MACRO ENVIRONMENT CHANGES AND THEIR IMPACTS ON VALUE CHAIN DEVELOPMENT IN INDONESIAN AGRICULTURE SECTORS

by
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Outline

- Introductory Remarks
- Macro environment changes
- Impact of macro changes on agri-food value chain: Focus on dairy industry
- Conclusion

Introductory remarks

"It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change"

"Bukan spesies yang paling kuat yang dapat bertahan, bukan pula yang paling pintar, tetapi yang paling responsif menyesuaikan diri terhadap perubahan"

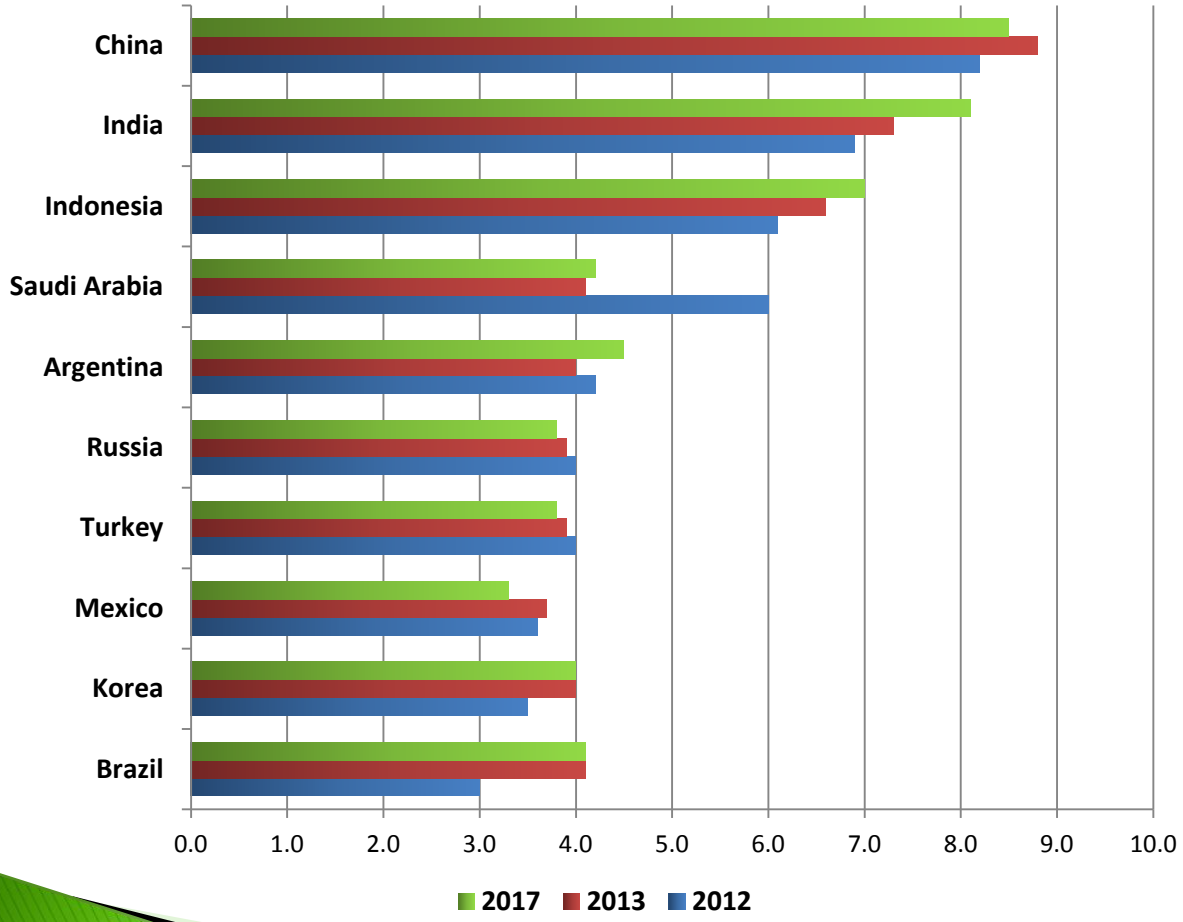
Charles Darwin

Macro Environment Changes in the Indonesian Economy

- Macrotrends
  - Changes in social and economics at macro-level

- Important macro changes:
  - Rapid economic and income growth
  - Urbanization
  - Globalization of trade and FDI

Rapid economic and income growth: Indonesia Context

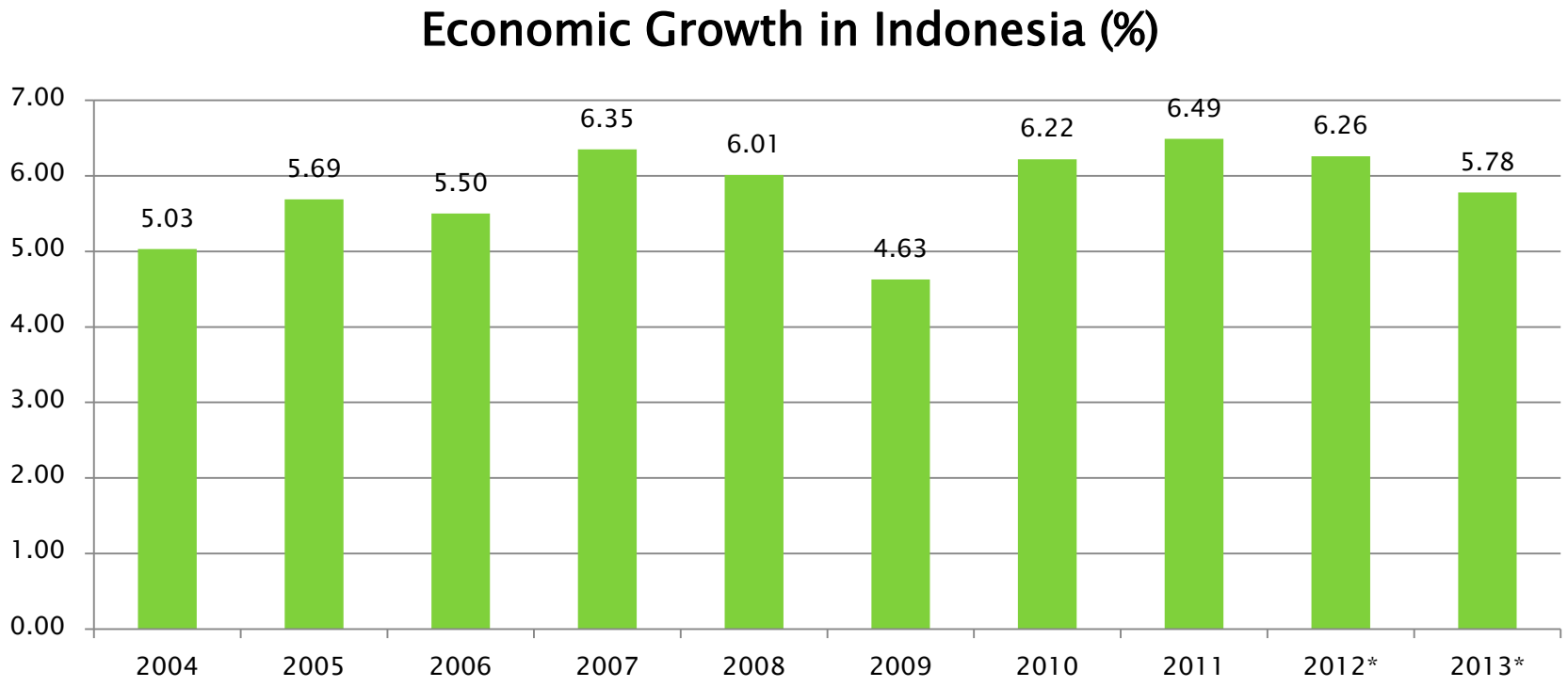


- **Indonesia is the Second Fastest Growing Economy** among G20 Countries in 2012
- The IMF projects Indonesia will be at **the top 3 fastest economic growths** among G20 countries.

Source: International Monetary Fund; *World Economic Outlook Database*, April 2012 in Ichwan (2013)

Rapid economic and income growth: Indonesia Context

- GDP grew more than 5% over the past 10 years (except in 2009)



Note: *Preliminary Report

Source: BPS, 2014

Rapid economic and income growth: Indonesia Context

Per Capita GDP in Indonesia increased in 2004-2013

Year	Per Capita GDP in IDR (current market price)	Per capita GDP in IDR (constant market price)
2004	10,479,588	7,561,380
2005	12,483,884	7,878,428
2006	14,816,401	8,195,865
2007	17,290,031	8,596,355
2008	21,364,534	8,990,403
2009	23,880,878	9,281,301
2010	27,028,695	9,703,465
2011	30,658,976	10,184,549
2012*	33,531,355	10,671,025
2013*	36,508,486	11,134,018

Note: *Preliminary Report

Source: BPS, 2014

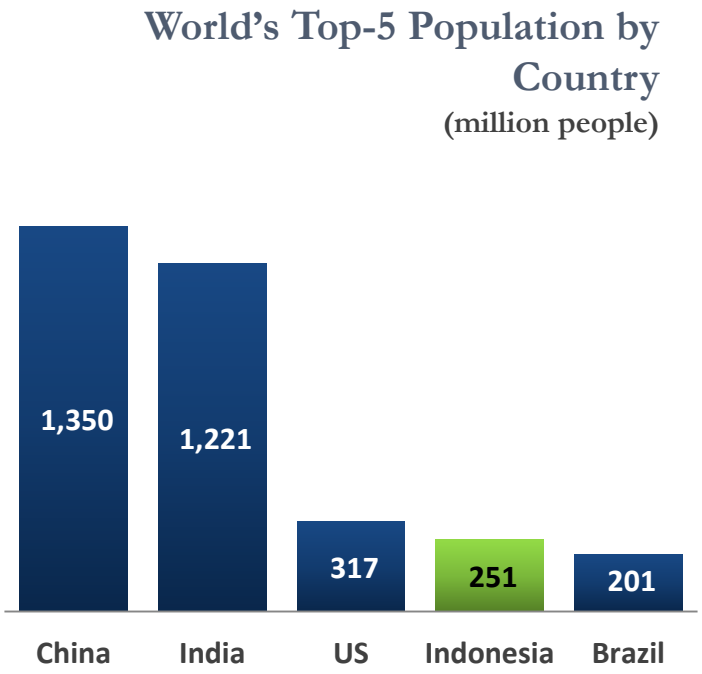
Rapid economic and income growth: Indonesia Context

- **Increasing of number of population in middle income**
  - per capita expenditure per day USD 2-20
- In 2003 about 37.7% of total population in Indonesia was in the middle income class
- In 2010 the total population in the middle income class has reached 56.5%
- It is expected that the number of population in middle income will increase to be **70%** in 2015.

Sources: Bank Indonesia and BPS, 2012

Urbanization: Indonesia Context

- **Huge Population and Demographic Bonus**: Big Market



In 2013, Indonesia ranks the **4th most populous country** in the world.
Source: Central Intelligence Agency US, 2013

Indonesia's population covers **more than 39%** of total population of **10 Southeast Asian countries**.
Source: ASEAN Community in Figures 2011, Ichwan (2013)

Urbanization: Indonesia Context

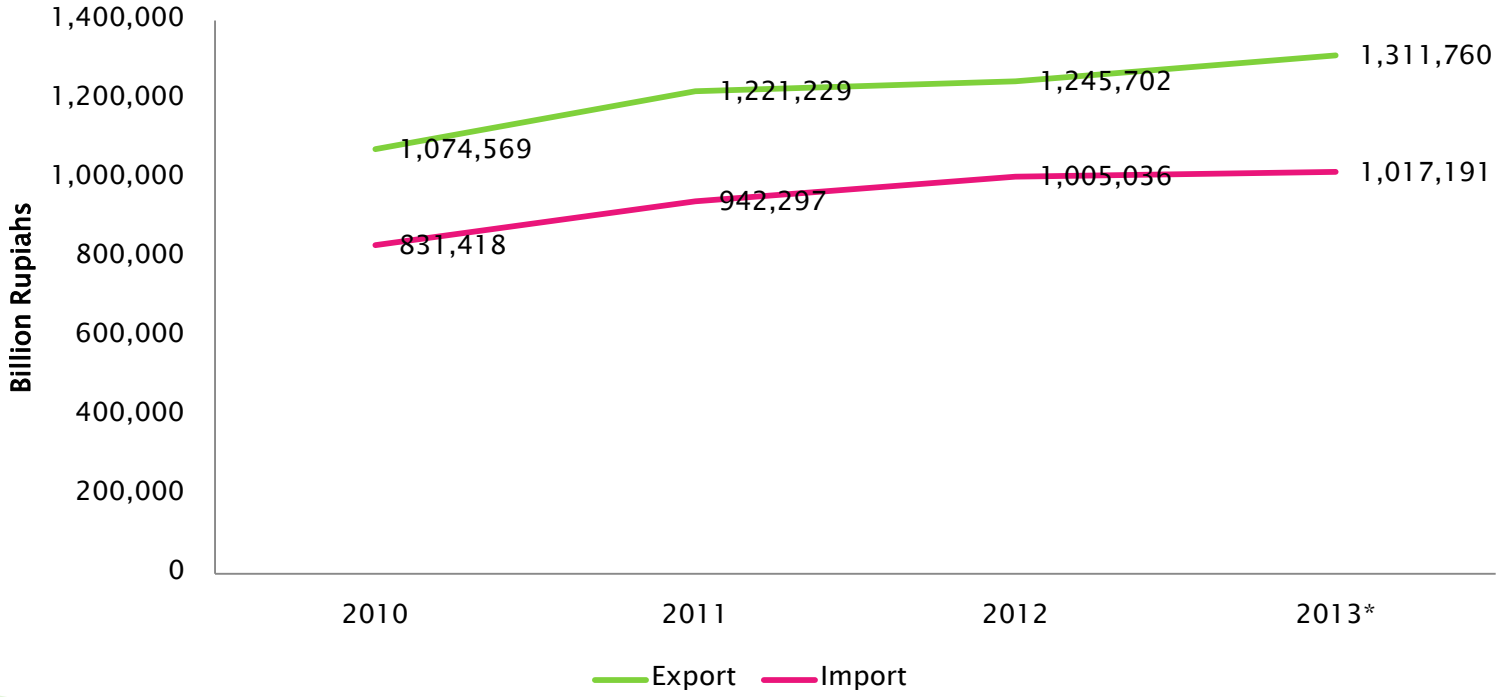
- **Population in Indonesia increased significantly** in1995 –2010, and is projected to continue increasing until 2030
- **The population in cities** grew from 49.8 in 2011 to **63.4% in 2030**, producing 86% of GDP.
- More women participating in labor market, particularly in urban area

Year	Number of Population (Thousand)	% population living in urban area
1995	194,755	
2000	206,265	
2010	238,519	49.8
2015	255,462	53.3
2020	271,066	56.7
2025	284,829	60.0
2030	296,405	63.4

Source: BPS, 2014

Globalization of trade and FDI : Indonesia Context

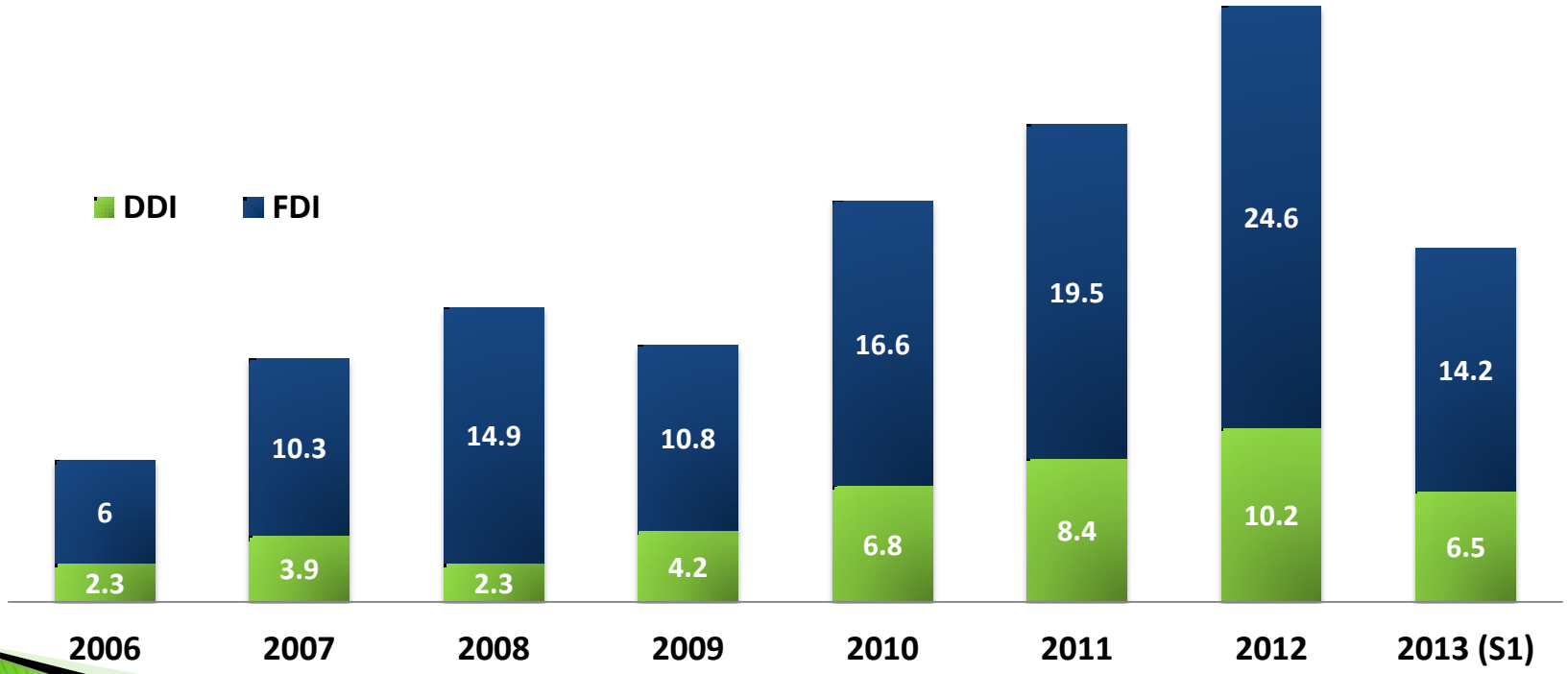
- Indonesia has participated actively in International trade
- The value of export and import increased in 2010-2013



Source: BPS, 2014

Globalization of trade and FDI : Indonesia Context

- Overall investment realization in Indonesia 2006-2013 (see figure). (The value is in $US Billion)
- FDI (Foreign Direct Investment) dominated compared to DDI



Note: in 2013, only included data in semester 1

Source: Ichwan, 2013

Impact the Macro Changes on Agri-food Value Chain

The changes of macro environment are leading to transformation of food supply system

- **Rapid economic and Income growth** led to dramatic shift of population **diets** away from staples towards HVAPs
  - HVAPs: agricultural products with a high economic value per kilogram, per ha or per calorie' (Gulati et al., 2005). Meat, milk, eggs, and fresh fruit and vegetable are examples of HVAPs.

Product Category	2007	2008	2009	2010
Food				
Stapple crops	10.15	9.57	8.86	8.89
Fish	3.91	3.96	4.29	4.34
Meat	1.95	1.84	1.89	2.10
Egg and Milk	2.97	3.12	3.27	3.20
Vegetables	3.87	4.02	3.91	3.84
Fruits	2.56	2.27	2.05	2.49
Oil and fats	1.69	2.16	1.96	1.92
Processd food	10.48	11.44	12.63	12.79
Others	11.66	11.79	11.76	11.86
Total food	49.24	50.17	50.62	51.43
Total Non food	50.76	49.83	49.38	48.57
Total	100	100	100	100

In Indonesia, the share of average expenditure per capita per month tended to reduce for staple crops in 2007-2010.

Source: BPS, 2014

The changes of macro environment are leading to transformation of food supply system

- **Urbanization**
  - more women participating in labor market increases opportunity cost of women's time and their incentives to seek shopping convenience and processed foods to save cooking time (Regmi and Dyck, 2001).
- **Liberalization FDI**
  - Increase the number of modern markets: supermarkets & modern food processors
  - **Supermarkets**:
    - Pandin (2009): From 2004 to 2008 the numbers of hypermarket outlets increased from 34 to 130; supermarkets from 956 to 1,447; and convenience stores (mini-markets) from 5,604 to 10,289.
    - Natawidjaja et al. (2007):t supermarkets accounted for around 30% of national food retail sales in 2007, a three-fold increase in market share since 1998.
    - The share of fresh fruit and vegetables (FFVs) products increased from virtually zero to 8% of supermarket retail sales in 1998-2007
  - **Modern food processors**
    - In 2014 more than 350 modern food processors are listed in the Indonesian Food and Beverage Association

The changes of macro environment are leading to transformation of food supply system

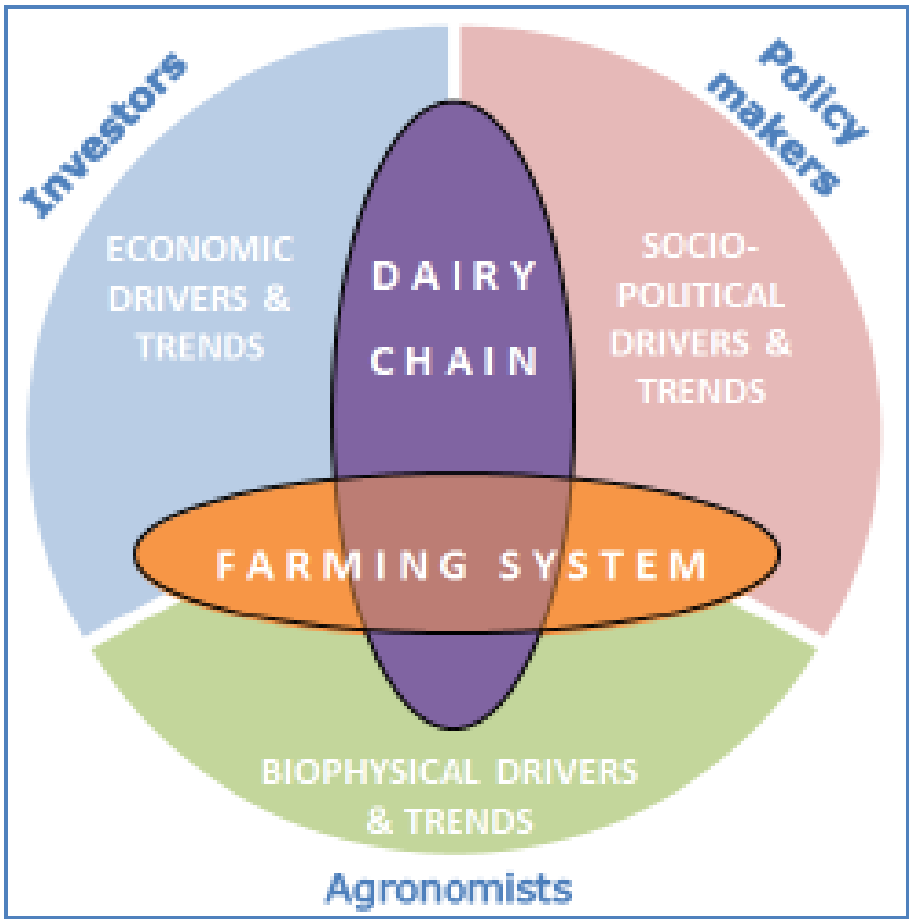
- In order to increase efficiency, manage on-time delivery of the right quantity and quality of a product, and meet consumer needs, modern markets have imposed new procurement systems (Reardon et al., 2007).
  1. the centralization of procurement comprising a shift from a per-store procurement system to a distribution system that serves several stores in a given zone, district, country or a given region (which may cover several countries)
  2. the adoption of organizational innovations making a shift from spot market transactions toward the use of specialized/dedicated wholesalers
  3. the adoption of the institutional innovation contracts with preferred suppliers, particularly through specialized/dedicated wholesalers
  4. the implementation of the quality and safety standards as instruments of coordination of supply chains by standardizing product requirements for suppliers who may cover many regions or countries.

The changes of macro environment are leading to transformation of food supply system

- Modern markets (supermarkets and food processors) provide new market opportunities, potentially rising profits and income, access to input, technical assistance, new technology
- However, several challenges face by small famers to supply to modern markets
  - Greater investment : quality seeds and inputs, food safety certification and capital investments, irrigation, green houses and refrigeration facilities
  - Small farmers face several constraints to supply to modern markets: knowledge and capital constraints
    - Widespread concern among researchers & policy makers that small farmers will be excluded from modern market channels.
    - It is important to improve farmer access to markets

Impacts of Macro Changes on Agri-food Value Chain: Focus on the Dairy Industry

Dairy Production and Marketing are Operating in a Dynamic Context



Source: Van der Lee, 2014

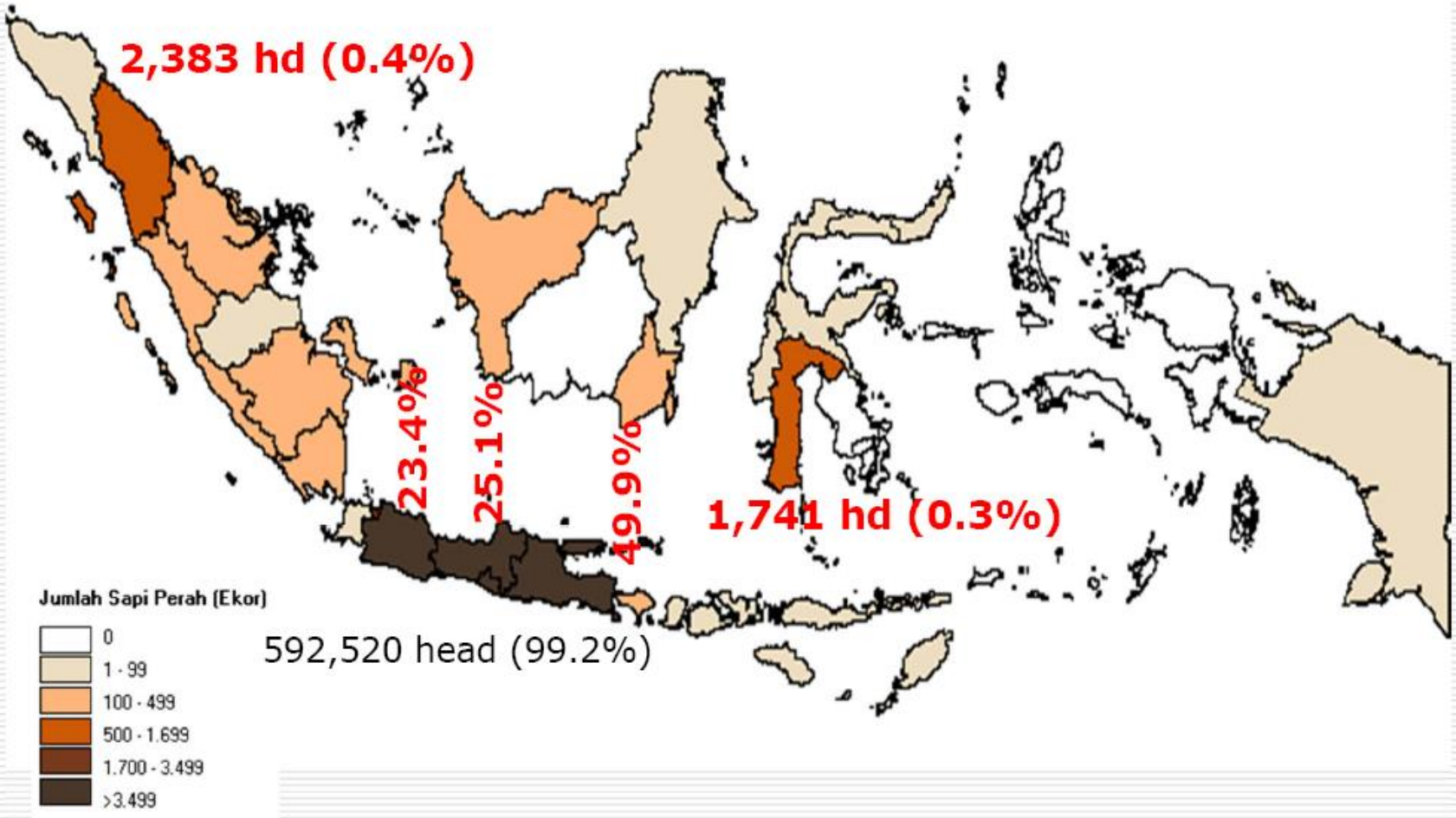
Key Driving Forces in Dairy Industry

- Important factors increasing demand for dairy products:
  - Population growth
  - Income growth
  - Increasing middle class income
  - Urbanization
  - Longer life span and ageing

Fresh Milk Production 2005 – 2010, by Province, in tonnes

No	Provinces	Year					
		2005	2006	2007	2008	2009	2010 *)
1	NAD	36	43	43	31	34	34
2	North Sumatera	4.695	8.783	1.507	1.324	1.657	1.665
3	West Sumatera	899	930	930	1.053	1.264	1.550
4	Riau	0	0	41	4	125	156
5	South Sumatera	277	401	269	167	15	21
6	Bengkulu	3.262	90	3.381	138	1.055	1.212
7	Lampung	104	197	185	352	178	185
8	Jakarta	5.061	6.365	7.016	6.388	5.723	5.856
9	West Java	201.885	21.889	225.212	225.212	255.348	270.616
10	Central Java	70.693	130.896	70.419	89.748	91.762	106.040
11	DI Yogyakarta	8.812	11.063	6.994	7.083	5.038	5.187
12	East Java	239.908	244.300	249.275	312.270	461.880	531.797
13	Bali	78.12	95	132	0	169	195
14	West Kalimantan	36	39	50	0	0	0
15	South Kalimantan	123	177	310	186	129	123
16	South Sulawesi	90	1.184	1.846	2.857	2.778	3.081
17	Papua	0	96	69	54	0	0
18	Bangka Belitung	0	0	0	61	67	78
19	Gorontalo	0	0	3	25	25	43
To[illegible]		**535.962**	**616.549**	**567.683**	**646.953**	**827.249**	**927.838**

Dairy cattle distribution in Indonesia



Indonesia Dairy Imports (Jan – December), 2007 – 2010

Product	Volume Tonnes 2007 Total	Volume Tonnes 2008 Total	Volume Tonnes 2009 Total	Volume Tonnes 2010 Total		Value US$'000 2007 Total	Value US$'000 2008 Total	Value US$'000 2009 Total	Value US$'000 2010 Total
Buttermilk / BMP	14.075	6.328	10.017	12.823		43.618	24.597	17.498	31.148
Butterfat	15.686	9.655	13.273	14.642		42.974	41.663	36.547	70.900
Cheese	13.930	10.557	13.971	15.683		46.363	54.609	49.299	69.338
Milk	16.697	16.187	9.775	4.151		19.598	24.532	16.084	11.845
WMP	90.718	83.514	52.929	49.856		300.852	330.572	157.198	221.985
SMP	90.757	81.207	103.801	132.227		316.477	309.893	238.330	405.153
Whey products	53.367	42.239	65.433	72.619		99.772	78.057	74.206	114.138
Yoghurt	1.482	968	356	156		1.500	1.385	668	339
Total	**296.712**	**250.656**	**269.554**	**302.158**		**871.153**	**865.308**	**589.829**	**924.886**

Liquid Milk Processors Location and Production, 2009

Processor	**Location**	**Production ‘000 tonnes**	**Production** percent
Ultra Jaya	Bandung, West Java	89,9	32,5
Frisian Flag	East Jakarta	61,2	21,8
Indolakto	Sukabumi, East Java	47,8	16,6
Greenfields	Malang, East Java	39,8	14,1
Sekar Tanjung	East Java	16,3	5,9
Danone Dairy	Bekasi, West Java	13,8	3,9
Nestle	Pasuruan, East Java	4,1	1,6
Diamond	North Jakarta	0,3	0,1
Cisarua	Sukabumi, West Java	0,2	0,1
	Other	8,7	3,4
	TOTAL	**282,1**	**100,0**

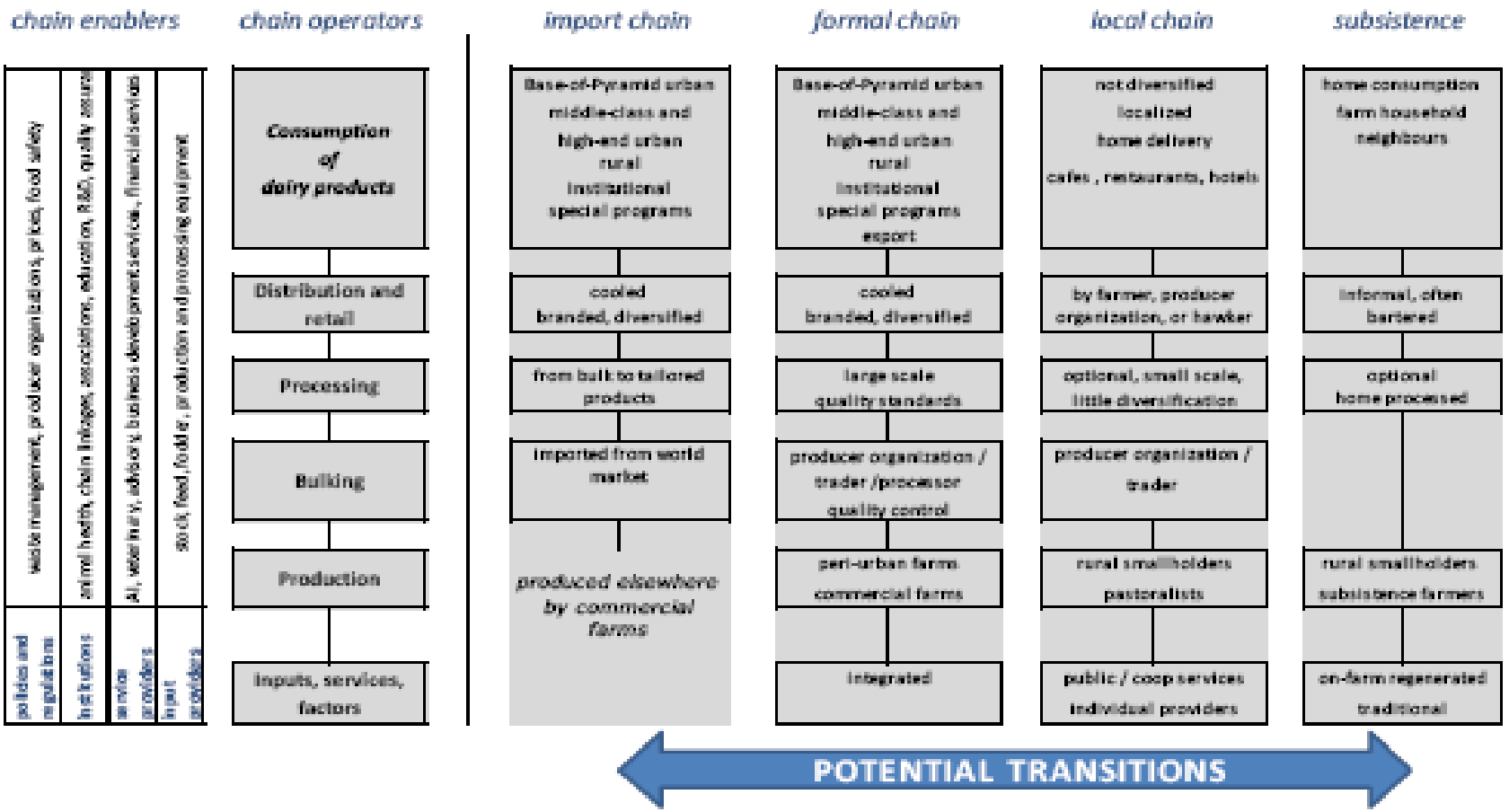
Source:
CIC report on “Study on Industry and Market of Liquid Milk & SCM in Indonesia”, 2010

SCM Processors Location and Production, 2009

Processor	Location	Production '000 tonnes	Production percent
Frisian Flag	East Jakarta	187,6	43,7
Indolakto	Sukabumi, West Java	164,3	38,3
Nestle	Pasuruan, East Java	71,6	16,7
Ultra Jaya	Bandung, West Java	6,0	1,3
	TOTAL	429,5	100,0

Source: CIC report on "Study on Industry and Market of Liquid Milk & SCM in Indonesia", 2010

Main Dairy Value Chain Types



Source: Van der Lee, 2014

General Development Pathways of Dairy Sectors

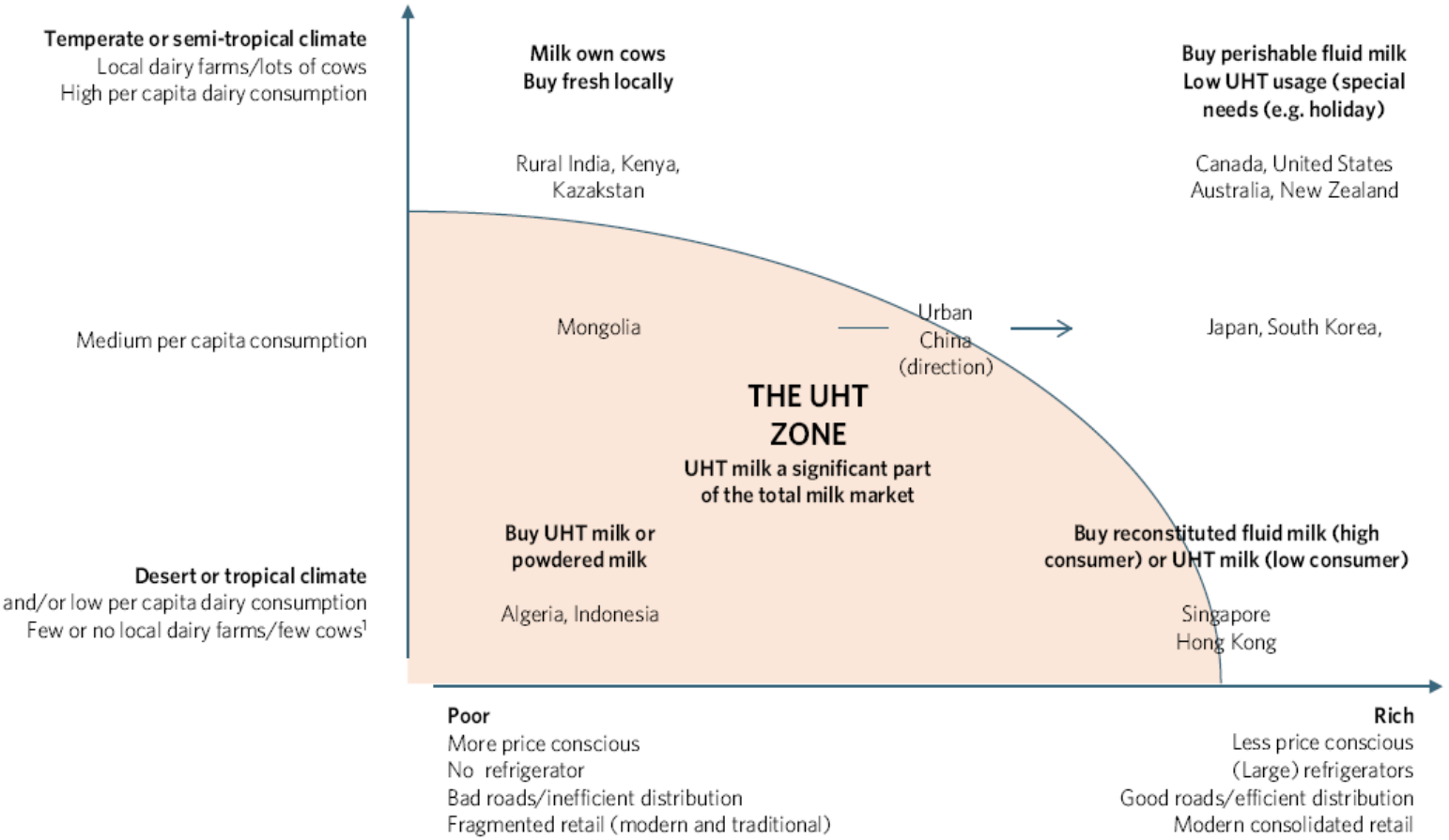
Source: Van der Lee, Groot and Helder, 2014

Generalized Theory of Change for Dairy Sector Development

Goal	Competitive and developed dairy sector			
Changes at impact level:	*Increased farmer income Growth in rural economy*	*Food security Nutrition security*	*Food safety Self-sufficiency*	*Reduced environmental impact*
Objectives	Competitive dairy production	Developed dairy chains	Developed knowledge base	Developed organization and representation of the dairy sector
Changes at performance level not specified				
	Improve / strengthen:			
Strategies	Access to finance for milk producers	Linking producers in rural areas with processing industry and markets	Research and innovation	Producers' organizations
	Public and private investments in physical infrastructure (water, roads, electricity)	Inclusion of small scale milk producers to formal dairy chains	Education	Dairy sector organizations
	Policies supporting competitive dairy production	Increase rural milk processing and marketing (informal)	Farm and industry advisory services	Chain actor representation and coordination
	Policies related to food safety and implementation of regulations	Improve dairy marketing and consumption in urban areas	Knowledge on dairy production in supporting institutions (finance, government etc)	Public-private partnerships
	Land reform	Improve input and service supply to dairy producers		
		Implementation of improved food safety and quality standards		
		Improve investment climate in dairy sector		
Example interventions	Fodder introduction	Develop collection grid and business cluster	Business development services for producers' organizations and SMEs	Crossbreeding program
	AI service	Develop B2B linkages	Farmer advisory service	Disease surveillance
	Dairy zone development	Investment fund	Innovation coaching and funding, co-innovation	Land titling
	Medium-sized farm development	Quality-based milk payment system	Dairy network development	Independent milk testing laboratory
	Soil fertility management management	Producers' organization capacity building	Business-linked vocational training	
	Training young-stock rearing			

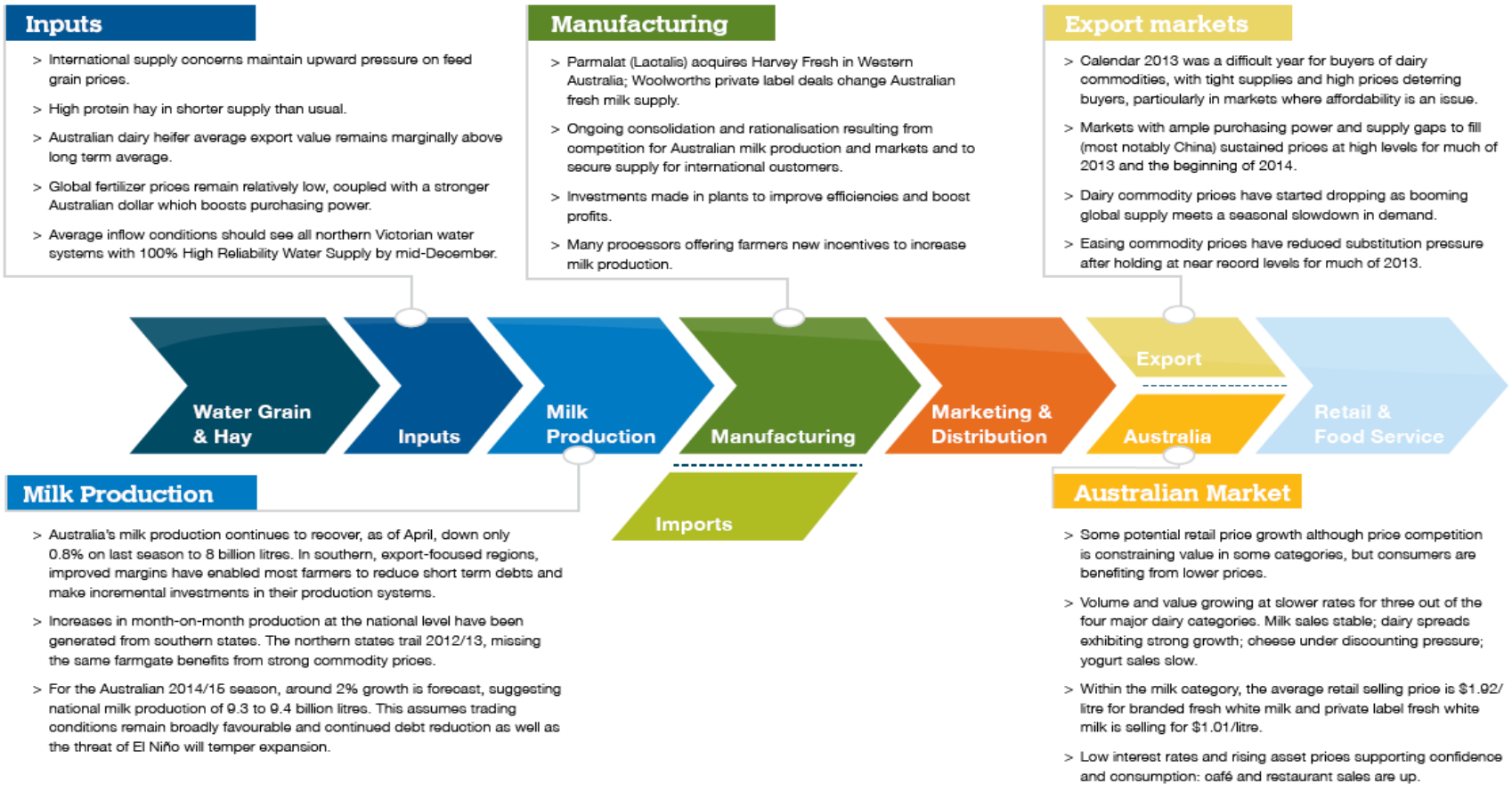
Source: Van der Lee et. al, 2014

Milk Purchase Form Based on Income and Climate



Source: Coriolis, 2013

Lessons Learnt: Australia Dairy Value Chain

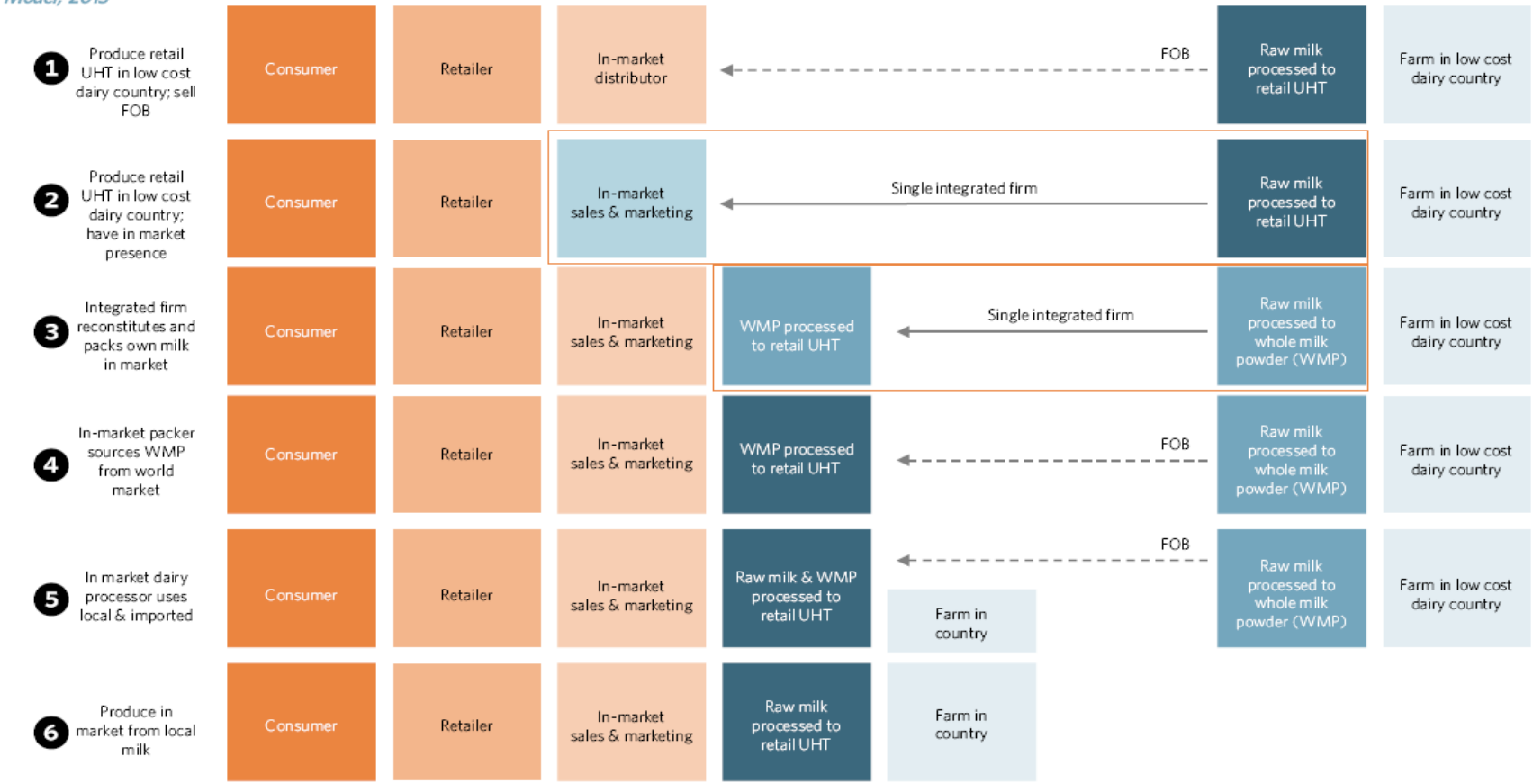


Source: Dairy Australia, 2014

Value Chain Integration Models

EXAMPLE: Simplified model of six potential value chains for UHT production

Model; 2013



Source: Coriolis, 2014

Several Issues in Dairy Development in Indonesia (1)

- Scarcity of forage and high price of dairy cattle feed and concentrates
- Small farm size and scarcity of land at suitable elevation for dairy cattle farming
- Low dairy cow productivity – with an average of about 10 liters of milk per cow per day
- Low farm profitability due partly to low milk yields
- Low milk quality with only 12 percent of milk production meeting the minimum standard

Several Issues in Dairy Development in Indonesia (2)

- Poor farm and herd management practices
- Lack of technology for milking and processing of fresh milk
- Limited access to high – quality genetics
- Limited access to finance and bank loans
- Limited farmer education

Some Policy Initiatives (1)

1. This policy is known as BUSEP (Bukti Serap – Absorption Proof) scheme implemented in the period of 1982-1998. This policy is found to be not significant in increasing the productivity of Indonesian dairy products.
   - ❖ Amaliah and Fahmi's study (2007) showed that the lifting of BUSEP scheme significantly increase milk import which means despite being protected for more than 15 years, Indonesian dairy industry failed to improve their competitiveness against the imported milk.

Some Policy Initiatives (2)

2. Recently government (Ministry of Agriculture) produces Blue Print on Dairy Industry Development. This blue print is very promising if we look at its comprehensiveness, clear road-map and measurable targets, and the formulation of strategies to achieve that targets.
   - The blue-print is started by portraying the existing condition of Indonesia dairy industry by identifying its strengths and weaknesses.
   - Six generic groups of strategies have been formulated by matching the SWOT factors.
     1. Human resource and institutions development,
     2. Increasing the number of population and productivity,
     3. Quality and hygiene assurance,
     4. Price and welfare of the farmers,
     5. Increasing fresh milk consumption, and
     6. Improving the infrastructures

Some policy initiatives (3)

3. Government encouraging domestic and foreign companies to invest in dairy farming and dairy breeding to meet local demand.
4. Government provides credit facilities with subsidised interest for small dairy farmers for purchasing dairy cows.
5. Coordination with GKSI (Indonesian Milk Cooperation Organisation), the Ministry of health and the Ministry of Education and Culture to create milk market directly to the students → School Milk, School Children Food Supplement Program (PMTAS).
6. Regional government initiatives to promote more milk consumption for school aged children → GERIMIS BAGUS (Gerakan Minum Susu Bagi Anak Usia Sekolah)
7. Through P2HP (Directorate General of Agriculture Processing) and Ministry of Industry built facilities for milk processing in many milk collecting unit closed to the farmers → Cluster program.
8. Training and education for farmers on dairy farming management, milk processing and market.
9. Diary Board has been established, but it is still not very active → Introduction of levy?

Major Goals of Blue Print

- Self-sufficiency in milk production to increase from 25-30 percent to 50 percent in 2015
- Expansion of dairy production in suitable areas outside Java, especially Sumatera and Sulawesi
- Milk production per cow to increase from 8-10 kg cow/day to 15 kg per cow/day (in 2015)
- Calving interval to be reduced to 13 months
- Milk quality to be improved from 12 percent of total milk that meets the SNI standards to 20 percent meeting the SNI standards in 2015
- To ensure dairy farming remains feasible from an economic point of view, the minimum milk price to be kept at a level of at least 80 percent of world market prices.

Conclusion

- Changes in macro environment influence the demand for agricultural products leading to agri-food supply chain transformation
- Ignorance of the macro changes will lead to great risk of failure in the agri-food value chain, risking small farmers
- The most important question: How to include small farmers to the ongoing transformation?

Thank you