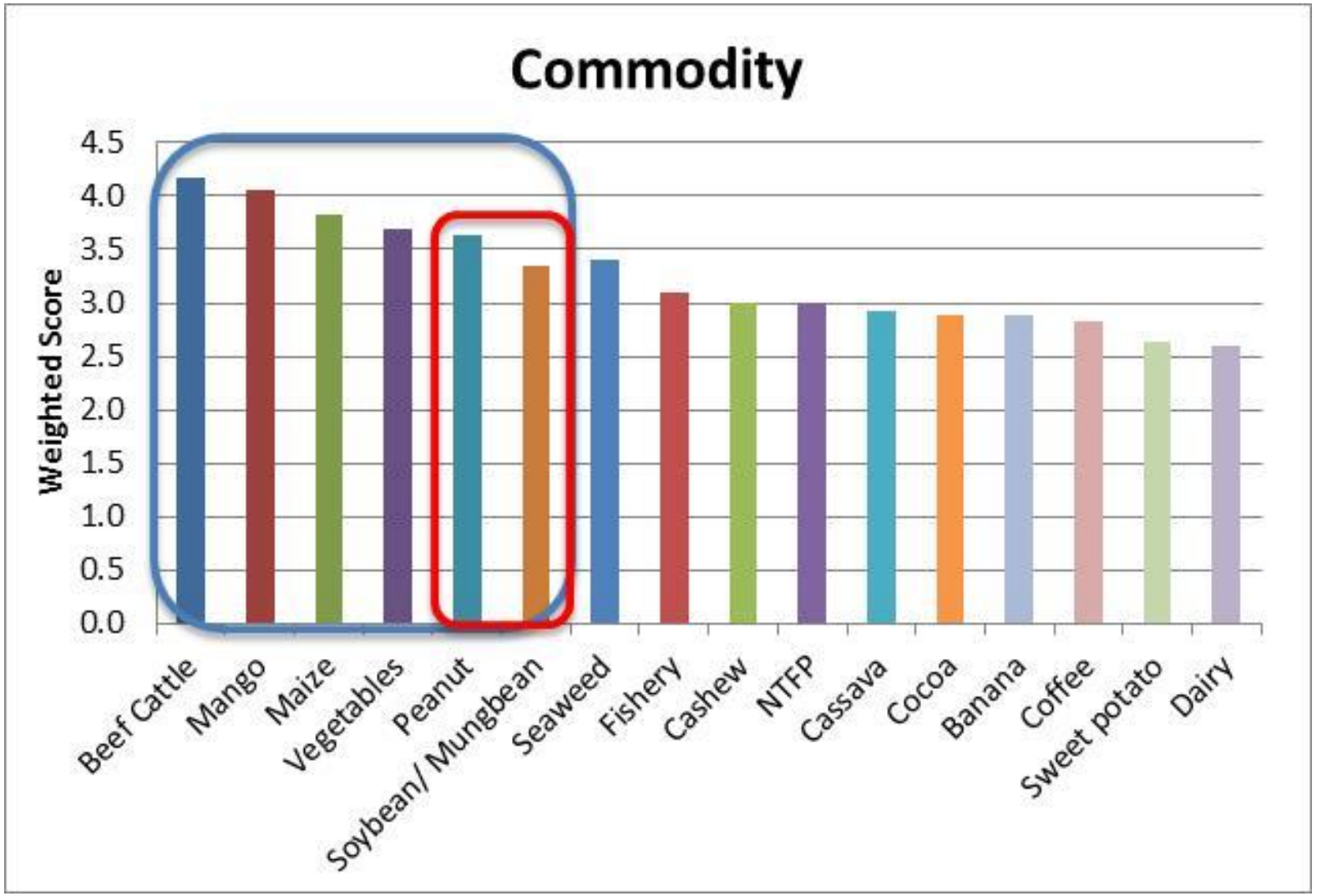
EI-ADO Methodology

- Initial identification of 32 commodities
- Reference Group selected down to 16 commodities
- 16 commodity literature reviews preformed
- Provincial and Reference Group consultation for commodity prioritization
- Identification of 5 priority commodities for detailed value chain studies.

1. Beef	
2. Legumes	Soybean, mungbean, peanut
3. Mango	
4. Maize	
5. Vegetables	Chilli, shallot, tomato & potato

Commodity Prioritisation

Commodities with most potential to increase income of the poor



Maize Presentation

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Project Approach and Key Findings

Project Approach

- Maize study team
  - Jaclyn Flewelling, Value Chain Specialist / Team Leader
  - Paul Fox, International Commodity Specialist
  - William Ruscoe, National Commodity Specialist (NTT)
  - Ketut Puspadi (BPTP, Mataram), Damianus Adar (Undana Kupang), Abu Zaenal Zakariya (Malang), and Teddy Kristedi (ACIAR)
- Field interviews with actors throughout value chain
  - Identified key constraints in competitiveness at each level, and contacts to develop potential intervention strategies

Project Approach and Key Findings

Summary of Interviews Conducted in the Maize Value Chain

	Input Supplier	Seed producer	FGD	Farmers	Retailers	Traders	Feed mills	Processors	Poultry Farm	Finance	Research	Govt.	Total
NTB													
Mataram												1	**1**
E. Lombok	2					2	1						**5**
Bima			1	5		1							**7**
Dompu	4			1		4							**9**
EJ													
Surabaya												1	**1**
Sidoarjo							2						**2**
Mojokerto		1		2									**3**
Kediri		2		2		2						1	**7**
Trenggalek				2		1	2					1	**6**
Malang	1	1		1		1		2			1		**7**
NTT													
Kupang	2	3	1	2	2	1		1	1			1	**14**
E. Flores	1			2	1	1			1	1		1	**8**
TTS	1				1	1						1	**4**
TTU	2		2	5								1	**10**
Belu		2			2	1							**5**
International Maize Conference, Gorontalo													
		2				2	1				11	2	18
Total	**13**	**11**	**4**	**22**	**6**	**17**	**6**	**3**	**2**	**1**	**12**	**10**	**107**

Project Approach

Rationale for Areas Visited

- **In East Java**:
  - province with highest level of maize production,
  - ubiquitous presence of maize processors (animal feed mills)
- **In NTB:**
  - features the highest increase in maize production (maize production area doubled in NTB from 2007 to 2011)
  - provincial government priority to increase maize production
- **In NTT:**
  - primarily subsistence, rain-fed maize production

Key Findings

Source: FAOSTAT 2010

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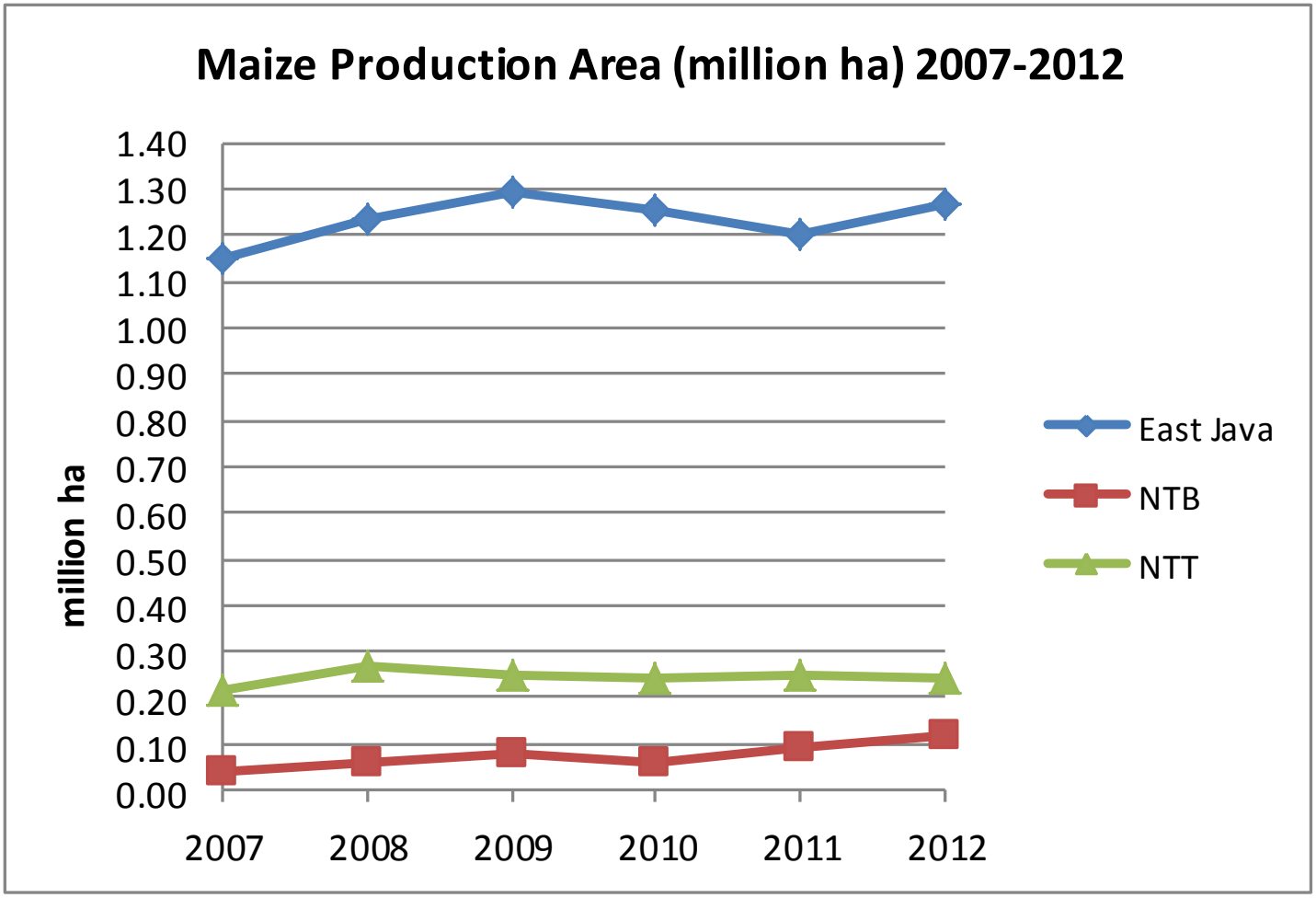
Key Findings



Source: BPS (National Statistics Bureau 2012)

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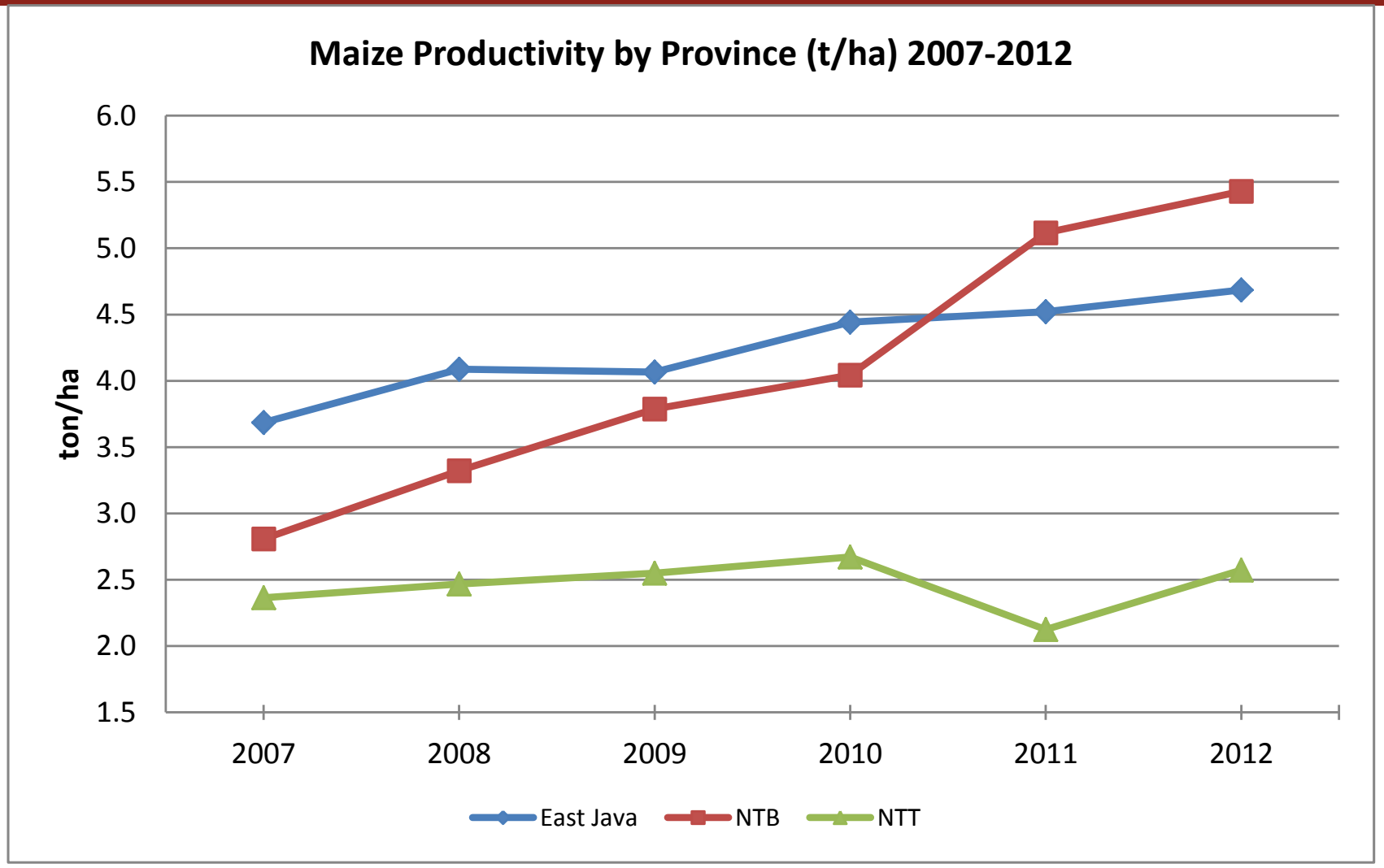
Key Findings



Source: BPS (National Statistics Bureau 2012)

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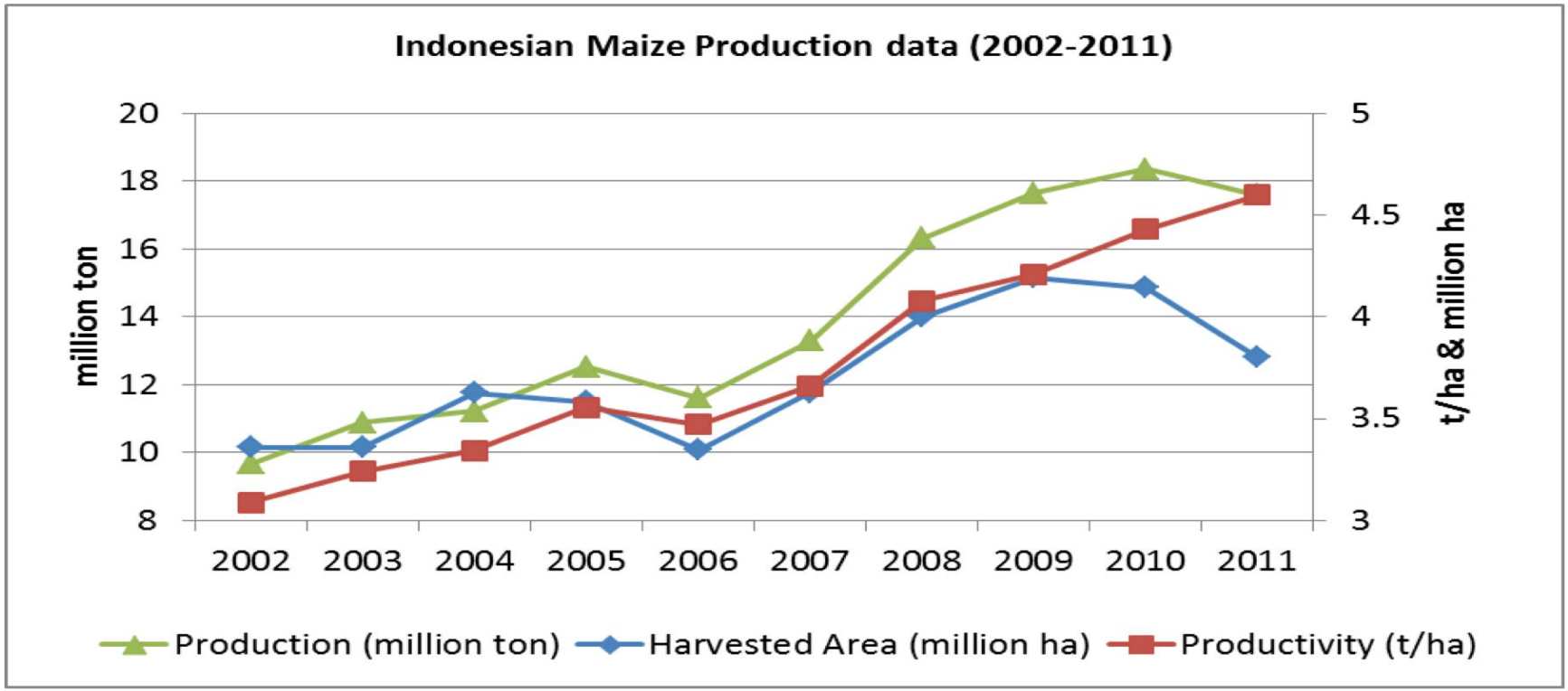
Key Findings

	Provincial Maize Production Ranking 2008-2011							
	Area (ha)		Productivity (t/ha)		Production (t)		% National production	
	2008	2011	2008	2011	2008	2011	2008	2011
EJ	1	1	11	10	1	1	31.0%	30.9%
NTB	12	10	16	5	12	10	1.2%	2.6%
NTT	5	6	24	28	7	8	4.1%	3.0%
Note: 33 Provinces in total								
Source: Indonesian Ministry of Agriculture 2012								

Overview of the Maize Sector in Eastern Indonesia

- Local production increased but insufficient to meet growing demand of animal feed mills
  - supply of maize is highly seasonal; concentrated within 3 months of the year



Source: Dr Haryono, Director General of IAARD, Presentation at International Maize Conference 2012.

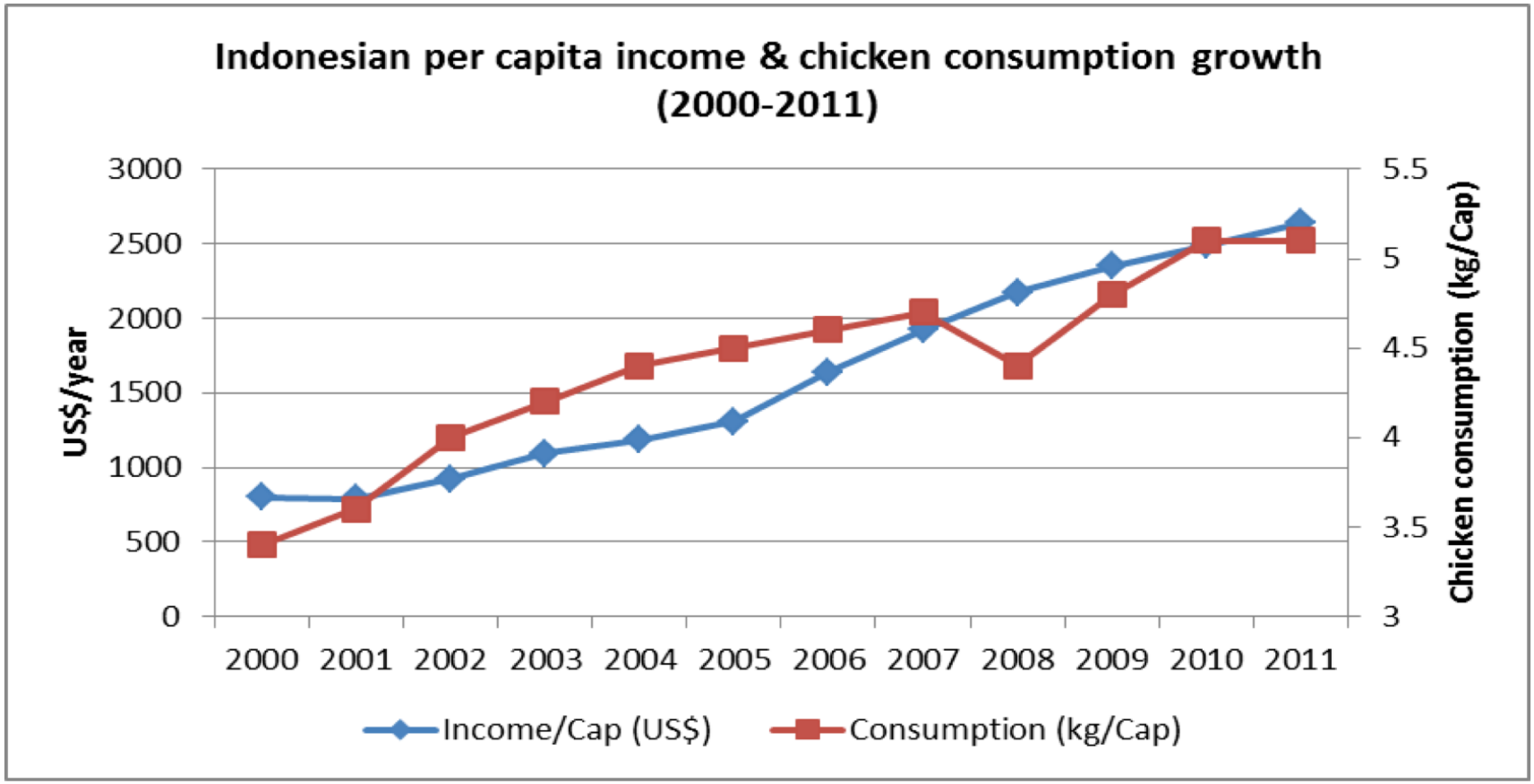
Key Findings - Imports

- Indonesia is net importer of maize:
- In 2011, India 37 percent, Argentina 34 percent, the United States 11 percent and Brazil 9 percent

Source: FAOSTAT and MOA combined

Key Findings

- Close correlation between per capita income increases in Indonesia and growth in consumption of poultry
  - local poultry industry is driver of demand for animal feed



Source: BPS & FAO

Key Findings

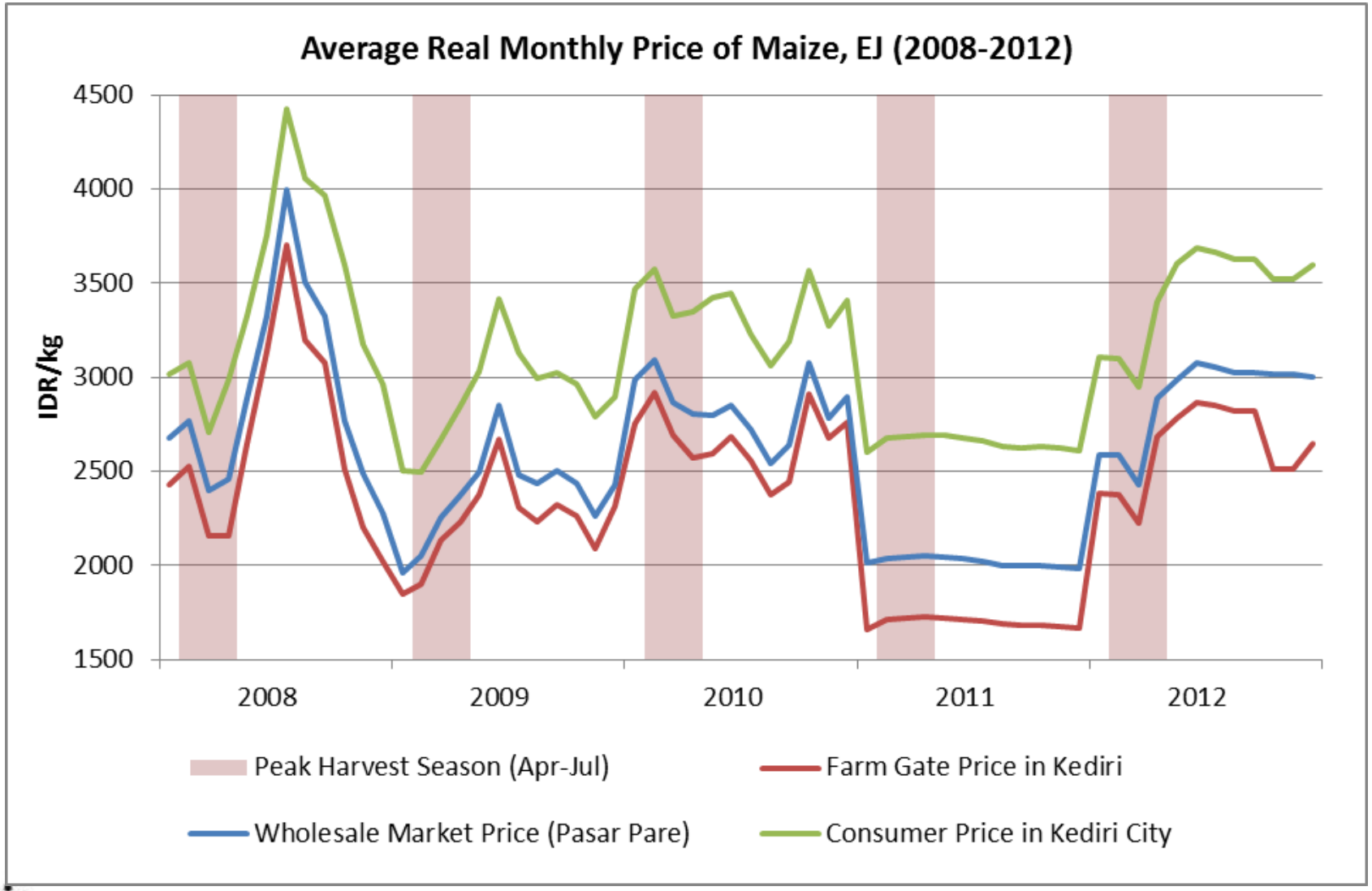
- Market for maize driven by increased demand for animal feed (maize is primary local ingredient in animal feed rations)

Table 1 Standard Animal Feed Ingredients and Sourcing

No.	Feed Ingredient	Local sources (as a %)	Imported
1	Maize	90 - 95	5 - 10
2	Fish Meal	5 - 10	90 - 95
3	Meat and Bone Meal	0	100
4	Soybean Meal	0	100
5	Rapeseed Meal	0	100
6	Corn Gluten Meal	0	100
7	Feed Additive	0	100
8	Rice Bran	100	0
9	Copra Meal	100	0
10	Palm Kernel Meal	100	0

Source: Indonesian Feed Millers Association (GPMT)

Key Findings - Prices



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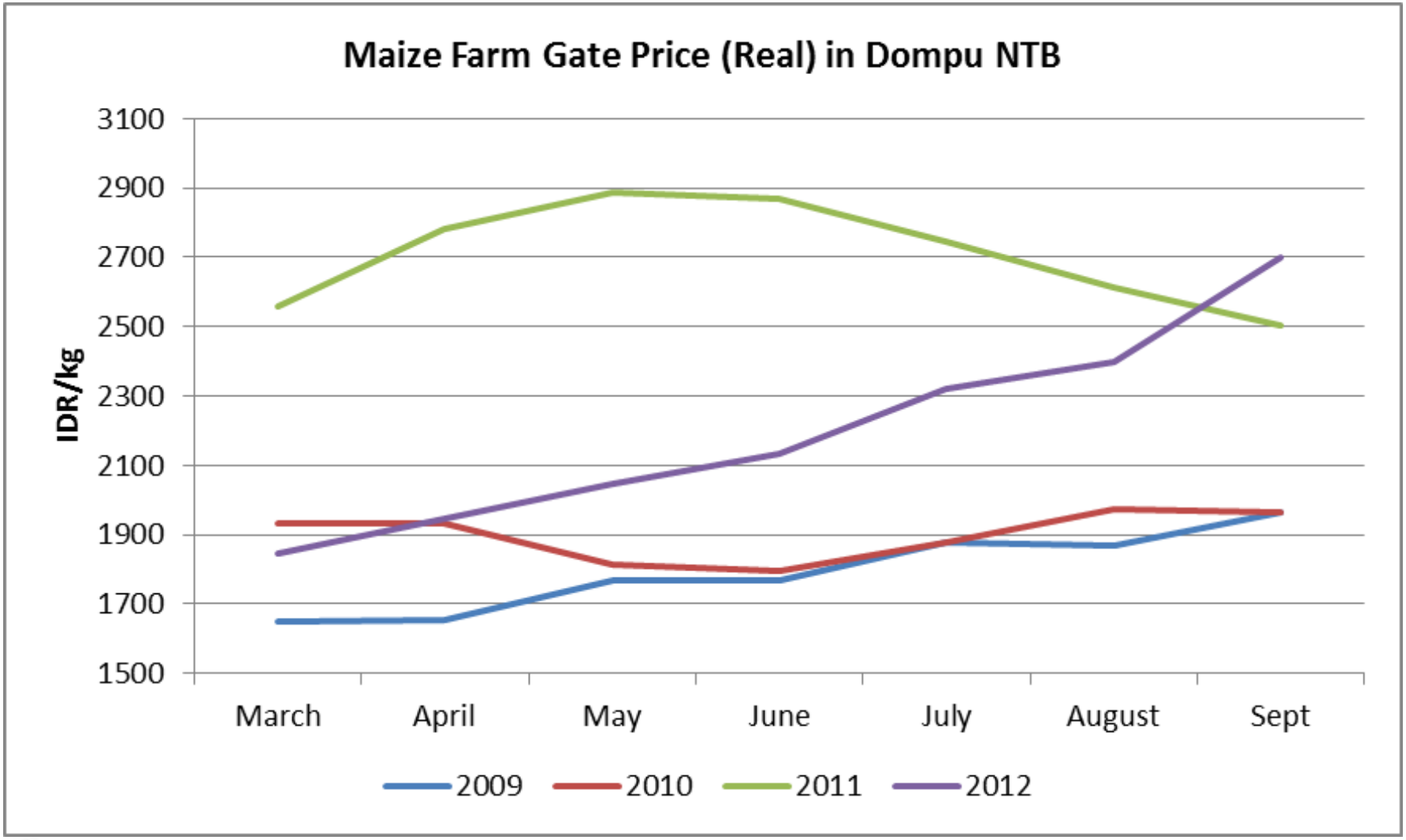

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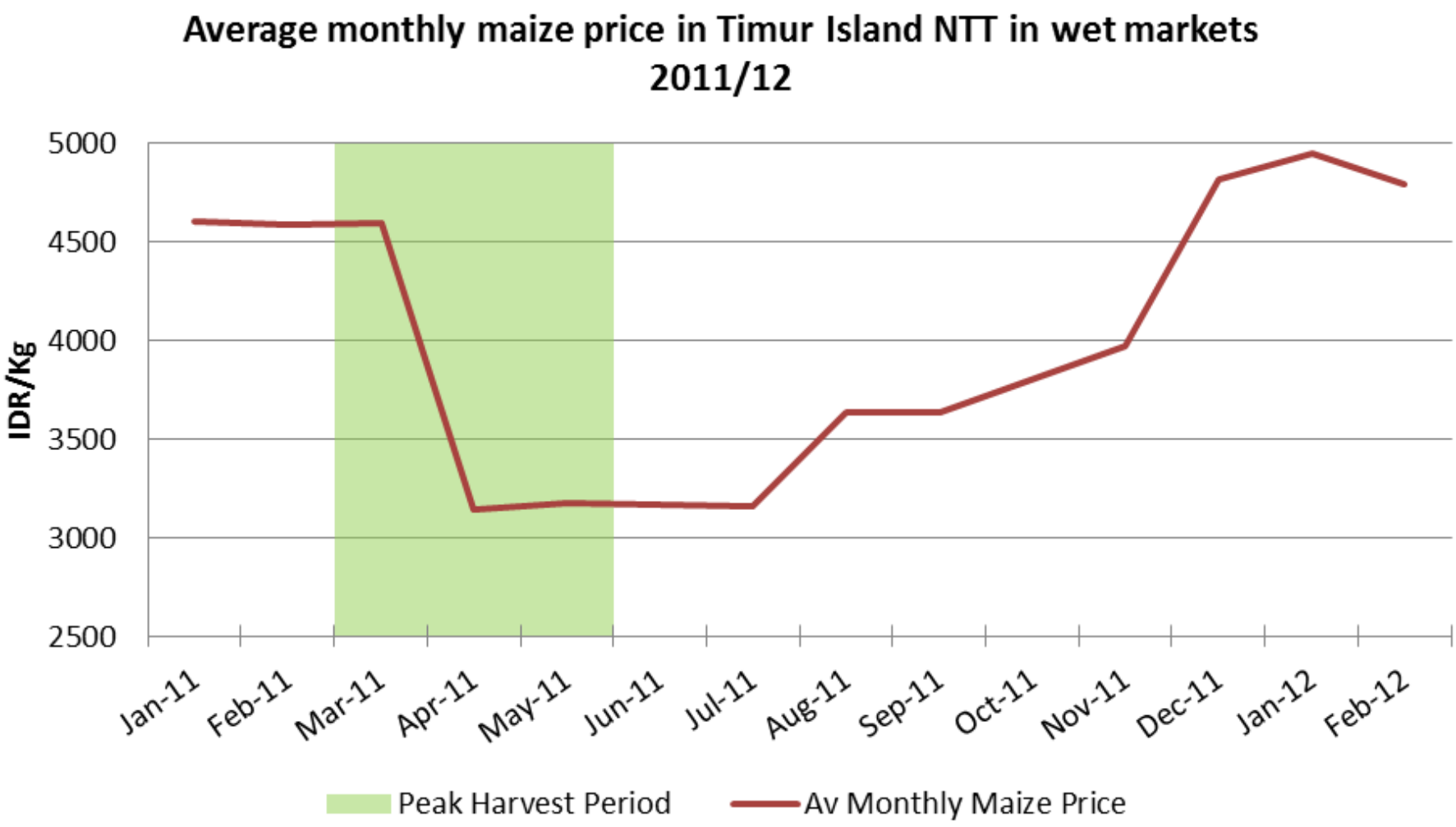


Key Findings - Quality

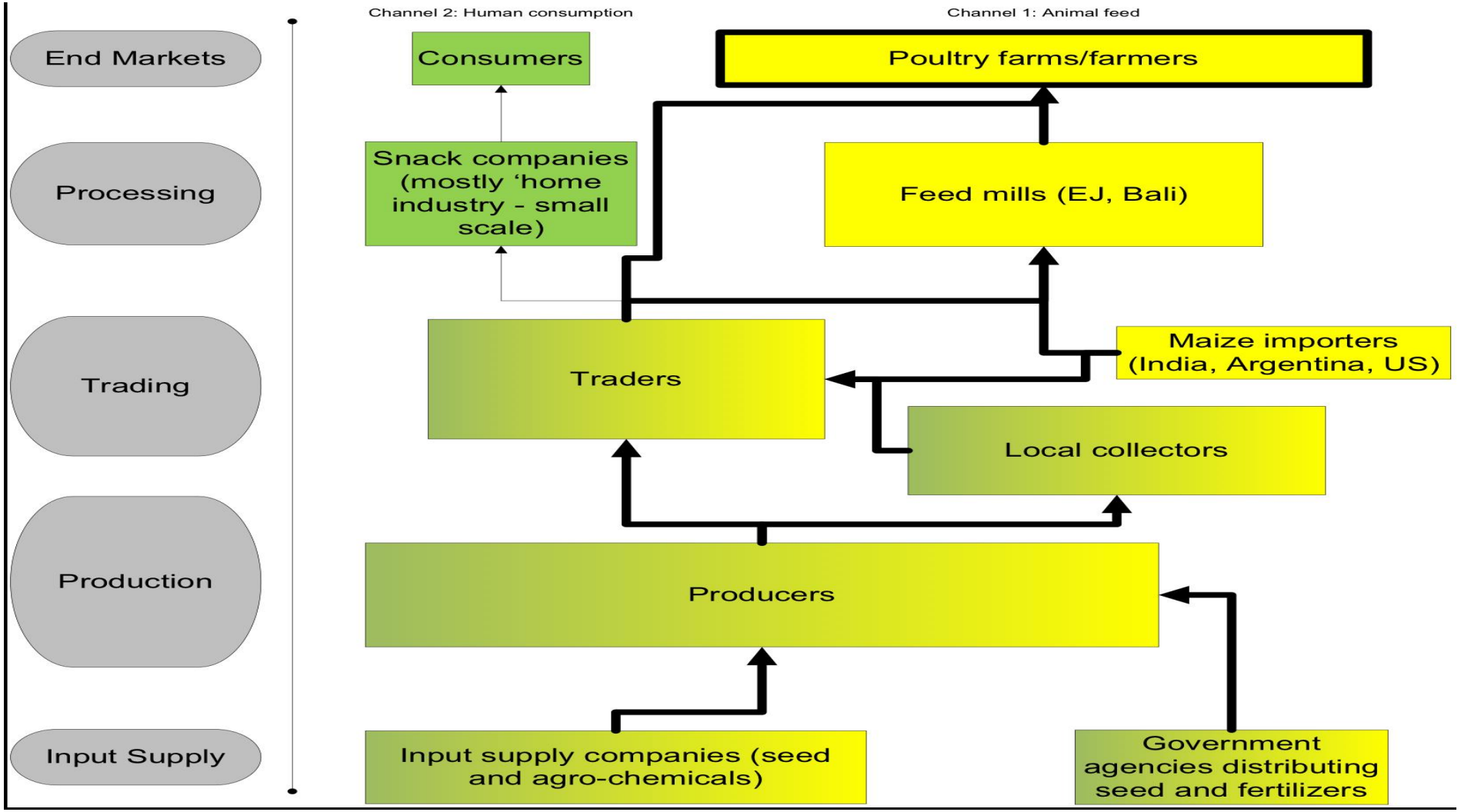
Illustrative Parameters for Different Grades of Maize

Parameters	Grade A	Grade B	Grade C
Insect	None		
Moisture	Max 15%	Max 28%	Max 28%
Foreign Material	Max 1%	Max 2%	Max 2%
Broken Kernel	Max 2%	Max 3%	Max 4%
Moldy Kernel	Max 2%	Max 5%	Max 7%
Dead Kernel	Max 3%	Max 5%	Max 7%
Aflatoxin	Max 50 ppb	Max 100 ppb	Max 150 ppb

Source: Based on data presented by QC Feed Technology CPI Surabaya; similar to PT. Agrico International East Java (July 2012)

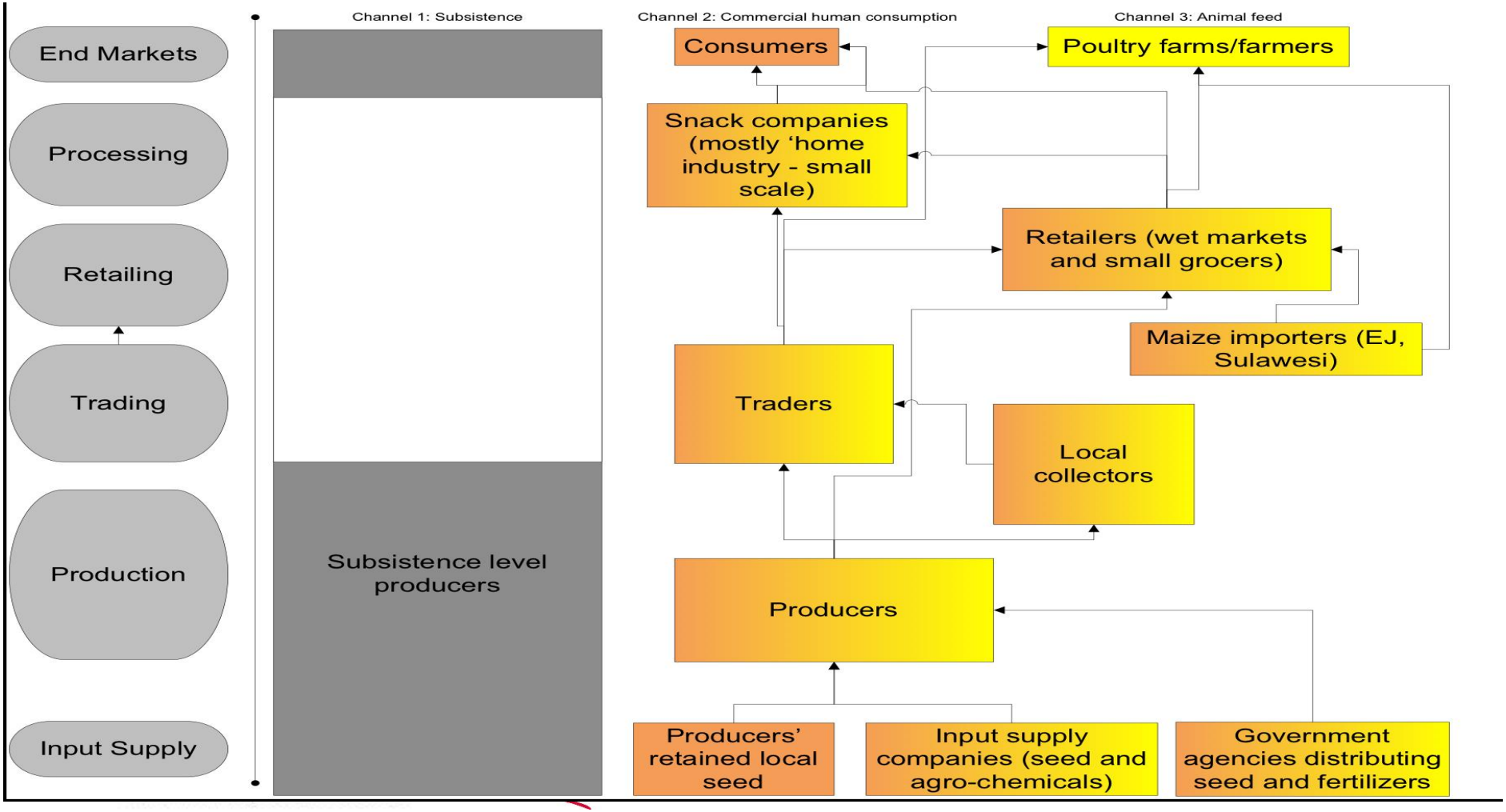
Overview of the Maize Sector in Eastern Indonesia

- Value Chain Map (EJ & NTB): most maize from NTB & EJ for animal feed channel



Overview of the Maize Sector in Eastern Indonesia

- Value Chain Map (NTT): primarily subsistence maize farming; small/growing local commercial maize demand for human consumption but limited flow for animal feed



Key Findings

Key Findings

- Maize is 2nd most important cereal crop (after rice) in Indonesia and priority crop for government in target provinces
- Demand for maize in Indonesia shifted from domestic human consumption to animal feed, especially for poultry industry
- Unmet demand for by local animal feed mills (installed capacity of 18.5 MTs but only operating at 77–80% capacity)
  - correlation between increased per capita income and growth in per capita consumption of chicken in Indonesia

Key Findings

- Most important product standard is moisture content (MC)
  - most farmers/collectors/traders lack (or do not use) improved technologies and methods to effectively dry maize,
  - buyers apply “penalty” or “discount” based on MC level, yet almost all maize is sold regardless of MC

- There is a lack of appropriate storage facilities at farm and collection level
  - This has the direct effect of increasing MC and aflatoxin levels →health risk for consumers
  - Puts pressure on the farmer to sell rather than store, explaining the broad price fluctuations with each harvest

Key Findings

Constraints	Market-Based Solution (MBS)	Existing/ Potential MBS Providers
Farmers lack technical knowledge (e.g. planting, use of agro-chemicals, post-harvest handling) limiting yields and income	1. Provision of technical information for farmers on production and post-harvest handling to increase yields and income	*input supply manufacturers, wholesalers, and retailers*
Many farmers in target areas, especially in more remote areas, lack access or not informed about improved maize seed varieties	2. Access to improved seed varieties for farmers, such as varieties with resistance to downy mildew	*seed companies*
Farmers lack input credit for seed, fertilizer, herbicide, etc. As a result, economic returns per hectare not optimized and income from maize is limited	3. Access to input credit for maize farmers	*Wholesalers, Feed Mills, Financial institutions*
Most farmers, collectors and traders lack equipment and facilities to effectively dry maize. Also lack effective tools and methods for testing moisture content of maize	4. Access to: a) appropriate and affordable crop drying technologies, and; b) tools and methods for maize moisture measurement.	*agricultural equipment suppliers*
Farmers lack access to/training in storage methods and appropriate technologies for maize. Subsistence level farmers in NTT face losses (up to 50%) due to poor post-harvest storage conditions	5. Access to and training in storage methods and appropriate technologies for maize	*Input suppliers, agricultural equipment suppliers*

General Questions

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Income Impact Matrix – Criteria

1. Potential to increase income of households

Consider

- What is the technical feasibility of this intervention to increase prices, yields or reduce cost of production for individual poor farmers, traders, wholesalers and retailers?
- What is the potential for this intervention to contribute to the AIPD-Rural goal of increasing household income by 30%?

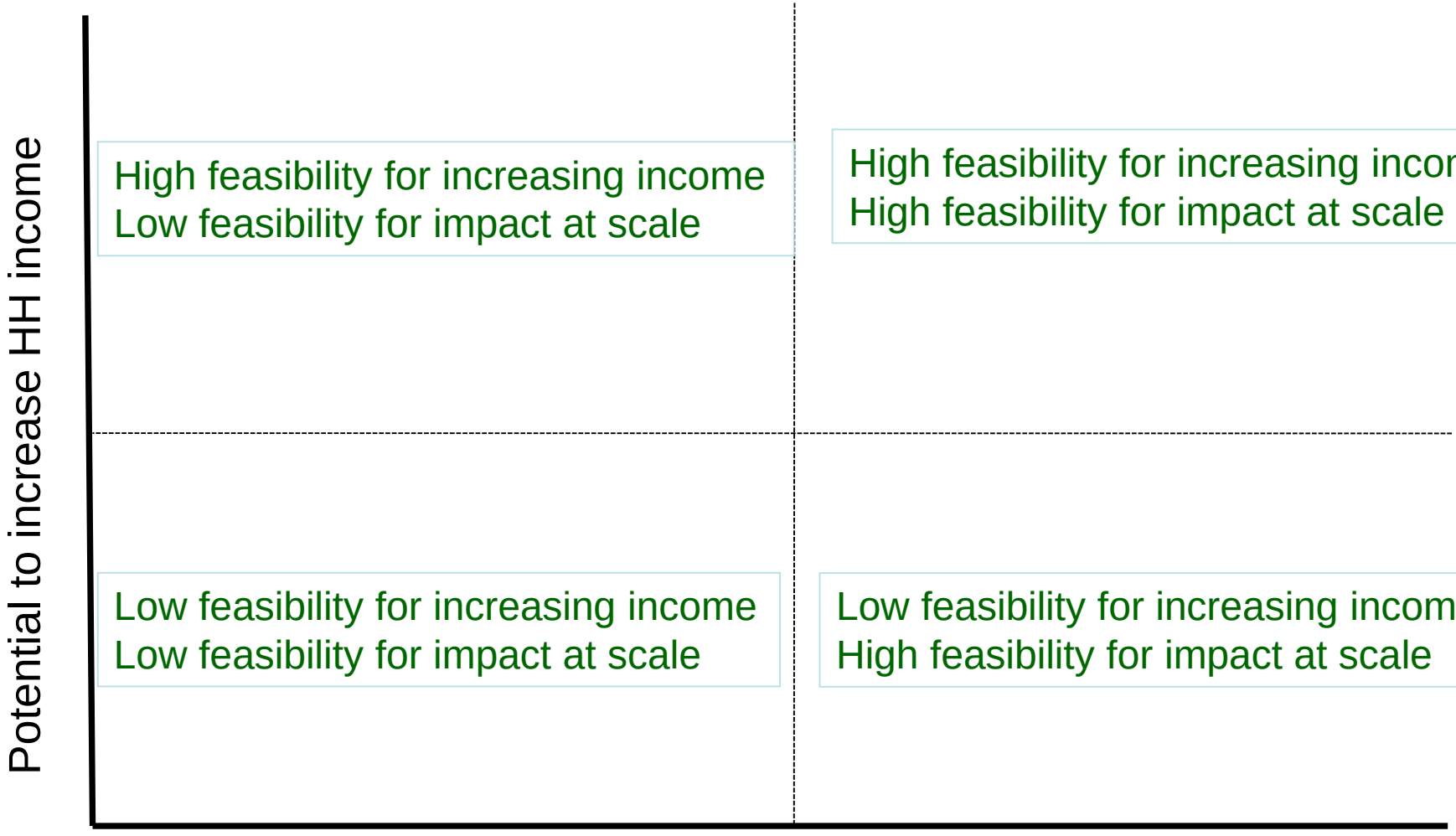
Income Impact Matrix – Criteria

2. Potential to implement, scale up and benefit large numbers of poor households

Consider

- What is the feasibility of implementing and scaling out this intervention, so that it will benefit a large number of farmers and poor households over the long term?
- What is the potential for this intervention to contribute to the AIPD-Rural goal of benefiting 300,000 households by 2017?

Income Impact Matrix



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Proposed Interventions

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Key Interventions

Overview of Proposed Intervention Areas
(Possible Market-based Solutions)

Assist / support / build the capacity of Lead Firms to:

1) Provide technical information for farmers on production and post-harvest handling to increase yields and income
2) Provide access to affordable, improved seed varieties for farmers, such as those with resistance to downy mildew and hybrids for higher yields
3) Provide access to: a) appropriate and affordable crop drying technologies, and; b) tools and methods for maize moisture measurement

Intervention Area 1: Production & Post Harvest

Provide technical information for farmers on production and post-harvest handling to increase yields and income

- Rationale:
  - Farmers lack technical knowledge which limits yields and income
  - Government extension not able to satisfy need for technical information and training, nor equipped to do so

- Proposed Providers:
  - Input supply manufacturers, maize wholesalers, retailers, feed mills

Intervention Area 1

- Challenges:
  - Targeted providers' staff not well equipped with technical knowledge and skills to advise farmers. Geographic coverage for many providers also limited
  - Some farmers unable to read information provided in training materials

- Incentives:
  - Input suppliers have incentive to provide MBS and expand their distribution networks and increase sales
  - Buyers and mills can develop new and improved sources of supply
  - Farmers have incentive to increase productivity and income

Intervention Area 1

Possible Impacts

- Illustrative Facilitation Activities:
  - Assist input supply companies, maize wholesalers, retailers, and feed mills (MBS providers) to improve and expand dissemination of production and post-harvest handling information to farmers

- Possible Impact:
  - Estimated 20,000 maize farmers in target districts with greater applied technical knowledge on production practices, and increased yields and income

Intervention Area 2: Improved Seed Varieties

Provide access to affordable, improved seed varieties for farmers (ex. Hybrids and those with resistance to downy mildew) for higher yields

- Rationale
  - Majority of farmers in the target areas, especially in more remote areas, lack access to or are not well informed about improved maize seed varieties

- Proposed Providers:
  - Private sector seed companies

Intervention Area 2

- Challenges:
  - Some private sector seed companies lack distribution networks to reach farmers in more remote areas; staff also lack skills in training and extension for farmers
  - Difficult to compete with government subsidised seed
  - Developing new and improved seed varieties can take several years

- Incentives:
  - Companies can increase sales by expanding distribution networks and offering new products to satisfy farmer needs
  - Farmers can reduce loss and increase income with better seed varieties

Intervention Area 2

Possible Impacts

- Illustrative Facilitation Activities
  - Promote activities of private sector seed and input supply companies to develop new products adapted to small-scale growers, introduce new varieties, build staff expertise, expand distribution networks, and promote their products and services

- Possible Impact
  - Estimated 40,000 maize farmers in target districts can benefit from access to affordable, improved seed varieties, and increased yields and income

Intervention Area 3: Drying Technologies/Moisture

Provide access to: a) appropriate and affordable crop drying technologies, and; b) tools and methods for maize moisture measurement

- <u>Rationale</u>
  - Moisture level for feed maize in Indonesia is high (17-20%) and effectively drying maize is essential to prevent germination, insect infestation once in storage
  - Most farmers, collectors and traders lack equipment and facilities to effectively dry maize grain and for testing moisture content

- <u>Proposed Provider:</u>
  - Feed Mills, Traders, Agricultural equipment suppliers

Intervention Area 3

- Challenges:
  - Farmers' lack incentives to decrease MC; maize paid by weight
  - Traders hesitant to invest in drying facilities, if only for one crop

- Incentives:
  - Potential for collectors and traders to increase income by avoiding penalties for moisture levels above acceptable levels

Intervention Area 3

Possible Impacts

- Illustrative Facilitation Activities
  - Support learning/exposure visits for traders, agricultural equipment suppliers, and/or mills (MBS providers) in EJ and NTB to identify appropriate drying and moisture testing technologies (such as flatbed dryers)
  - Support these market actors to carry out demonstration/information sessions for farmers and collectors.

- Possible Impact:
  - Can increase competitiveness of maize value chain in Indonesia and will impact on all value chain actors. If millers able to source local maize they reduce imports
  - Ultimately increasing sales for local farmers and traders alike

Feasibility of Proposed Interventions

- Ultimate feasibility of proposed activities (and implementation details) must still be determined
  - Need more in-depth discussions with targeted market actors themselves
  - Proposed providers of MBS need to take full ownership and responsibility for proposed initiatives
- Any illustrative facilitation activities should be vetted with market actors to get feedback on what is feasible or not

Identified Risks / Weaknesses

- Value chain analysis and incremental program design is ongoing process that must continue into implementation
  - More in-depth discussions with targeted market actors need to take place
  - Some of these market actors include:
    - input supply companies and distributors
    - feed mills in Java
    - Indonesian Feed Millers' Association
    - agricultural equipment manufacturers and suppliers
    - financial institutions and others in value chain providing credit to farmers
    - companies offering drying services
    - IFC PENSA

Gaps and Future Research

- Research for Development Interventions
  - Understand why farmers reject appropriate storage technologies when they could benefit from improved yields and food insecurity (esp NTT)
  - Determine whether airtight storage has been introduced with demonstrations/field trials of modern varieties

- Aflatoxin (AF)
  - AF poses challenge for maize value chain but not clear that market actors have sufficient commercial incentives to address issue

Key Interventions Summary

Summary of Proposed Intervention Areas
(Possible Market-based Solutions)

Assist / support / build the capacity of Lead Firms to:

1) Provide technical information for farmers on production and post-harvest handling to increase yields and income
2) Provide access to affordable, improved seed varieties for farmers, such as those with resistance to downy mildew and hybrids for higher yields
3) Provide access to: a) appropriate and affordable crop drying technologies, and; b) tools and methods for maize moisture measurement