Aiming Towards
100% Rice Self-Sufficiency Level
in Malaysia

An external perspective

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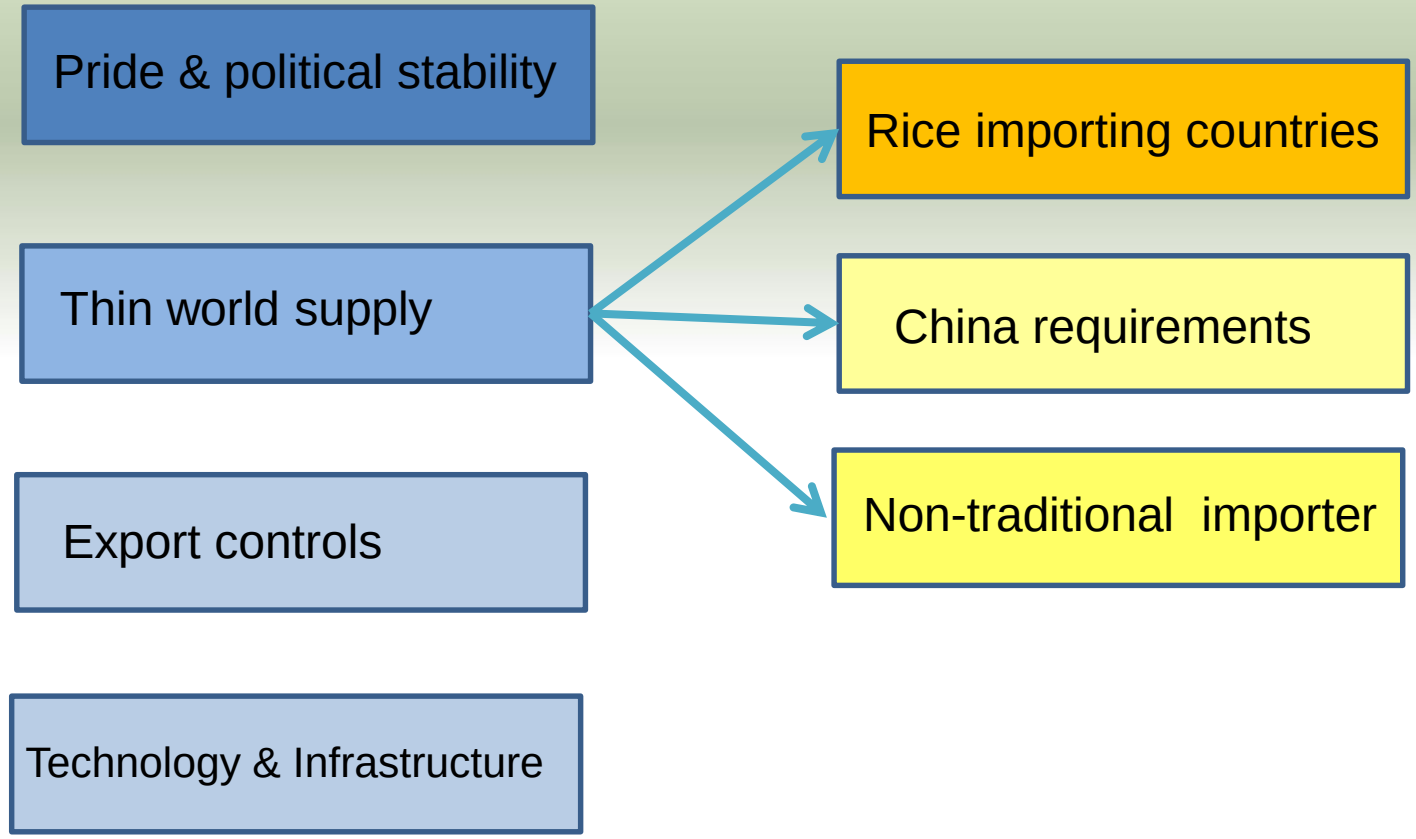
Why do countries aim for rice self-sufficiency?



Importer vs Exporter

Importers

Exporters

Cost of Production per kg of dry paddy (14% MC)

US$0.29

Nueva Ecija, Philippines

US$0.21

Tamil Nadu, India

US$0.33

Zheijang, China

US$0.22

Suphan Buri, Thailand

U$0.38

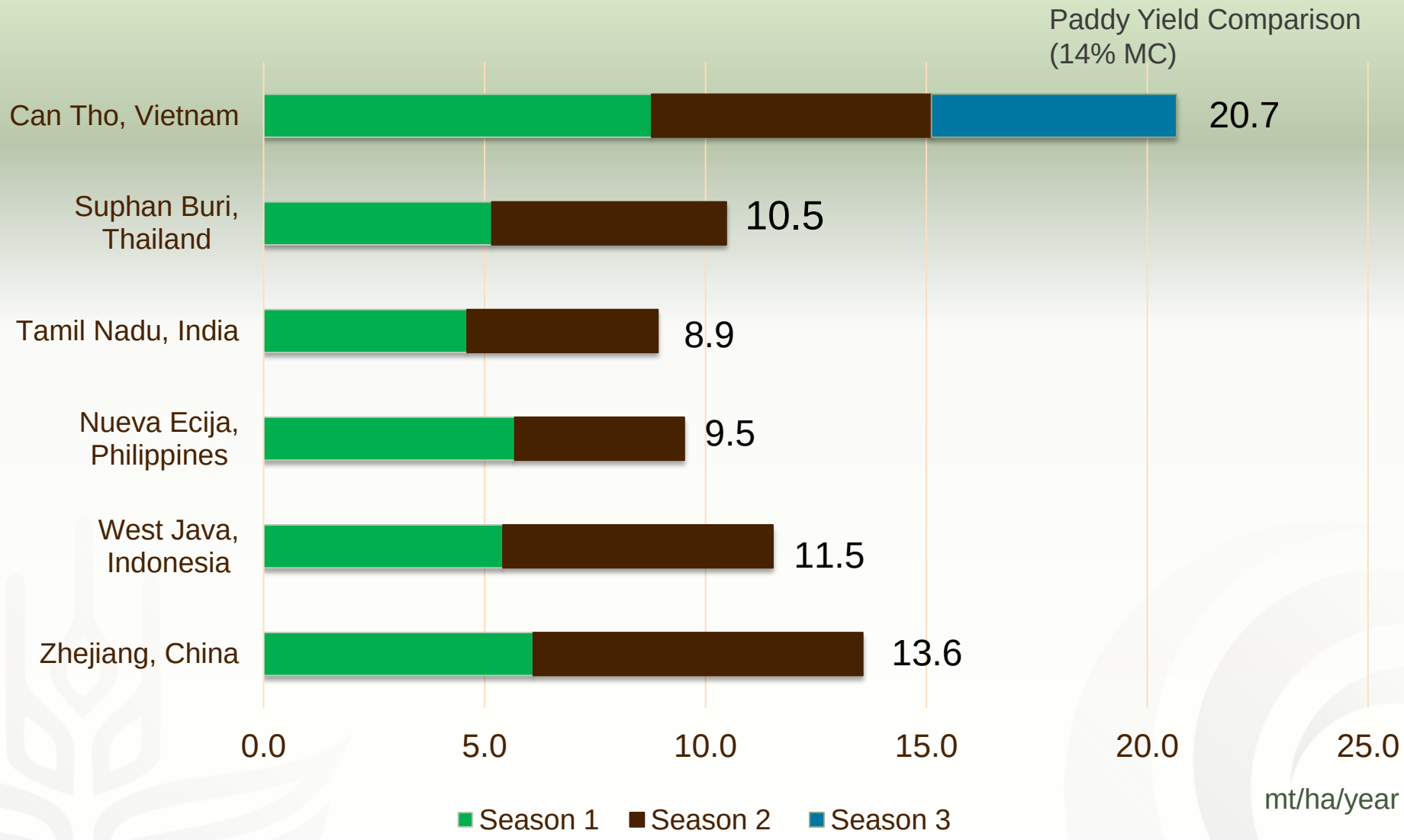
West Java, Indonesia

US$0.15

Can Tho, Vietnam

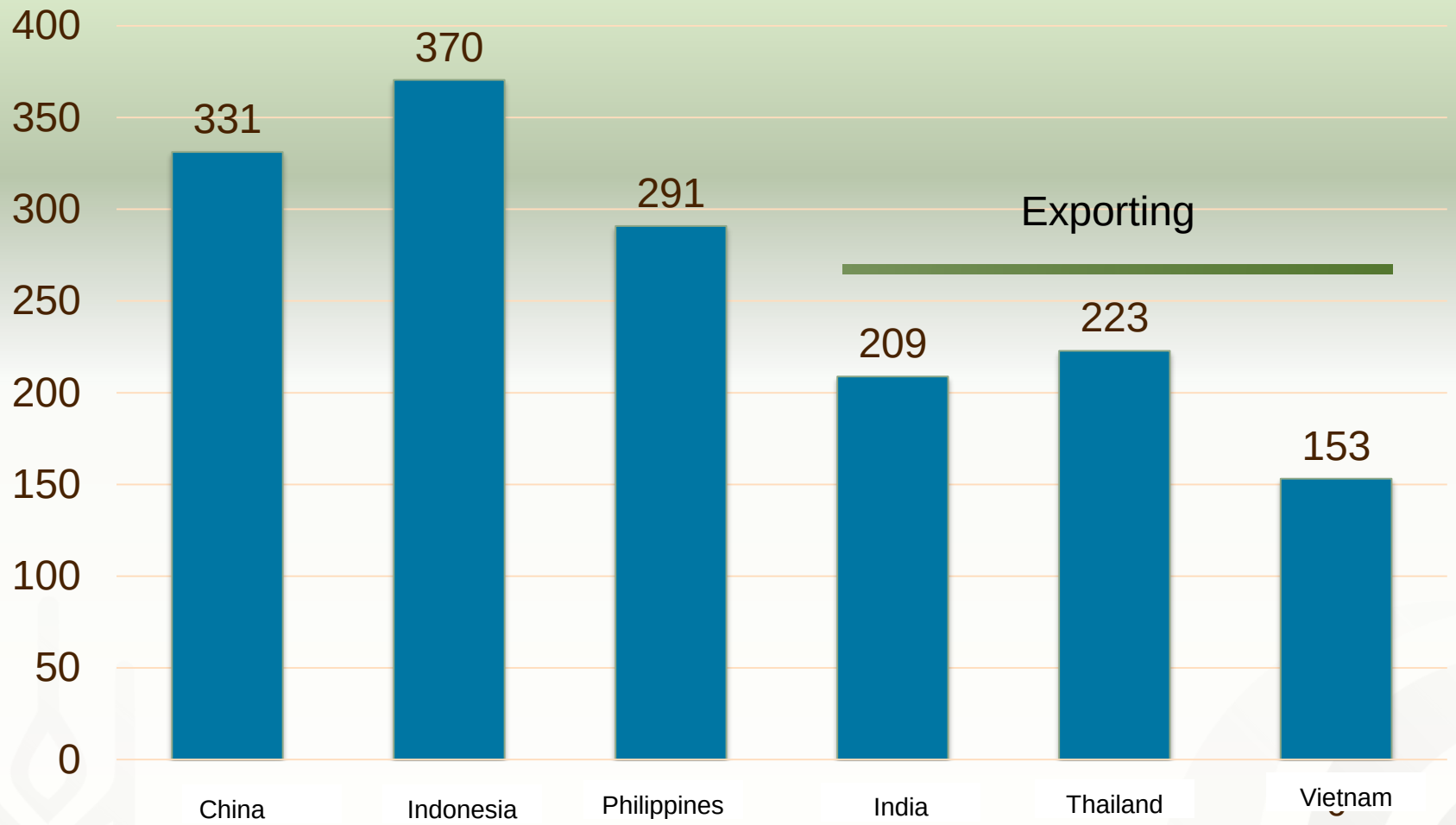
Slide from: Bordey et al, 2015 (PhilRice)

Land Productivity



Slide from: Bordey et al, 2015 (PhilRice)

Cost Comparison (US$/Mt)



Slide from: Bordey et al, 2015 (PhilRice)

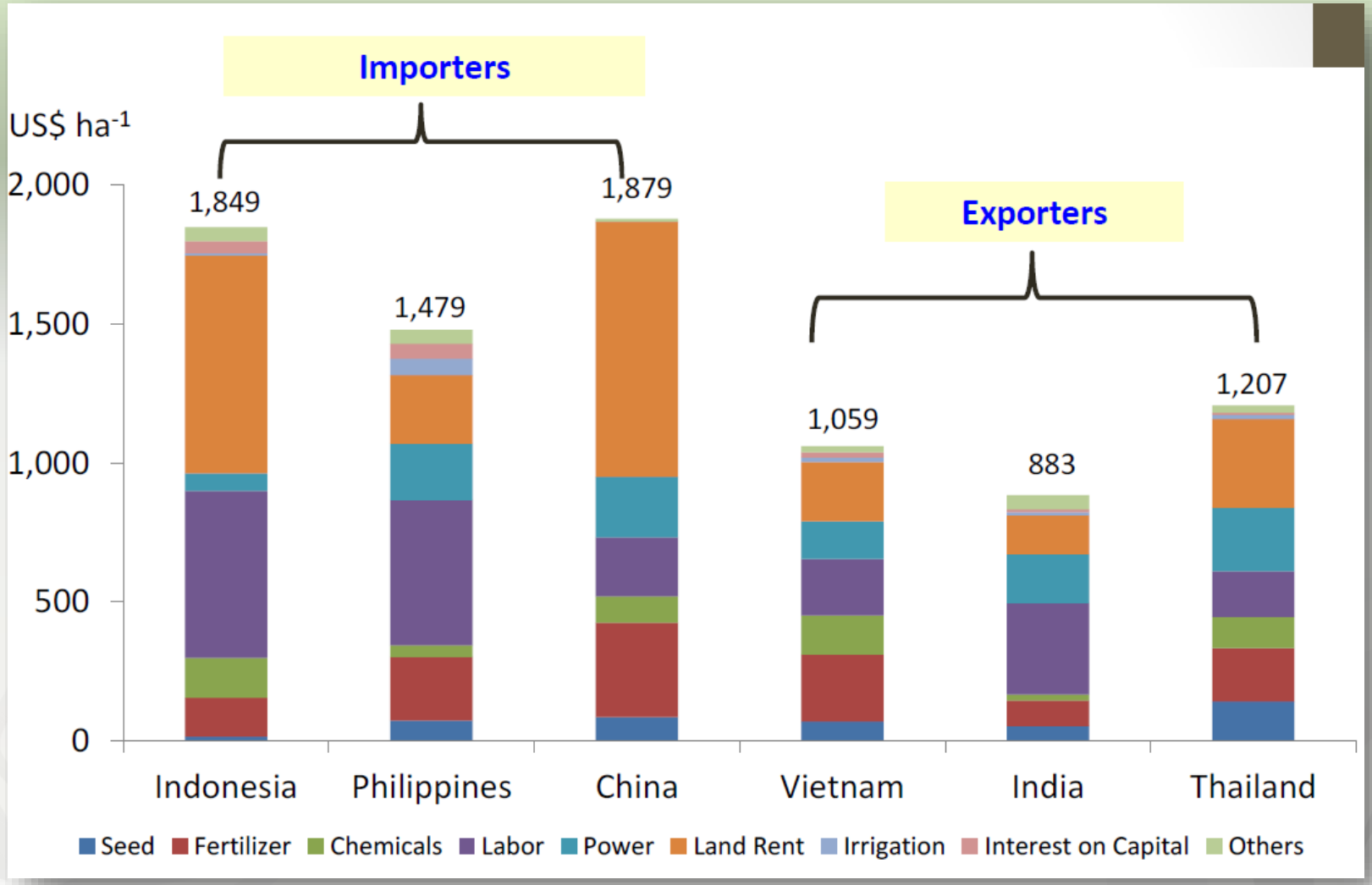
Cost component

Cost item (US$ mt^{-1} paddy)	China	Indonesia	Philippines	India	Thailand	Vietnam
Seed	18.02	3.48	13.58	10.64	26.38	10.40
Fertilizer	44.82	24.68	45.69	21.44	36.83	31.89
Pesticide	31.21	24.34	8.53	5.25	21.23	20.42
Hired Labor	11.65	101.05	88.61	59.33	15.46	10.79
OFE* Labor	59.34	24.13	15.46	11.07	15.21	18.92
Power**	74.34	11.80	40.66	41.98	39.21	18.95
Land Rent	89.38	155.83	48.22	46.19	59.21	34.94
Irrigation	0.00	2.45	10.51	2.76	3.24	1.97
Interest on Capital	0.16	7.73	10.23	1.97	1.38	1.82
Others	2.33	14.94	9.33	8.26	4.73	3.08

***OFE** - Operator, family, and exchange labor
** Power - Animal and machine rent including fuel
Exchange rate used: US$1 is equivalent to CNY6.20; INR58.60; IDR10,461; PHP42.45; THB30.73; VND20,933 (IMF 2015).

Slide from: Bordey et al, 2015 (PhilrRice)

Cost of production per hectare



Slide from: Bordey et al 2014

Comparison of Returns

Item	China	Indonesia	Philippines	India	Thailand	Vietnam
Returns						
Dry yield (14% MC in mt ha^{-1} yr^{-1})	13.56	11.53	9.52	8.93	10.47	20.66
Dry Paddy Price (US$ mt^{-1})	475	495	405	254	442	226
Gross revenue (US$ ha^{-1} yr^{-1})	6,447	5,712	3,860	2,264	4,627	4,670
Cost per hectare (US$ ha^{-1} yr^{-1})	4,492	4,403	2,769	1,864	2,334	3,165
Net income per hectare (US$ ha^{-1} yr^{-1})	1,956	1,309	1,092	400	2,293	1,504
Effective area (ha yr^{-1})	0.97	3.10	4.15	6.41	8.91	4.06
Annual income from rice farming (US$)	1,889	4,057	4,531	2,561	20,427	6,101

Exchange rate used: US$1 is equivalent to CNY6.20; INR58.60; IDR10,461; PHP42.45; THB30.73; VND20,933 (IMF 2015).

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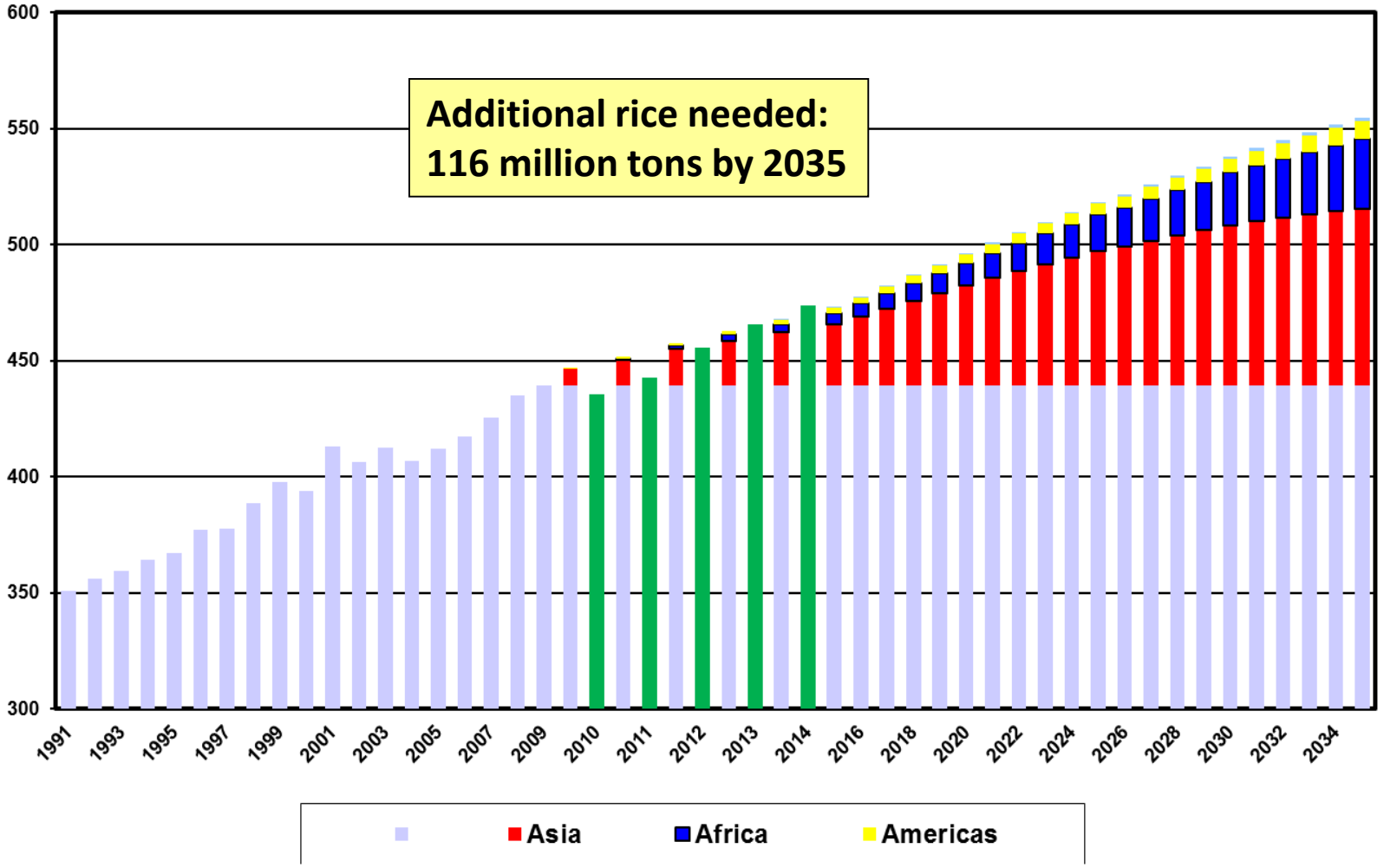
Rice Sector Transformation

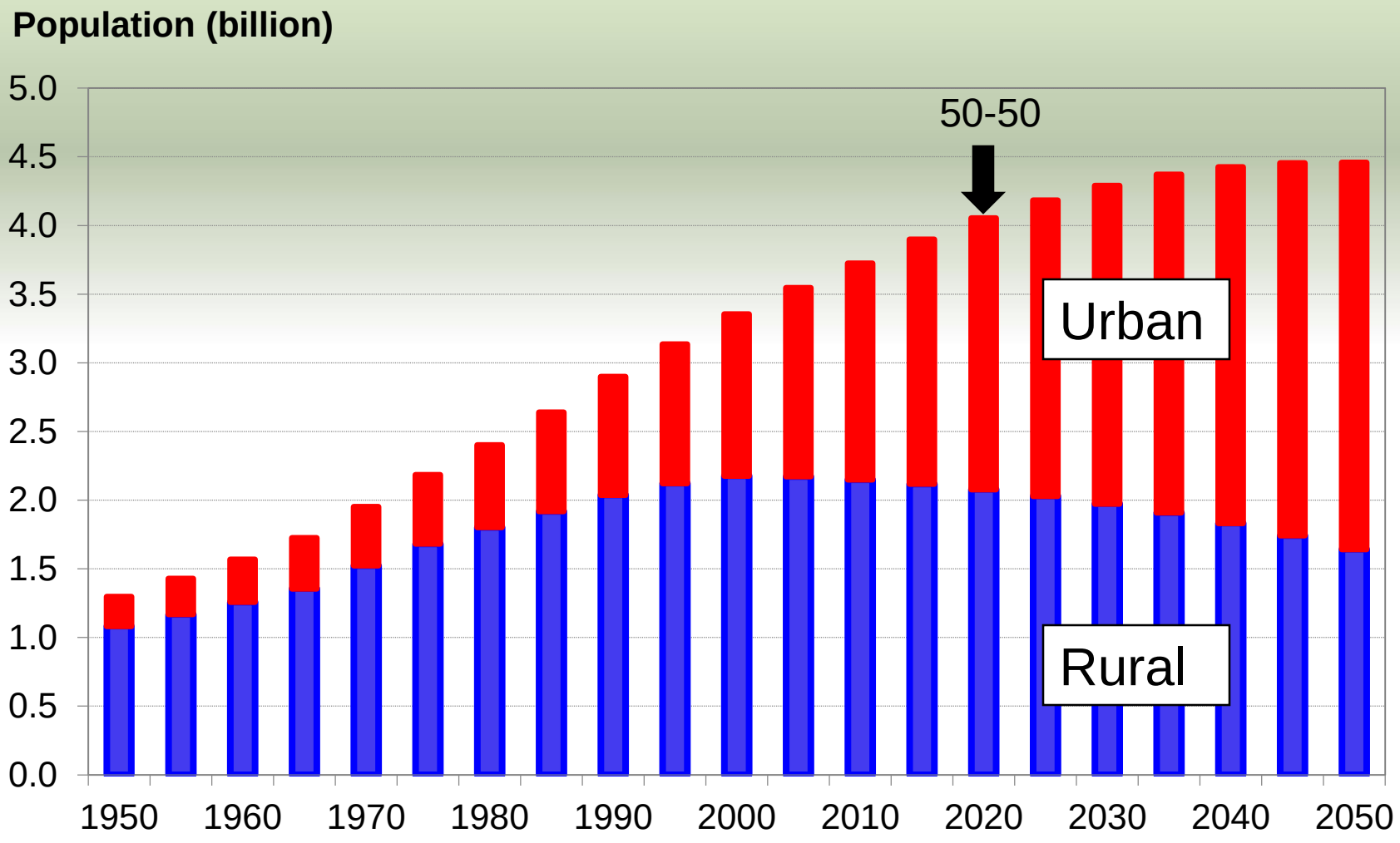
Global Rice Needs (estimated in 2009)

Million tons milled rice



Slide from: S. Mohanty. 2015

Urbanization trends in Asia



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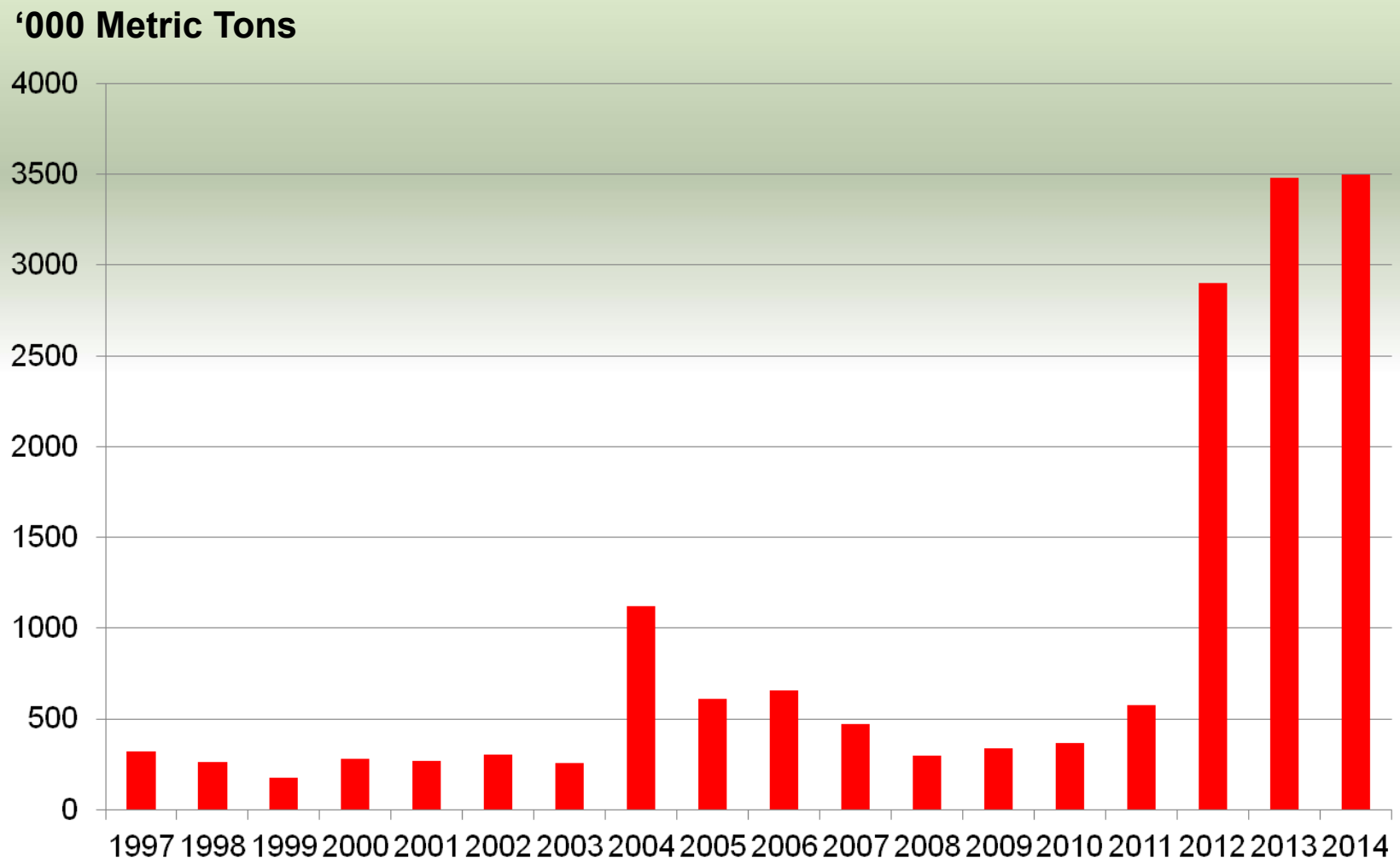
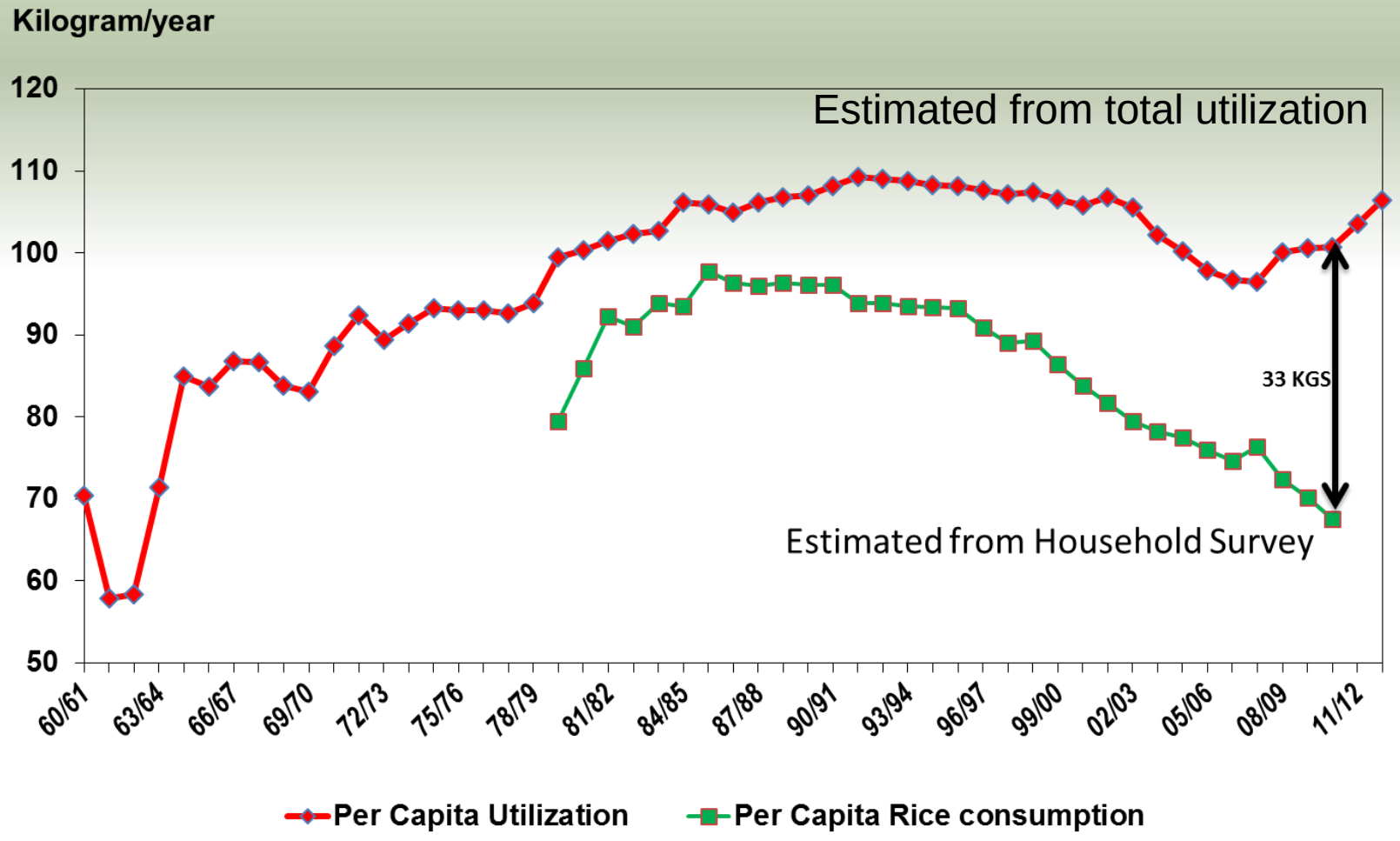
Rise of China as the largest importer



Data Source: PSD online database, USDA

Rising discrepancy in per capita rice consumption estimates

China



Slide from: S. Mohanty. 2015

Changing consumption pattern

With rising income and urbanization

- Moving away from rice consumption/moving from “low” to “high” quality rice
- Moving to healthier and nutritious rice
- Rising use of rice as processed products
- Home away consumption

Other usages of rice

- Ex: Growing usage of rice starch in consumer products

Slide from: S. Mohanty. 2015

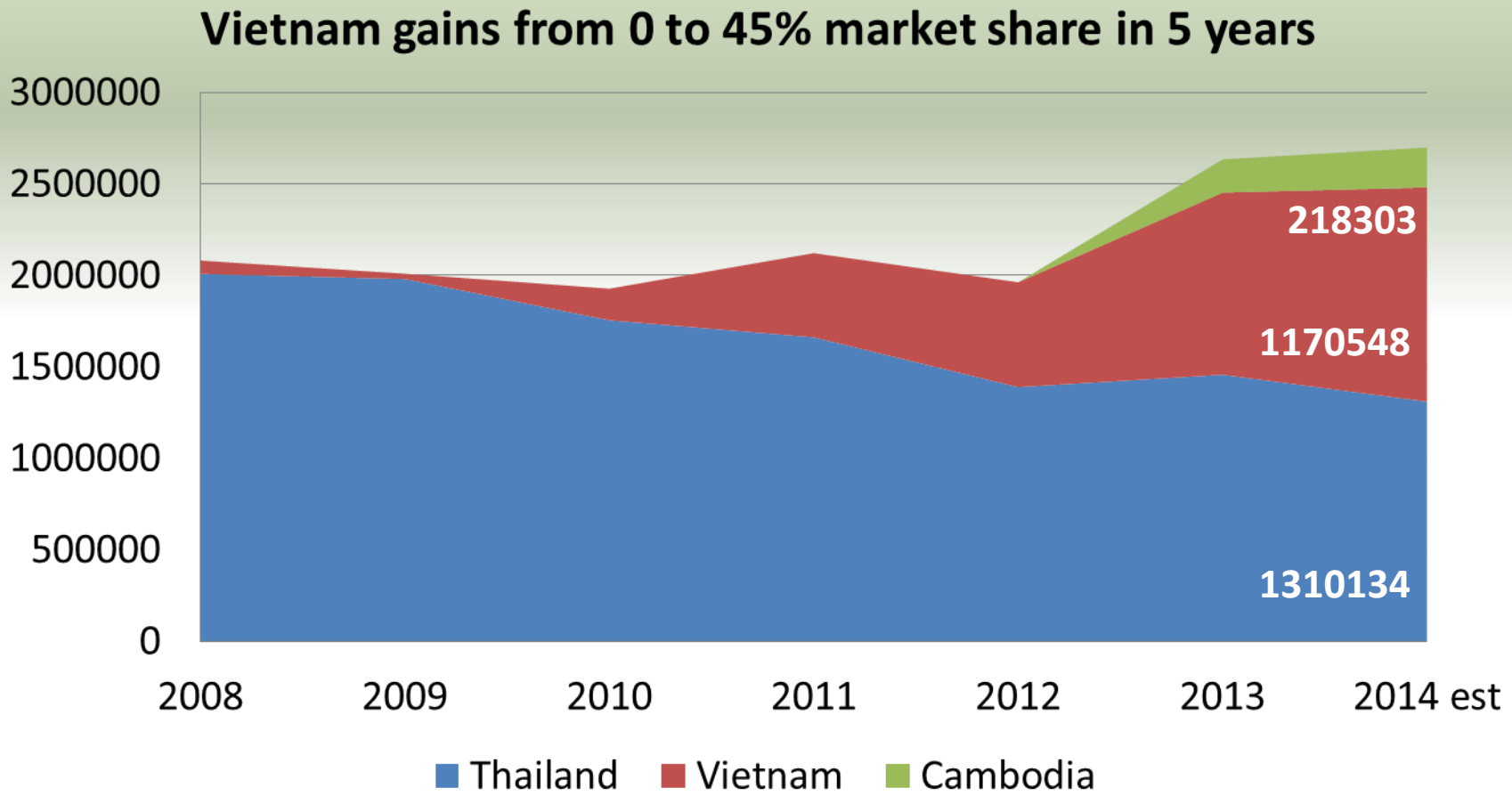
Market segmentation

Rice market is segmented by

- Variety
- Degree of processing
- Grain quality
- Country of origin

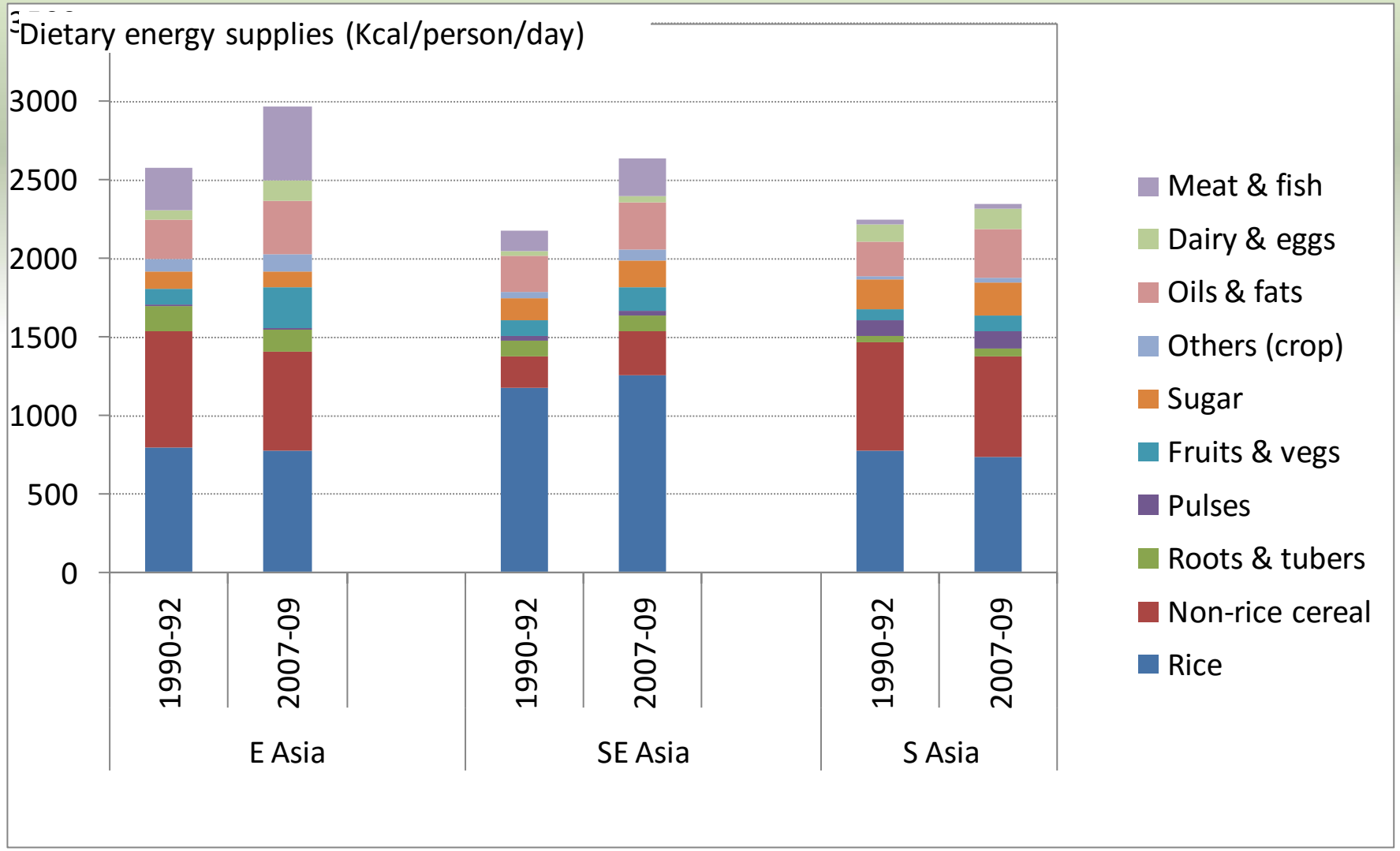
Slide from: S. Mohanty. 2015

Fragrant rice exports



Data Source: Subra, Rice Traders

Dietary energy supply, Asia (1961-63 & 2007-09)



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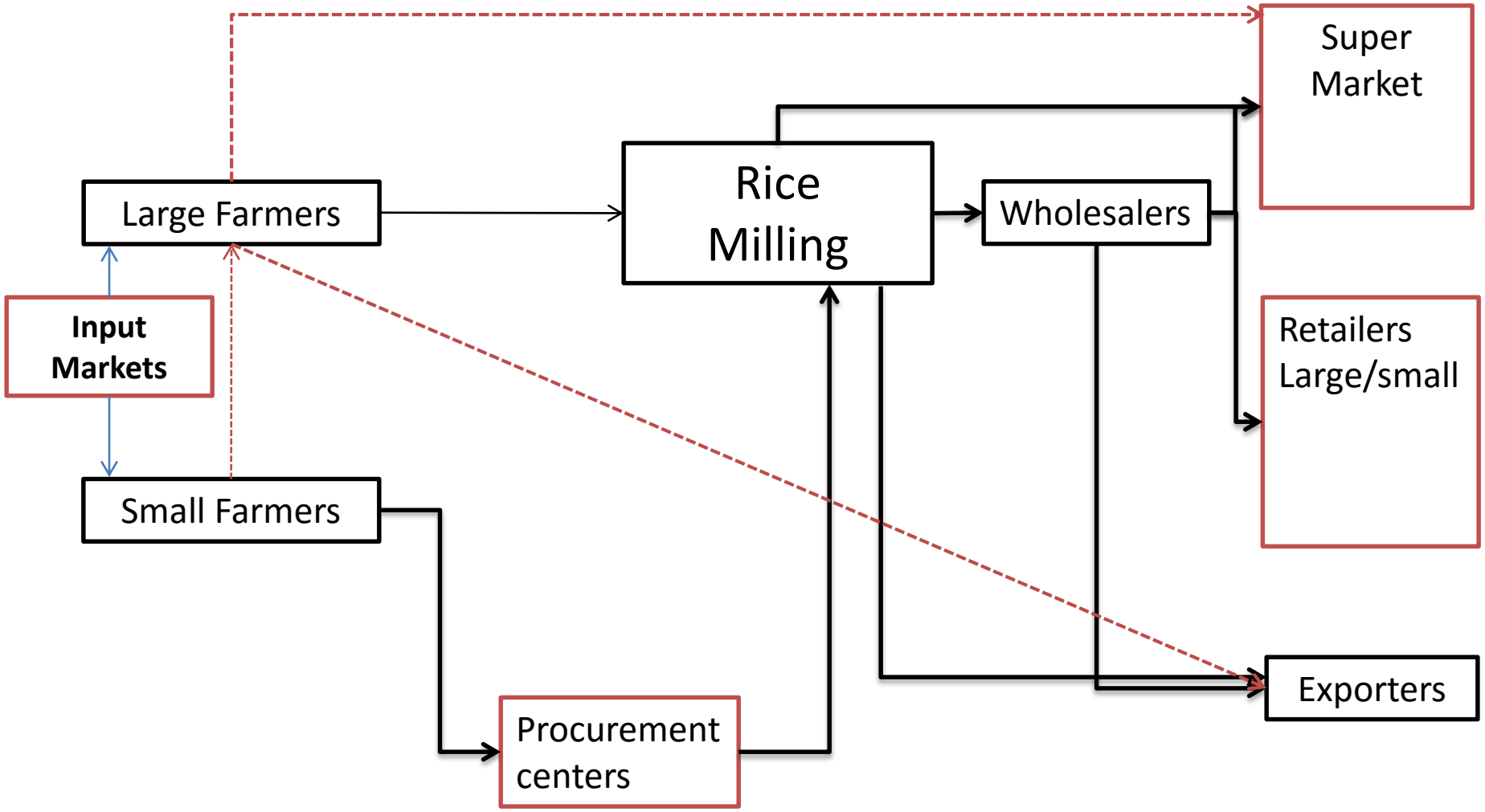
Integrated Rice Supply Chain



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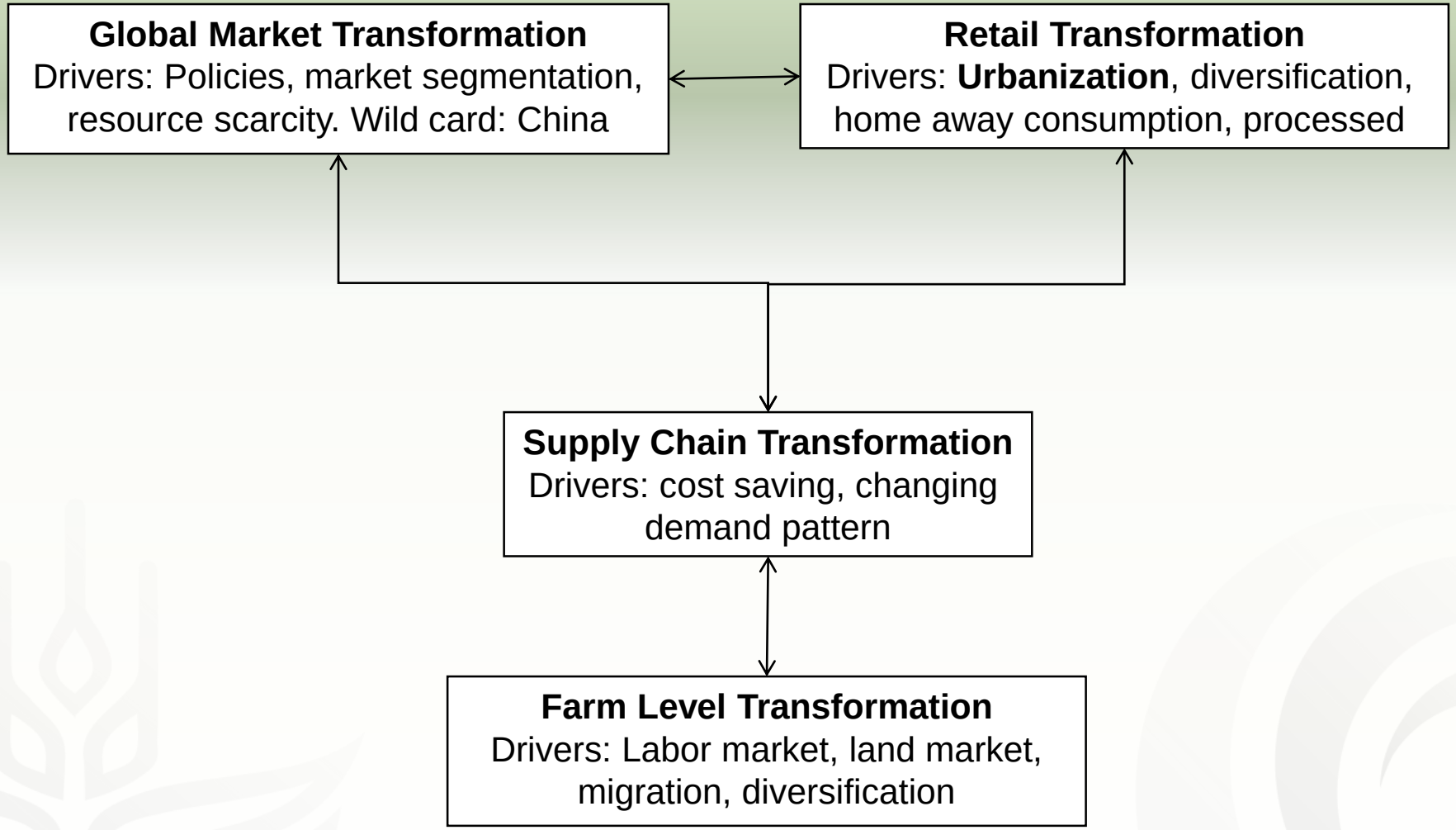
The global rice sector is transforming.



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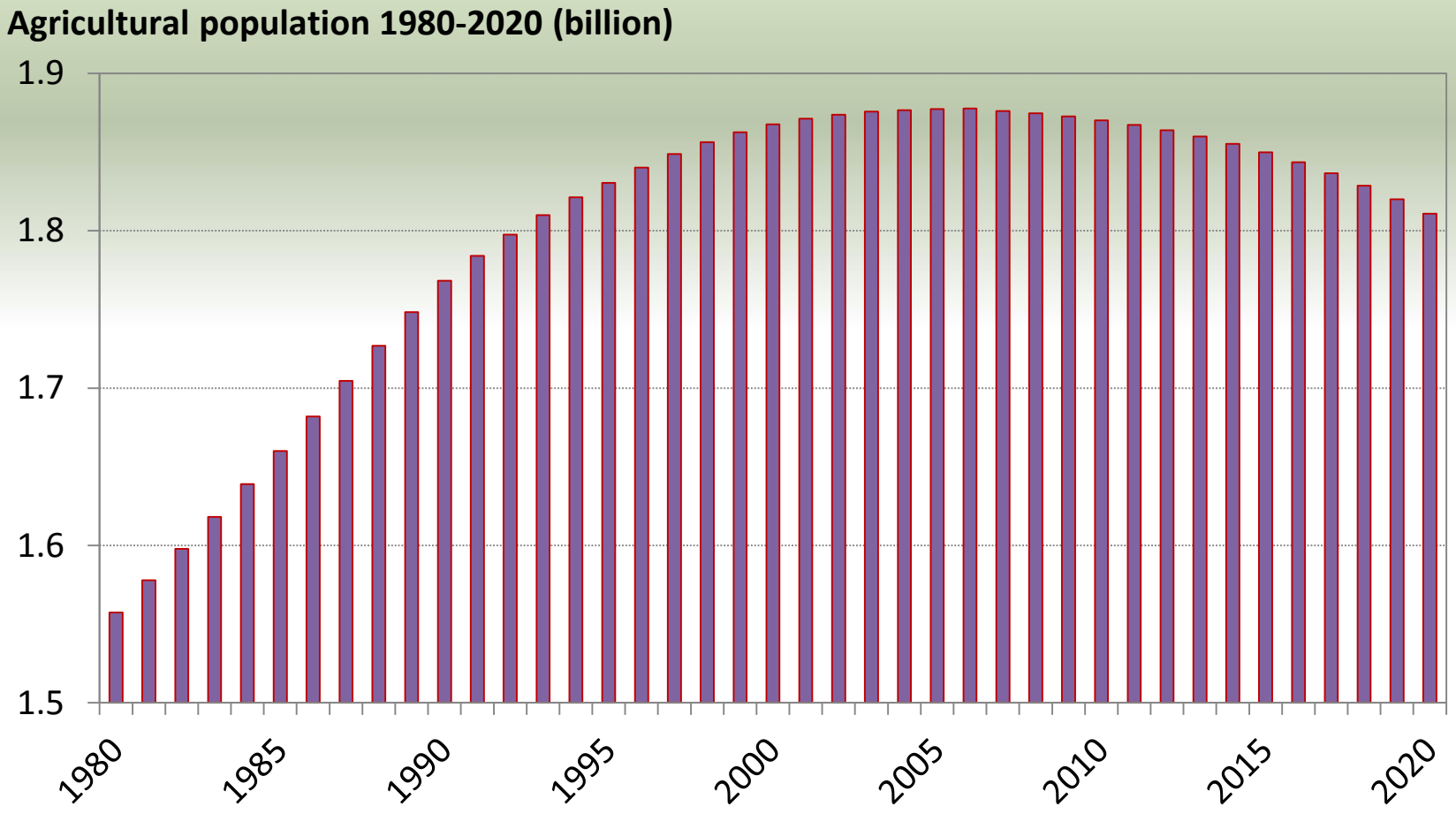
The Farm Landscape

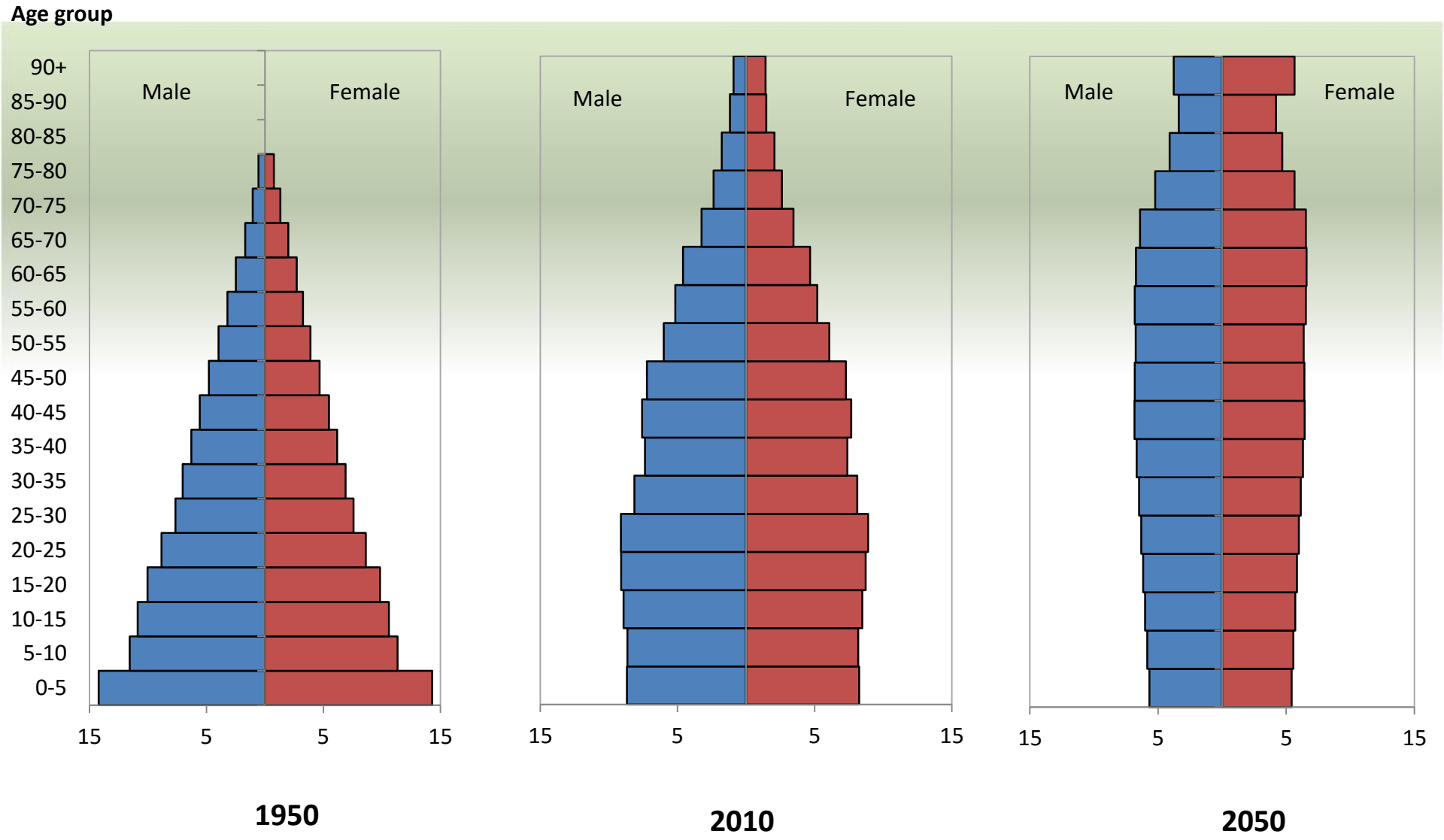
Less number of farmers



Data source: FAOSTAT (2013)

Slide from: H. Bhandari. 2015

Aging Population in Asia, 1950-2050



Data source: UNDESA (2013)

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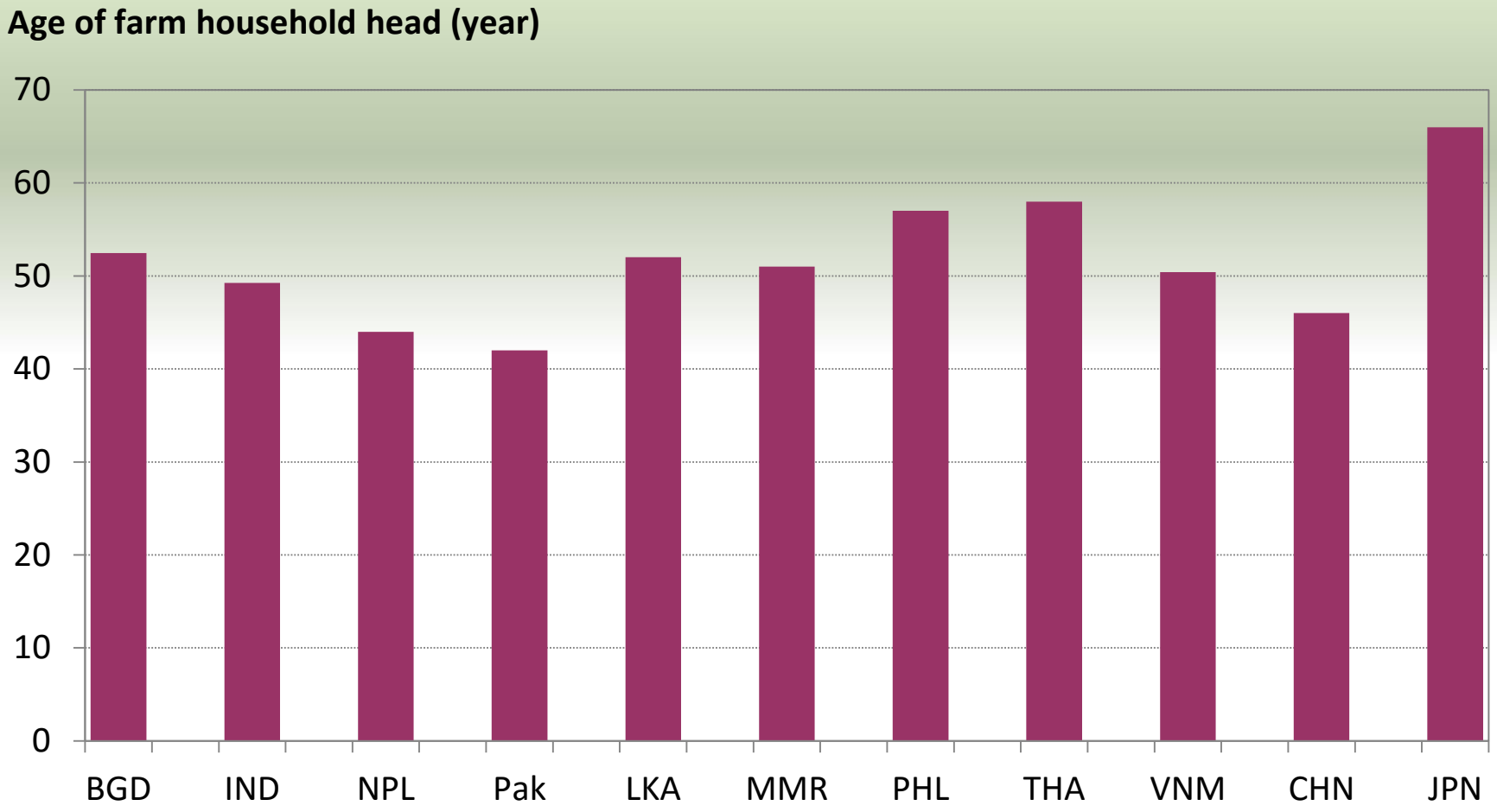
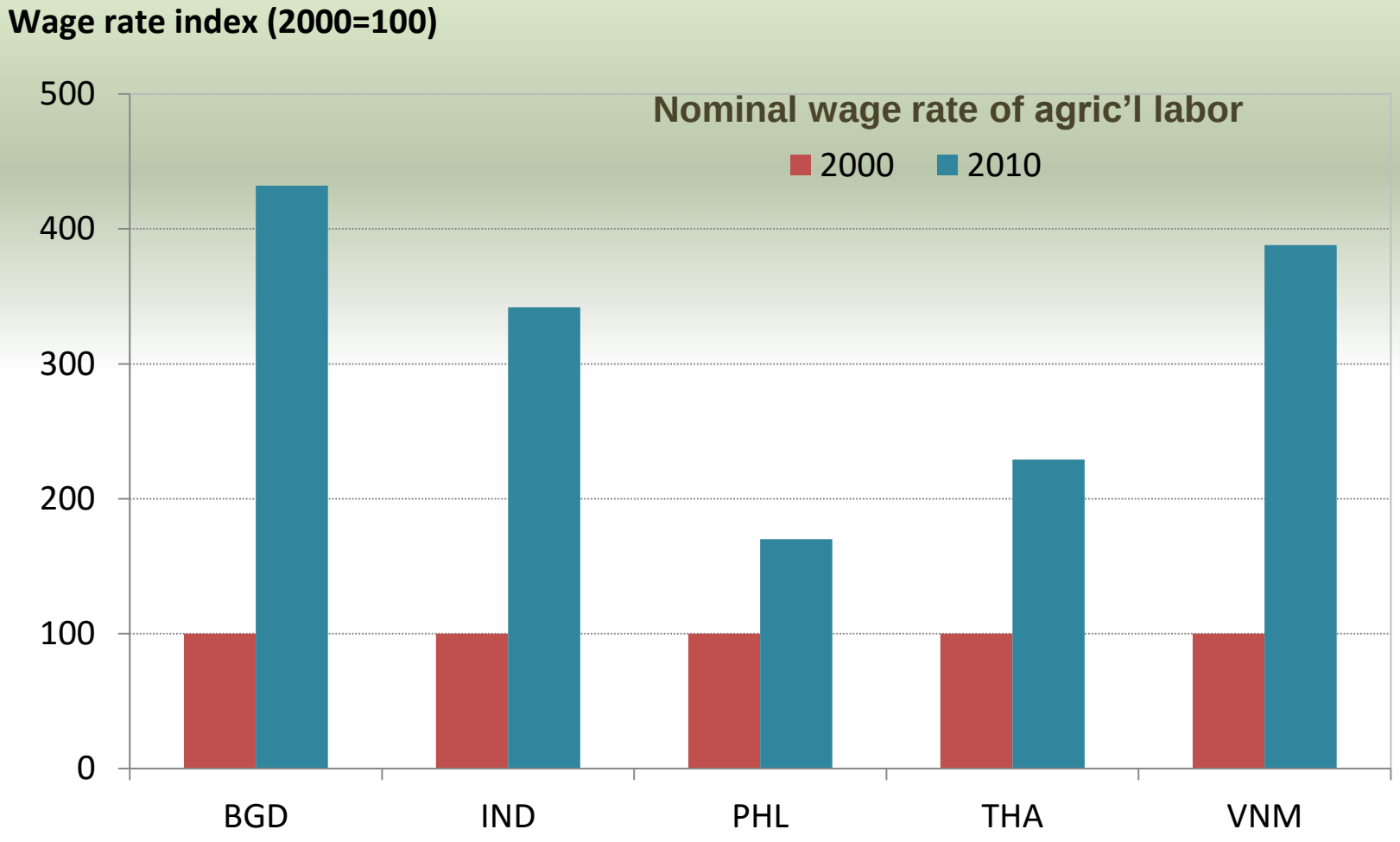
Age of farmers in Asia, 2003-2011



Data source: Country statistics (various years)

Slide from: H. Bhandari. 2015

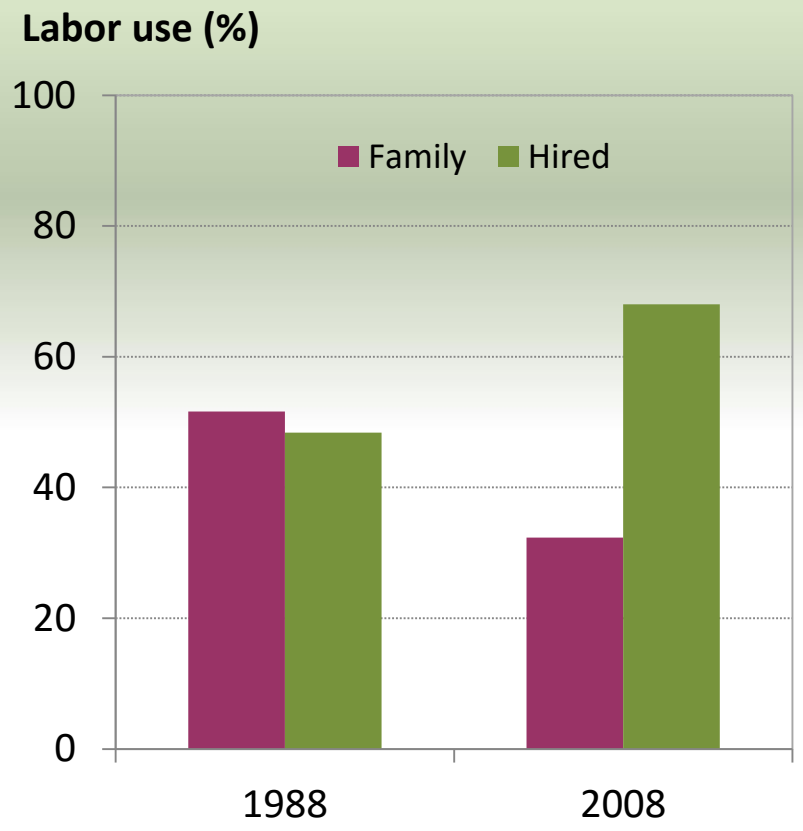
Cost of Agricultural Labor



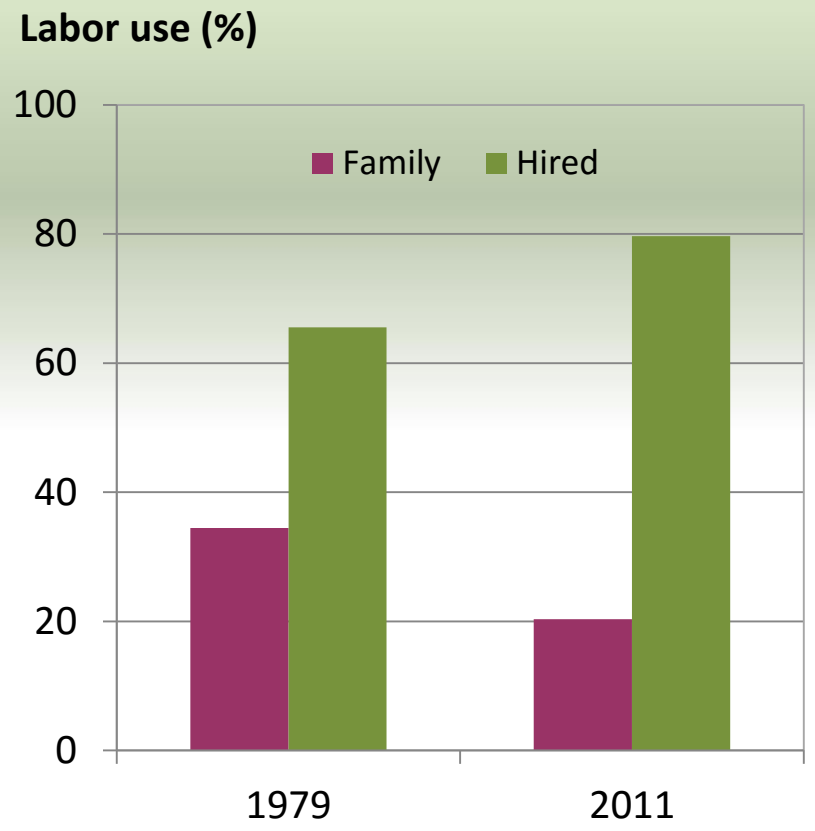
Data source: Country statistics (various years)

Slide from: H. Bhandari. 2015

Family and hired labor use in rice production



Bangladesh

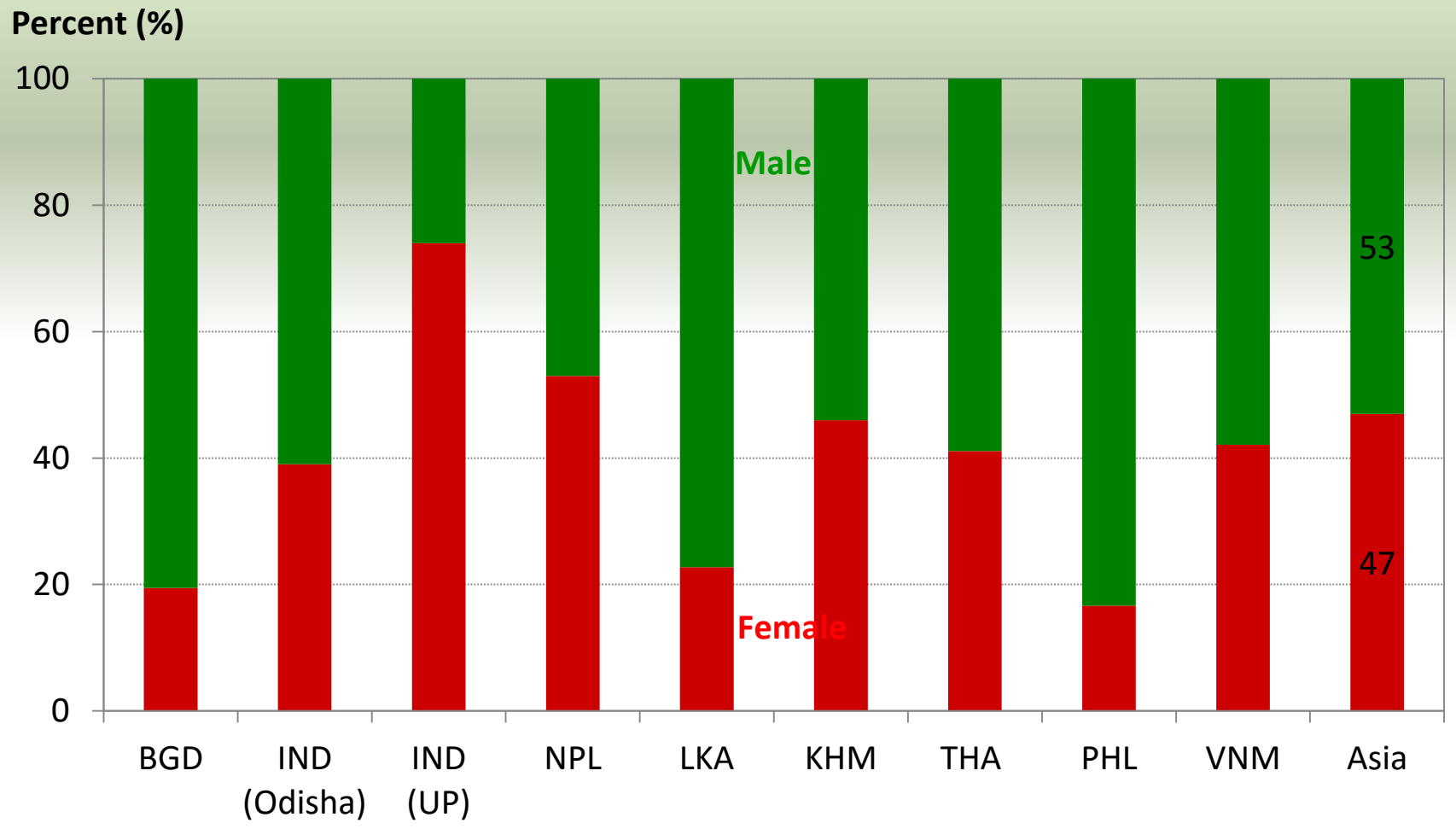


Philippines

Data source: VDSA panel data (2014) and Phil. loop survey (2012)

Slide from: H. Bhandari. 2015

Share of male and female labor in rice prod'n, 2004-10



Data source: FAOSTAT (2014)

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Towards SSL

Philippines Rice Program

Food Staples Sufficiency Pr

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Rice Program

Key Interventions:

3. Manage food staples consumption:
   - Promote consumption of alternative food staples and brown rice
   - Conduct IEC campaign to reduce food wastage

Achievement:

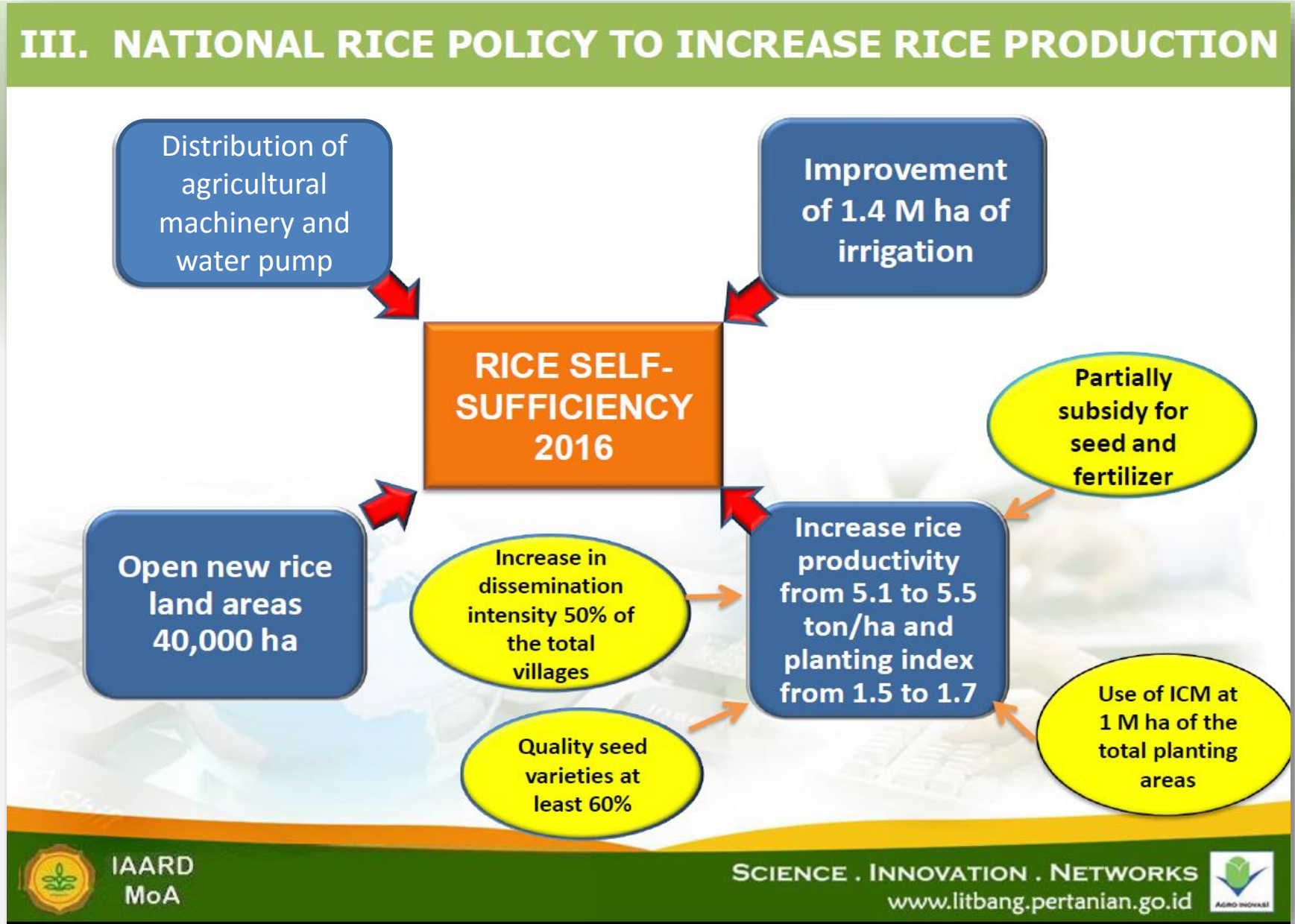
Reduced rice consumption

119.08 → 114.27

annual per capita consumption (2009 → 2012)

Be RiCEPONSiBLE

Indonesia Rice Program

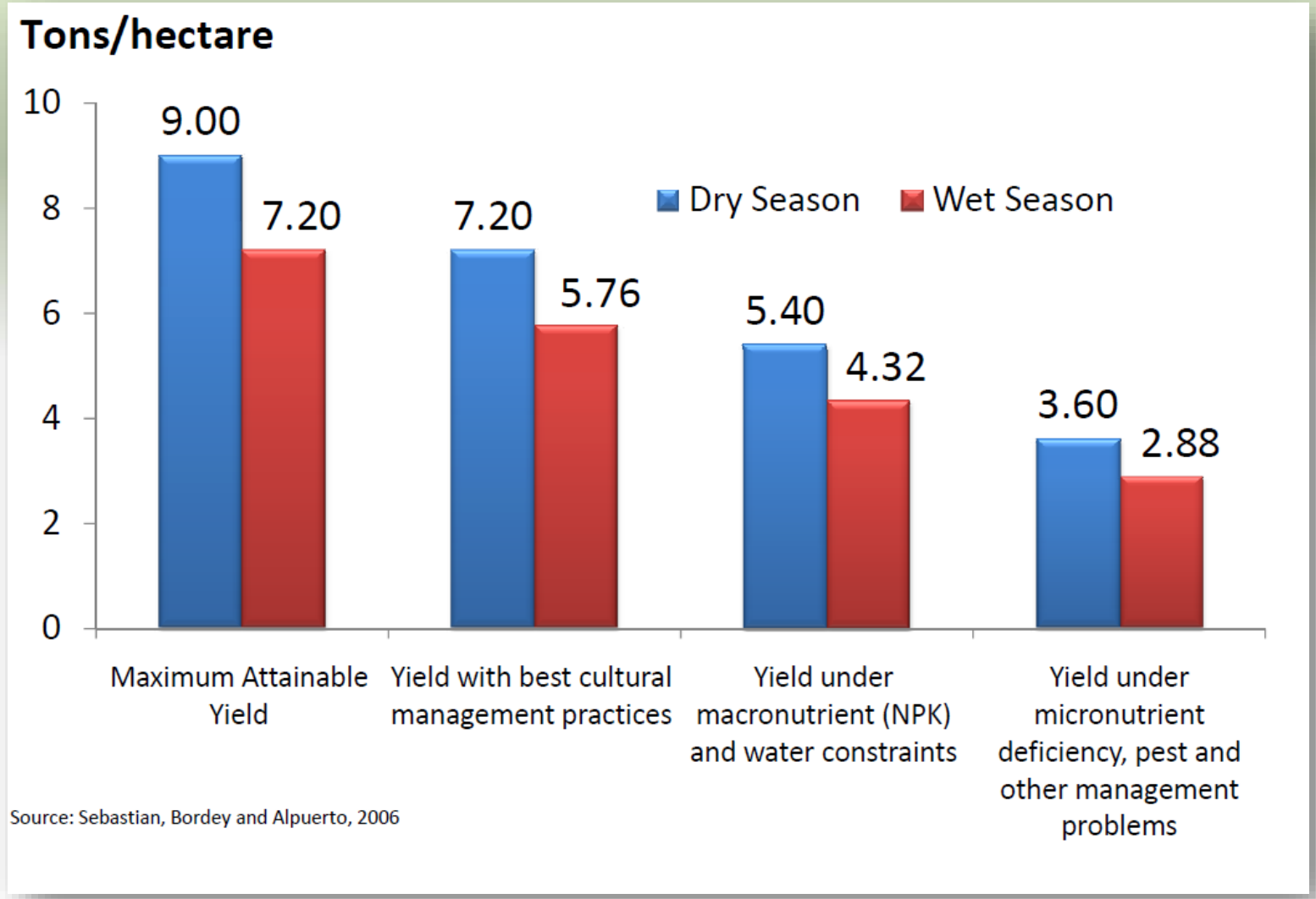


Factors contributing to yield increase

Factors	Contribution
1)R&D	25%
•Seeds (biotechnology, hybrid rice, certified seed, nutrition)	10
•Integrated crop management	10
•Mechanization	5
2)Infrastructure	40%
•Irrigation	25
•Farm-to-market roads	5
•Transportation	5
•Postharvest	5
3)Extension	15%
4)Environmental Factors	20%

Source: Balisacan, A.M., and Sebastian, L.S. 2006. " Challenges and Policy Directions: Overview." In Securing Rice Reducing Poverty, A.M. Balisacan and L.S. Sebastian (eds.). Science City of Muñoz: Philippine Rice Research Institute.

Yield Gap Analysis



Source: Sebastian, Bordey and Alpuerto, 2006

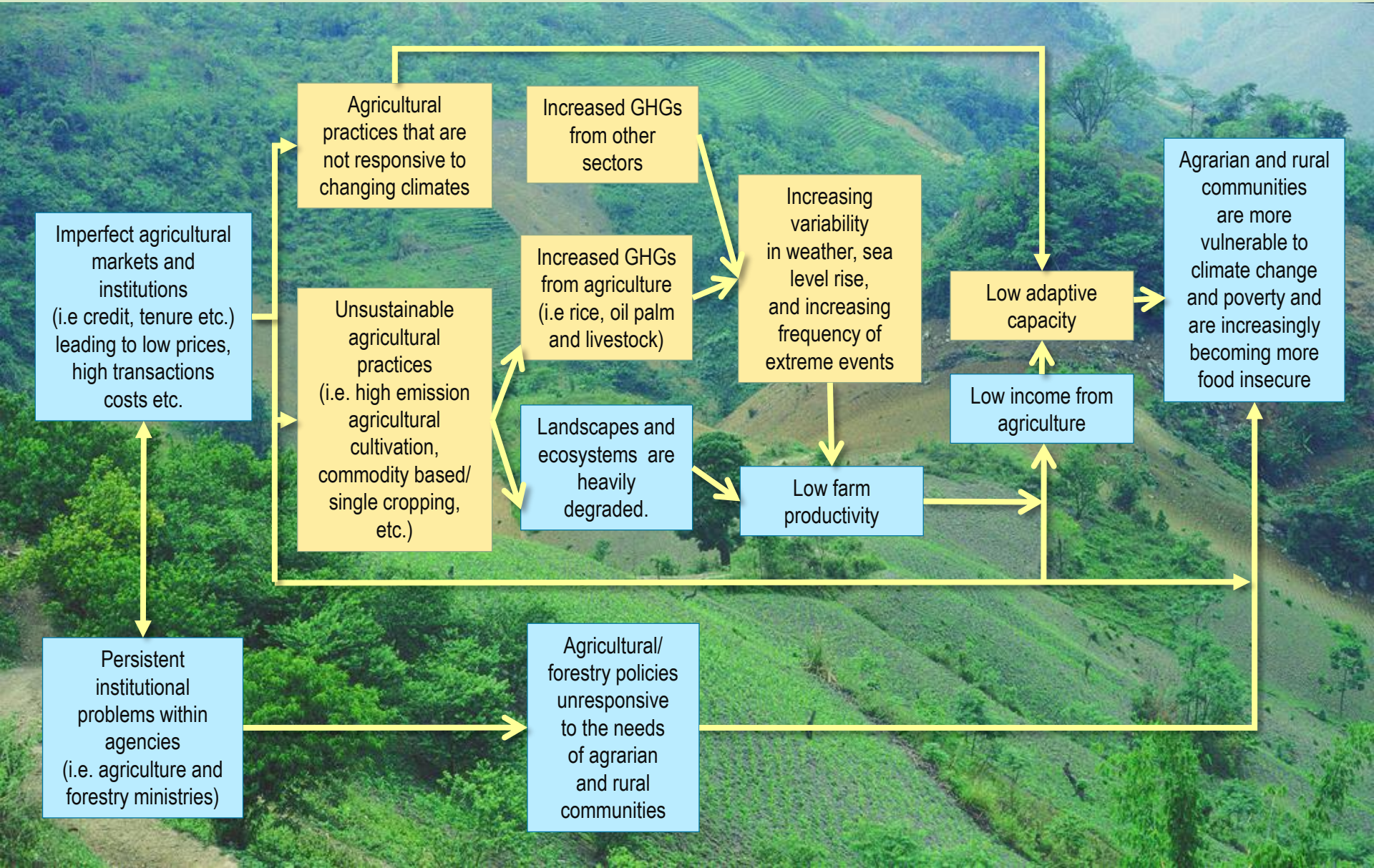
Integrated Crop Management (ICM)

1 must do: Use certified rice variety

5 reduction:

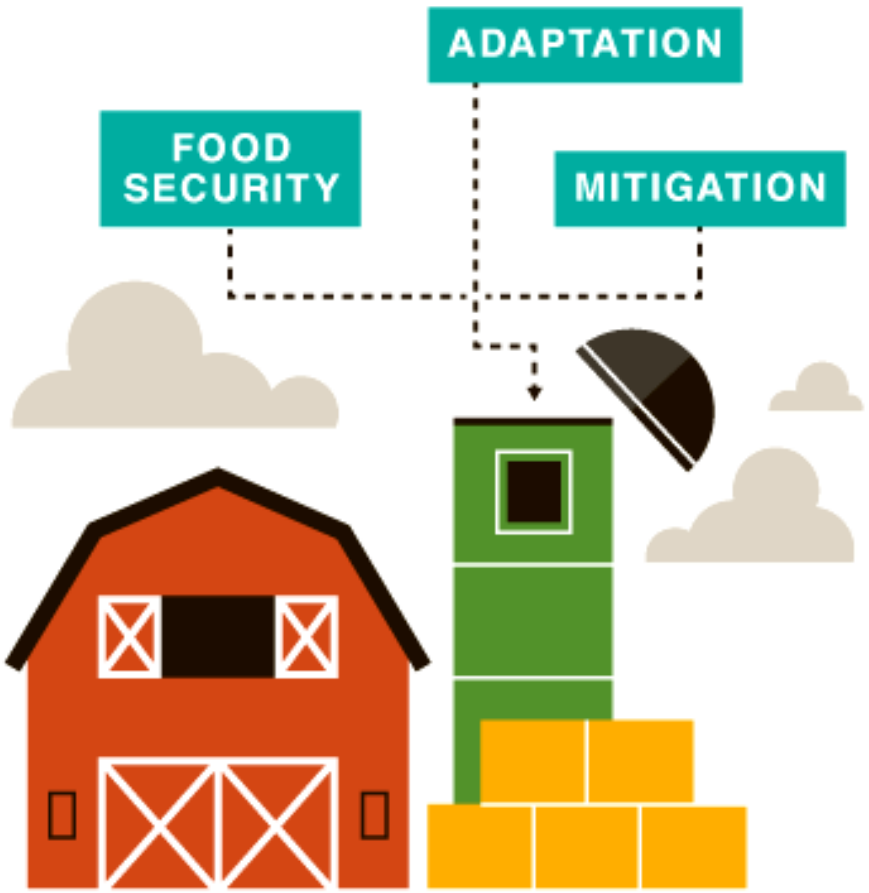
1: reduce seed quantity
2: reduce fertilizer use
3: reduce biocide use
4: reduce water use
5: reduce post-harvest loss

Climate change is aggravating the **challenges** affecting **agriculture and food.**



Climate-Smart Agriculture?

- Takes into account: food security, adaptation and ecological footprint
- Foremost about development itself and address smallholder concerns
- Crucial to deal with trade-offs
- Context matters: CSA differs widely
- Development & ecological footprint → green economy
- Its about outcomes, not just technology or practices



Integrated Approach to Climate Change

- Integration of interventions in a small landscape or village
- A model for scaling-up appropriate interventions
- Test bed for suites of adaptation and mitigation

Climate-Smart Village / Farm

WEATHER SMART	WATER SMART	CARBON SMART	NUTRIENT AND PEST SMART	ENERGY SMART	KNOWLEDGE SMART
• Seasonal weather forecasts • ICT based agro-advisories • Climate analogues	• Aquifer recharge • Rainwater harvesting • Community management of water • On-farm water management	• Agroforestry • Conservation tillage • Land use systems • Livestock management • Alternate wetting and drying	• Site specific nutrient management • Precision fertilizers • Catch cropping/ legumes • Ecological engineering	• Biofuels • Fuel efficient engines • Residue management/ biochar • Minimum tillage	• Farmer to farmer learning • Farmer networks on adaptation technologies • Seed and fodder banks • Market info • Off-farm risk management-kitchen garden






What will make Malaysia's SSL Viable? or rice sector competitive?

1. **Expand the rice areas for intensive rice production**
2. **Implement cost efficient integrated production-post production system**
3. **Pursue sustainable intensification**
4. **Make rice production climate smart**
5. **Encourage entrepreneurial farmers to go into rice farming.**

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CCAFS SEA Website
http://ccafs.cgiar.org/regions/southeast-asia