



Agribusiness in India

Outline

- Agriculture in India
- Problems
- Government initiatives/Schemes
- ICTD in agriculture
- Suggestions

Geographical Advantage

- 52% cultivable land compared to 11% world average
- All 15 major climates in the world exist in India
- 46 out of 60 soil types exist in India
- 20 agri-climatic regions
- Sunshine hours and day length are ideally suited for round the year cultivation



- Large livestock population , Variety domestic animals
- Large coastline
- Largest producer cereals
- Large irrigated area
- Prime location to connect to other countries

India's Rank relative to the world in various agri-products



Source: FAO, Kotak Securities

● Item, Rank, % of Global Share

Agriculture in India

- Share in GDP – 14%
- 11% of total export earnings
- 49% country's workforce
- BRICS study: 1% Growth in Agro=2-3 times more effective in poverty removal.

Concerns!!!

- DESPITE bumper production of food grains, 25% of all undernourished people in the world are living in India
- All demographic and food demand projections suggest that, by 2050, the planet will face severe food crisis due to our inability to meet agricultural demands :
 - 9.3 billion global population, 34% higher than today
 - 70% of world's population will be urban, compared to 49% today
 - Food production must increase by 70%

Problems

- **Agri Problems** – Segmented land , agricultural land being exploited because of increased urbanisation
- **Laws** - APMC , Essential crop act
- **Supply Chain Problems** – intermediaries
- **Logistics and Infrastructure** – warehouse , transportation , material handling
- **Finance-** difficult to get loans
- **Gap In Information** – No means to receive updates on new farming methods or market price information

APMC Acts: What and Why?

APMC derives motive from below two principles :

- **Farmer is not exploited** - Ensure that intermediaries (and money lenders) do not compel farmers to sell their produce at the farm gate at throwaway prices
- **Farmers gets good money** - All food produce should first be brought to the market yard and sold through auction

Functioning

- A State is geographically divided and Market (Mandis) are established at different places within the states.
- Farmers have to sell their produce through the auction at mandi.
- To operate in Mandi, a trader has to get license.
- Wholesale, retail traders (e.g. shopping mall owner) or food processing company etc cannot buy farm output directly from farmer. They've to get it through the Mandi.

Old APMC acts - Problems

- **Bureaucracy in system** - No transparency in election/nomination of APMC committee members
- **Farmers cheated at mandi** – delay in payment, no sale slip given, no on the spot payment
- **Double Commission** – middleman charges commission from farmer and retailer/food processor , hence heavy on pocket of end consumers
- **Hurting both sides** – prices do not drop much in peak season and profit don't reach farmers in lean season

Old APMC acts - Problems

- **No Value Addition** – No grading/sorting equipment's available => post harvest losses
- **Resistance to change** - resist anything that'll increase transparency or reduce transaction cost and time like Safal National Exchange in Bangalore
- **Price discovery** – No MSP declared for perishable goods
- **No Auction**
- **Cess** – Tax on Tax

Major Problems with APMC

- Licence raj
- Hoarding
- Minimum Support Price

Licence-raj == Lootera-raj

To operate in an APMC Market (Mandi), you need to get a license. This license raj leads to following problems:

- In most Mandis, the pre-condition to get license=> you must own a shop or warehouse in the Mandi. But Shops / warehouses are limited n number= extremely high prices.
- If you can't find a shop/warehouse, then you'll have to find an old man who has license but leaving business due to age/health problems and his sons not keen to join this profession. Then you buy his shop/license at extremely high price
- In any business where license is required=> Bribes have to be paid.

So again, No other option left then to exploit the farmers in order to recover your (bribe) investment.

Hoarding

- Big traders, agents- they buy commodities from farmers at throwaway prices in the Mandi.
- They rent large cold storage houses to store the purchased commodities.
- Thus these traders “control” the supply of these commodities across India. And whoever can control the supply, can control the prices.
- Thanks to this hoarding => Food inflation
- Rises in onion prices are often the result of this artificially created deficit in the supply

Minimum support price(1 / 3)

- Main focus is on cereals, pulses and oil-seeds, Not much considered for perishable commodities like fruits/vegetables
- Government declares minimum support prices (MSP) for many cereal, pulses and oilseeds crops=> middleman at APMC cannot exploit the farmers beyond a level (otherwise he can sell it to the FCI)
- but for fruits and veggies, government doesn't declare minimum support prices (MSP)=> gives plenty of opportunity for the middleman to exploit farmer (as well as end consumer).
- Because of this most farmers tend to grow cereal crops rather than cash crops

Minimum support price (2/3)



Junta demands this

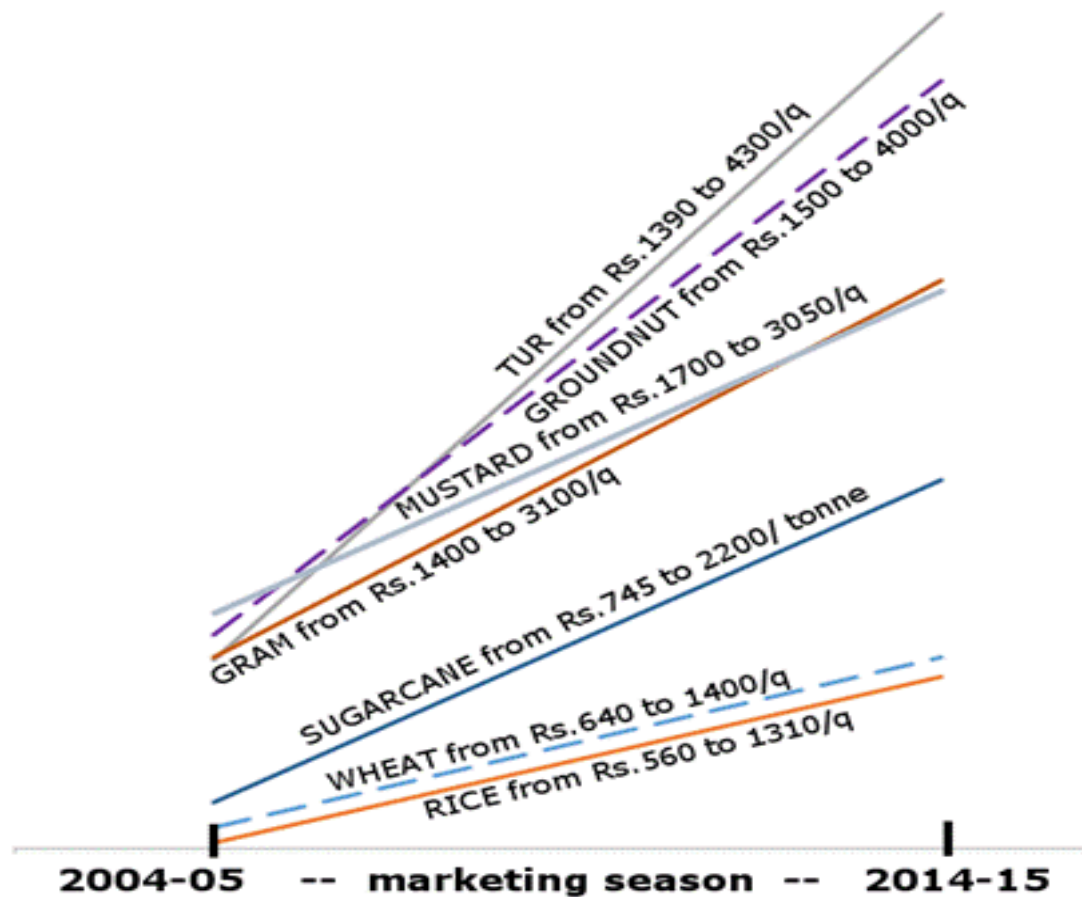
**Result:
Food inflation**



BUT Farmers Supply this because

1. MSP, crop insurance
2. Diesel subsidy
3. Cheap fertilizer, electricity

Minimum support price(3/3)



APMC revised

- Farmer doesn't need to bring his produce to APMC Mandi. He can directly sell it to whomever he wants
- Farmers Processors, exporters, graders, packers, etc. can buy agricultural produce directly from farmers
- Permits Private market yards, Direct Purchase Centers, farmers' market for doing trade in agriculture produce. (monopoly of Mandis=destroyed)
- Public Private Partnership in the management and development of agricultural markets in the country for post-harvest handling, cold storage, pre-cooling facilities, pack houses etc
- Increased the responsibilities of APMC committee
 - ❑ Transparency in pricing system and transactions
 - ❑ Ensure timely payments to farmers along with receipts
 - ❑ Publish data on arrivals and rates of agricultural produce brought into the market area for sale etc.

APMC - Summarized



farmer can't sell
directly to consumer.
APMC Acts prohibits.
He has to goto Mandi



APMC Mandi agents
1. Storage problem
2. Hoarding
3. Commission

Food inflation

Budget 2014 solutions

1. National market
2. Revamp State APMCs
3. Allow private yards
4. Let farmers directly sell to consumers



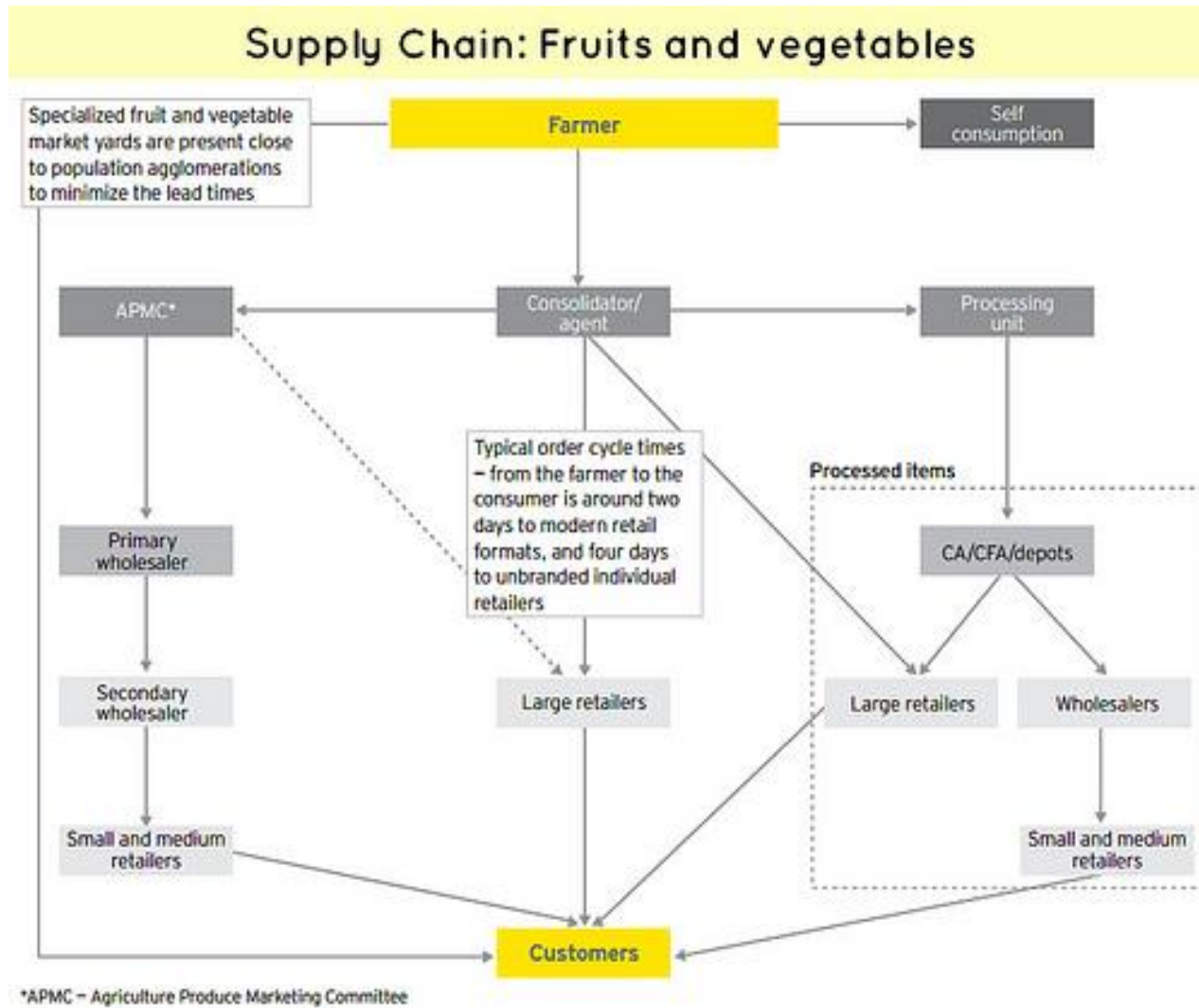
Essential Commodity Act

- What is it?
- Why it came into picture?
- Importance!!!!
- Why India does not see a steep price rise of Coca Cola but does see that for onions?

Supply Chain in Agriculture

- **Stakeholders included in Supply Chain**
 - Creators: Farmers, Food Entrepreneurs
 - Contributors: Middlemen, Retailers, Commodity Exchange
 - Consumers: Domestic and Foreign
- **Stakeholders influencing Supply Chain**
 - Government: Laws, Taxation, Incentives
 - Infrastructure: Transport, Storage, Power

Supply Chain : Example



Supply Chain Problems

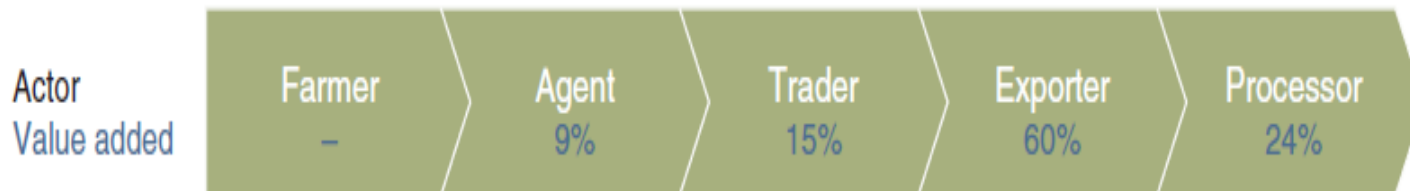
Yam value chain, Ghana



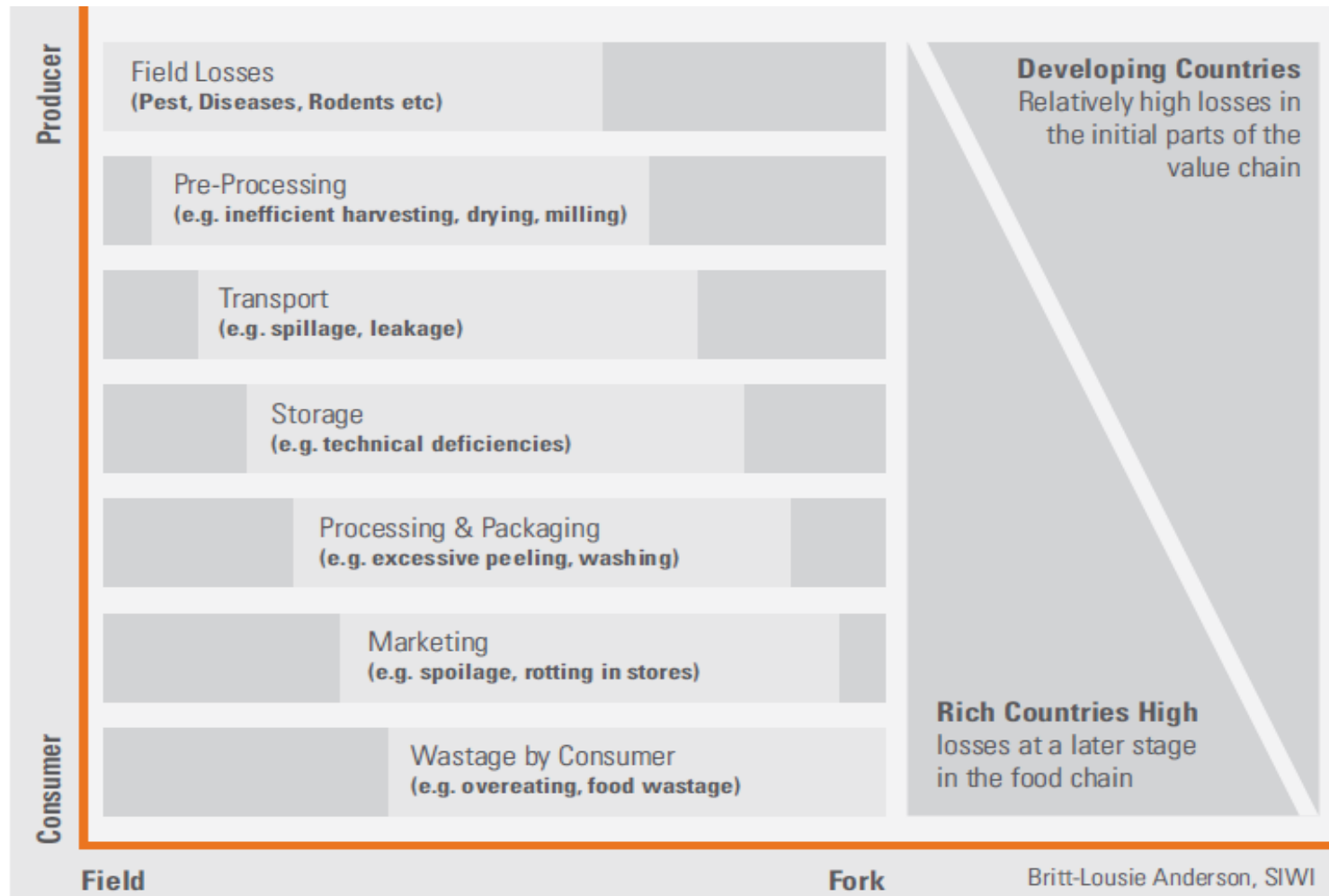
Kaja Apple value chain, Pakistan



Cocoa value chain, Ivory Coast



Losses across value chain



Finance Problems

- Bank reluctant to give loans- why??
 - Lack of credit discipline among farmers
 - Agriculture is risky business
 - Low repayment rate
 - Some farmers wait for government to disburse their loans
 - Small credit loans
 - No Documentary proof

Gap in information

- Dependency of farmers on informal means to know price of produce
 - 60.8 % of onion farmers in Karnataka depends on commission agents for price discovery
- Lack of awareness about schemes launched by government
- Lack of knowledge about technologies



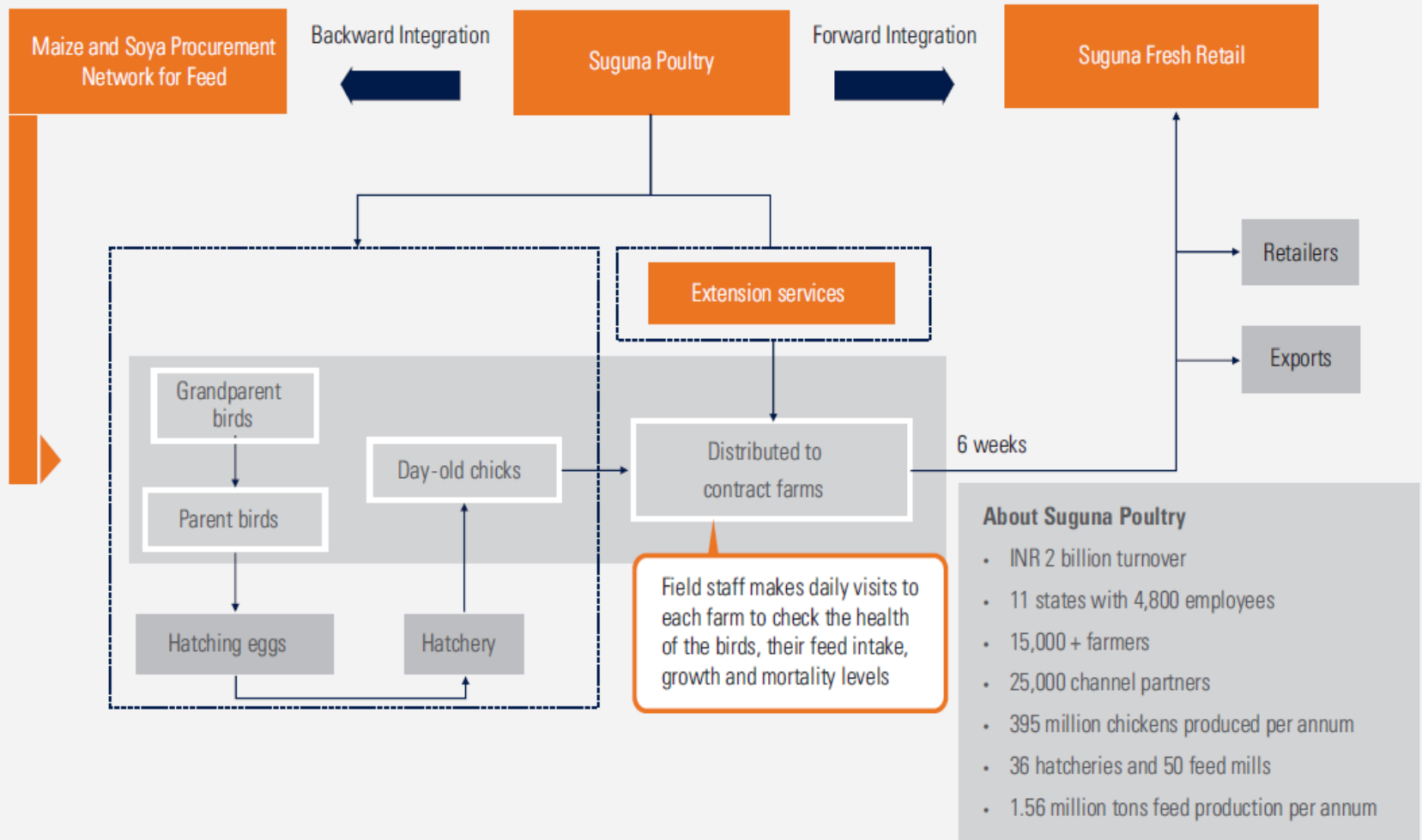
Solutions????

Direct Sale / Cooperative Market

- Contract Farming - Revised APMC Acts in some states
- Promote Markets like Rythu Bazar, Andhra Pradesh
- Promote “Below APMC-Mandi Market”
- Virtual Markets e.g. NCEDX, MCX

Contract Farming

Case Study: Contract Farming by Suguna Poultry



Rythu Bazar

State	Market Name
Punjab And Haryana	Apni Mandi
Rajasthan	Kisan Mandi
Tamil Nadu	Uzhavar Shanthigal
Maharashtra	Shetkari bazaar

- In South Korea, with direct marketing of agricultural products:

consumer prices declined by	Upto 30%
farmers' income rose by	Upto 20%

Virtual Markets(1/3)

- Example of such virtual markets:
 - Future Exchange
 - Spot Exchange
 - Warehouse Receipt System

Virtual Markets (2/3)



**Deposits wheat,
pays rent,
gets Warehouse
receipt (WR)**



Warehouse receipt



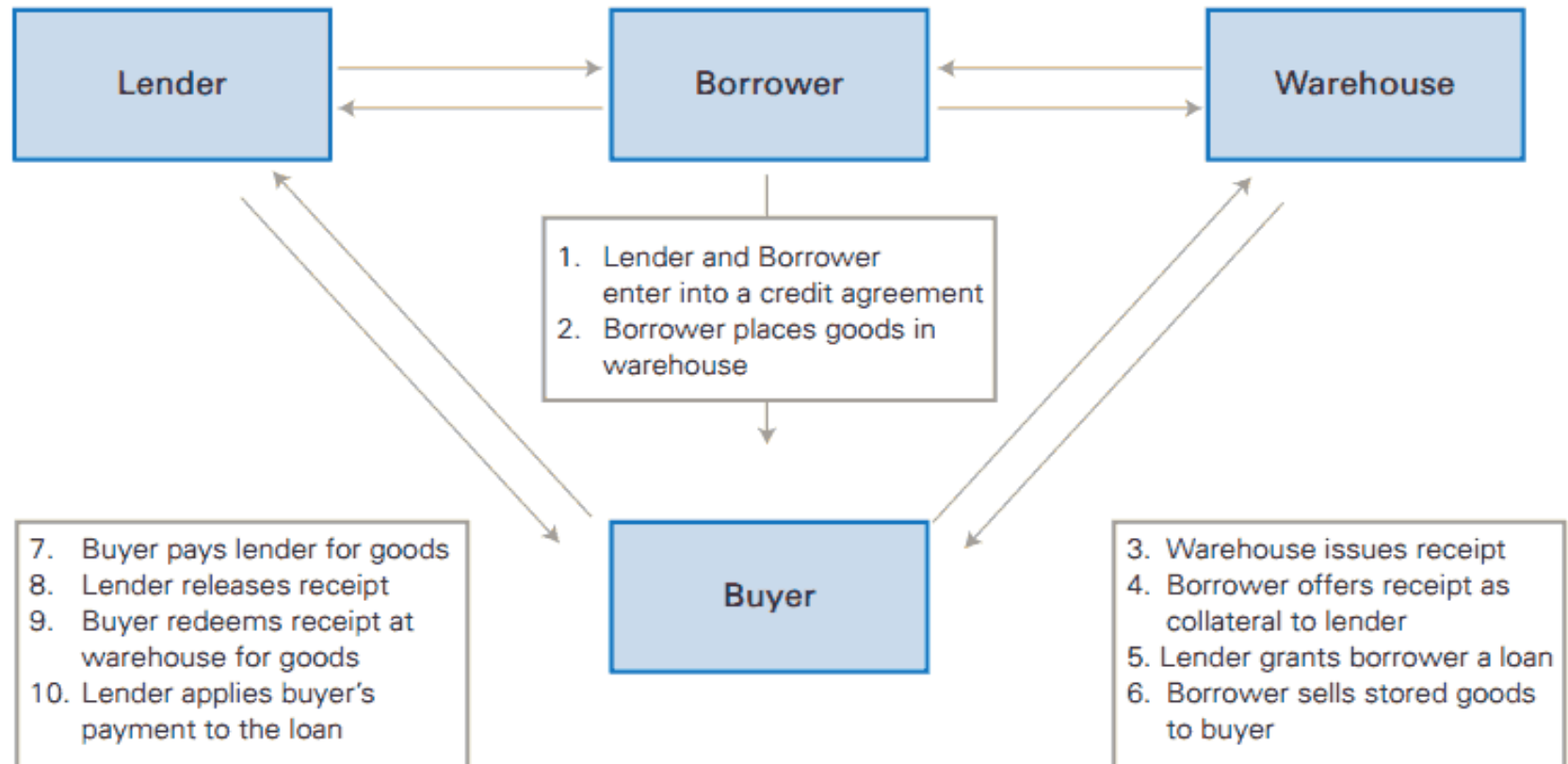
NSEL warehouse



**Can trade at
Commodity exchange**

Virtual Market (3/3)

Basic features of a warehouse receipt financing transaction



The NSEL crisis



5

Mrunal.org



3

Broker / Middleman

1. Hopes to arrange "Genuine" receipts from farmer / other brokers before DEADLINE
2. Using these investors money
3. Until then trades using fake warehouse receipts



2

NSEL e-series system
Online trading of commodities



4

Brokers had promised investors higher return in commodities market than share market



1

Expecting delivery in 20, 30 days

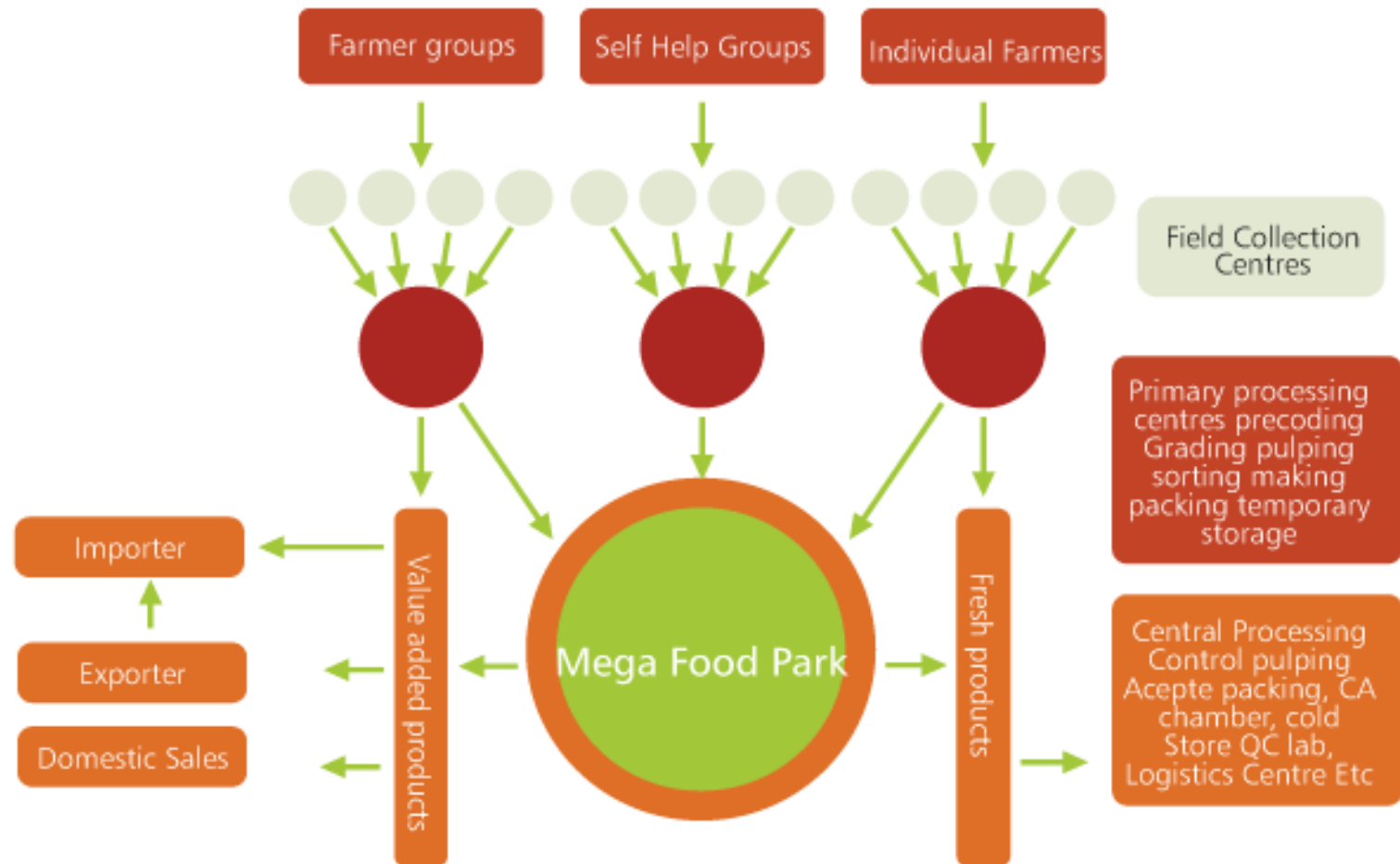
Schemes under 12th FYP

- Horticulture Trains
- Mega Food Parks
- “Kisan Vision Project” for setting up Perishable Cargo centers
 - Started Pilot Project at Singur, WB
 - Failed because of no infrastructure facility and away from market
- Encourage food processing sector

Horticulture Trains

- Why trains?
- Problems with previous goods trains
 - No ventilation
 - Have to keep doors open for ventilation
 - Slow Speed
- What is Horticulture Train?
- E.g. Banana Train: Jalgaon (MH) to the rail yard of the Azadpur mandi in Delhi

Mega Food Parks



Mega Food Parks



Mega Food Parks

- How will these food parks help?
 - Reducing post harvest losses
 - Maintenance of supply chain in sustainable manner
 - Brings employment
 - Reduces supply chain costs
 - Reduces food wastage across food value chain and improve quality and hygiene
- PM Modi inaugurated Mega food park in Tumbur, Karnataka on 24th September, 2014

Cold Chain Infra

- About 30% fruits and vegetables grown in India get wasted annually
- Mobile pre-cooling van and trucks
- Why is it important?
- Food irradiation plants
 - BARC has set up a irradiation plant at Lasalgaon in Nasik (MH)
 - It increases shelf life of onion

Food Processing Industry (1/2)

- Increases shelf life: milk vs butter
- Increase value: milk vs butter
- Well-developed food industry + compact supply chain=reduces food inflation via:
 - Disintermediation (meaning no middlemen/commission agents)
 - Less wastage/spoilage of perishable products

Food Processing Industry (2/2)

- Investment of INR 10 billion generates employment for:
 - 54,000 people in the food processing sector,
 - 48,000 people in textiles
 - 25,000 people in the paper industry
- 60% of the employment generation takes place in small towns and rural areas
- Controls rural-urban migration, which prevents
 - unplanned urbanization,
 - slums/hygiene/social problems in cities

Food Processing- Scope

Level of Processing across segments (Source: MOFPI Annual Report 2007-08)

Segment	Level of Processing	Comments
Fruits and Vegetables	2.2%	USA (65 %), Philippines (78%) and China (23%); 60-70% in developed countries
Fisheries	26%	
Poultry	6%	
Buffalo Meat	20%	
Milk	35%	60-75% in developed countries

Food Processing- Challenges

- Largely unorganised
- Poor infrastructure
- Government schemes/subsidies/grants have low ceilings
- Difficult to get bank loans
- Bigger the plants bigger the headache in terms of tax liabilities
- Overlapping laws because of multiple schemes

FHEL's Apple Business

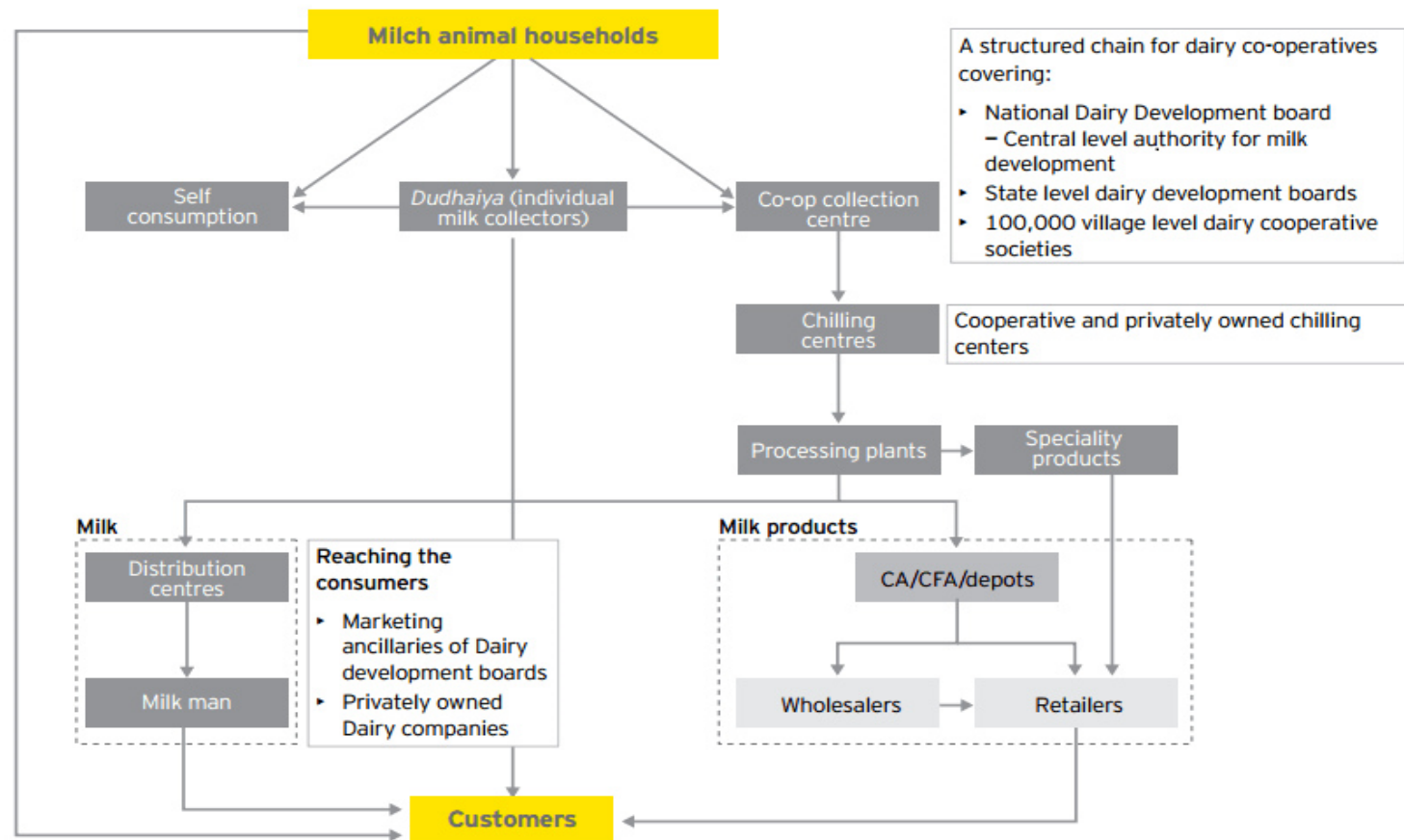
- Container Corporation of India (CONCUR)- a PSU under Railways ministry.
- Fresh and health Enterprises Ltd (FHEL) - subsidiary company under CONCUR, started in 2006
- to create world class cold chain infrastructure in the country
- procures Apples from Shimla & Kinnaur districts of Himachal Pradesh and transports them to Sonapat for sorting, grading, packing & storage

HPMC

- Himachal Pradesh Horticultural Produce Marketing and Processing Corporation Ltd
- Collect and disseminate market information by holding exhibitions.
- Promote, aid and finance the research projects on horticultural production.
- Promoting export quality produce => kiwi production encouraged

Milk Supply chain

Supply Chain: Milk and Dairy products





ICTD

Role of ICTD in Agriculture

- Use of technology to provide information to farmers
- Why?
- What Information?
 - Price of crop in various markets
 - Weather forecasting
 - Knowledge to improve crop productivity and quality

Supply-Chain Management (SCM) Systems

- Stores information about suppliers
- Enables the company to transmit an order to farmers
- Ideally, allows production to be monitored
- Track the transport of goods
- Examples : Suguna Poultry – Oracle's SCM, Godrej Agrovet

ICT in Agriculture

- High hardware and software cost
- Lack of supporting infrastructure like proper internet connectivity in developing country
- But now diffusion of ICT devices (especially mobile device) has eased this constraints
- Use of cost-effective technologies like use of excel sheet to store data
- Different types of ICT applications as per need

Case Studies

- e-Choupal by ITC
- RML (Reuters Market Light)
- E.I.D. Parry
- Virtual City – AgriManagr
- ACDI/VOCA's ICT Solutions
- TIPCEE's ICT Application in Ghana

e-choupal

- Why e-choupal?
 - Problems with old system
 - To avoid intermediaries
- ITC Limited
- Over 4000 e-choupals covering over 24000 villages
- 45 hubs

e-choupal: Infrastructure and Operation

- Each internet kiosk was designed to cater to its host village and four other neighbouring villages within a five kilometre radius
- Each is equipped with Computer with broadband internet connectivity through VSAT
- Set up of hubs for collection of soy sold to ITC

e-Choupal: Services provided

- Provide information about 60 mandi prices to soy farmers in the state
- ITC's own offer price at its 45 hubs
- Farming Techniques / Crop Management
- Weather Updates
- Expert Advise
- Free of cost!!!
- The seeds, fertiliser and other inputs

e-Choupal: Effectiveness / Sustainability

- Increase in monthly mandi price of soybean by 1-3%
- Dispersion of soybean prices across the affected mandis in Madhya Pradesh decreased after the intervention
- Reduction in Transaction cost
- ITC saved 12.9 billion rupees in the first year operation through better quality oil and DOC (de-oiled cake)
- By 2005, it reached out to 3.5 million farmers growing range of crops

Some Findings on e-choupal

Transaction	Mandi system		eChoupal system	
	Farmer	ITC	Farmer	ITC
Transportation	120	120	120	0
Labour costs	50	0	0	0
Commission to agent	150	100	0	50
Handling	50	40	0	40
Bagging	0	50	0	75
Cash disbursement costs	0	0	0	50
Total	370	335	120	215

Per metric ton

Reuters Market Light (RML)

- Launched in October 2007
- Use of mobile phone text messages to inform farmers about crop prices
- 1.4 million unique subscribers so far in an estimated 50,000 villages across 17 states
- In October 2014, launched myRML mobile app for farmers on all feature and Android Platform , 10K farmers as already registered

RML - Working

- Farmers will subscribe using subscription card from RML's local distributors
- Subscription
 - Fee of 80 ₹ per month
 - Select 2 crops and 3 markets for each crop
 - Select language
- Employees of RML will collect data and send it to central server
- Data Verification
- Message Sending

RML - Services

Weather

- » Daily Weather Information
- » 3 Days Rolling Forecast
- » Frost Alert
- » Wind Speed

Farm Solutions

- » Crop Advisory Tips
- » Sustainable Agriculture Practices
- » Weather Based Advisory
- » Animal Husbandry
- » Organic Farming
- » Crop Improvement Techniques

Agri Information

- » Market Information
- » Post Harvest Technology
- » Agri Input Information
- » Regional And Local Agri News
- » Government Schemes and Subsidies

Market Data

- » Market Prices for Agriculture Commodities
- » High, Low and Modal Prices
- » Commodity Arrival Information
- » Variety Specific Market Prices


Health & Education

- » Hygiene
- » Women and Child Education
- » Health Tips and Balanced Nutrition
- » Vaccination Schedule
- » Government Schemes

Financial Information

- » Banking Information
- » Lending, Insurance and Investments
- » Agriculture Related Financial Policies

RML - Impact



5.2% reduction in price dispersion across markets due to availability of RML service

- Developing Electronic Markets in Low-tech Environments: India's Agriculture Markets - Research Paper by Chris Parker and Bruce Weber, London Business School, 2011

80% of farmers changed information sourcing behaviour after using RML

- Best Practices in ICT and Agriculture: Study of Reuters Market Light and PIKA Farmers, ACDI/VOCA & USAID, 2011

90% of farmers believed they benefited from RML service, over 80% willing to pay for the same

- ICRIER study in 2009 - India: The Impact of Mobile Phones, ICRIER Study, 2009

RML –Case Study

- Location: Uttar Pradesh
- During ban on bulk messages during period of evening of September 22, 2010 to night of October 4, 2010
- Study shows that price dispersion went high about 12% during this period in the area with large number of subscribers as compared to area with low subscribers
- After the ban lifting again price dispersion reduced
- One possible reason for this price dispersion may be due to civil unrest
- But author denies this and gives reason as:
 - While civil unrest was expected, none was reported in news, heard of, or personally observed
 - No decrease in the transacted volume

RML - Conclusion

- As per survey, it is proving to be beneficial to farmers
- More farmers are connecting
- Limitation
 - price for the produce of highest quality
 - Farmers with low quality produce have to expect low price

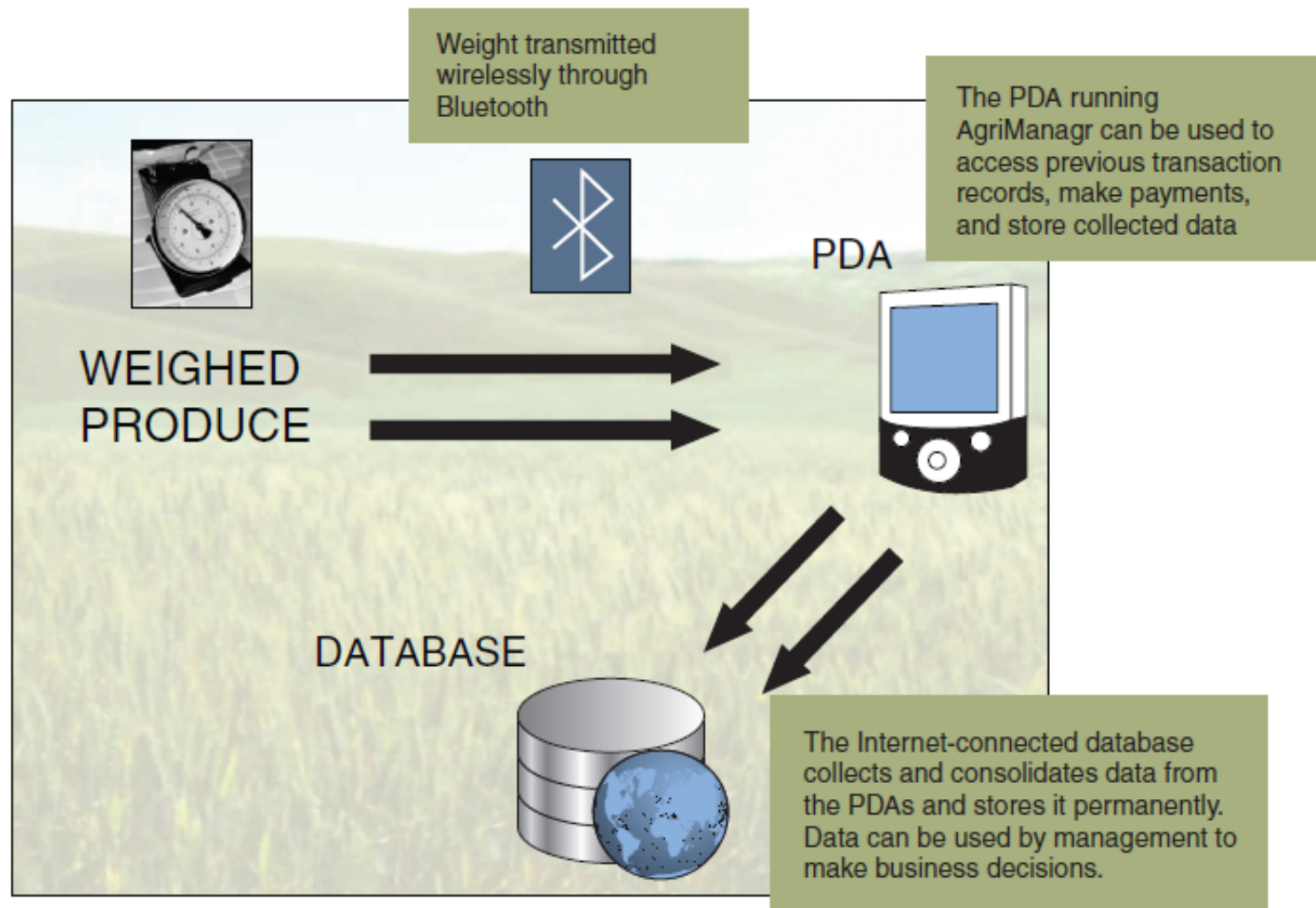
E.I.D. Parry's Indigriline Services

- Seller of sugar and fertilizer
- Makes use of kiosk and web based portals
- Sources sugarcane from 80K-100K farmers
- Franchise Business Model
- Impact, Scalability, and Sustainability
 - Moving to Mobile phones

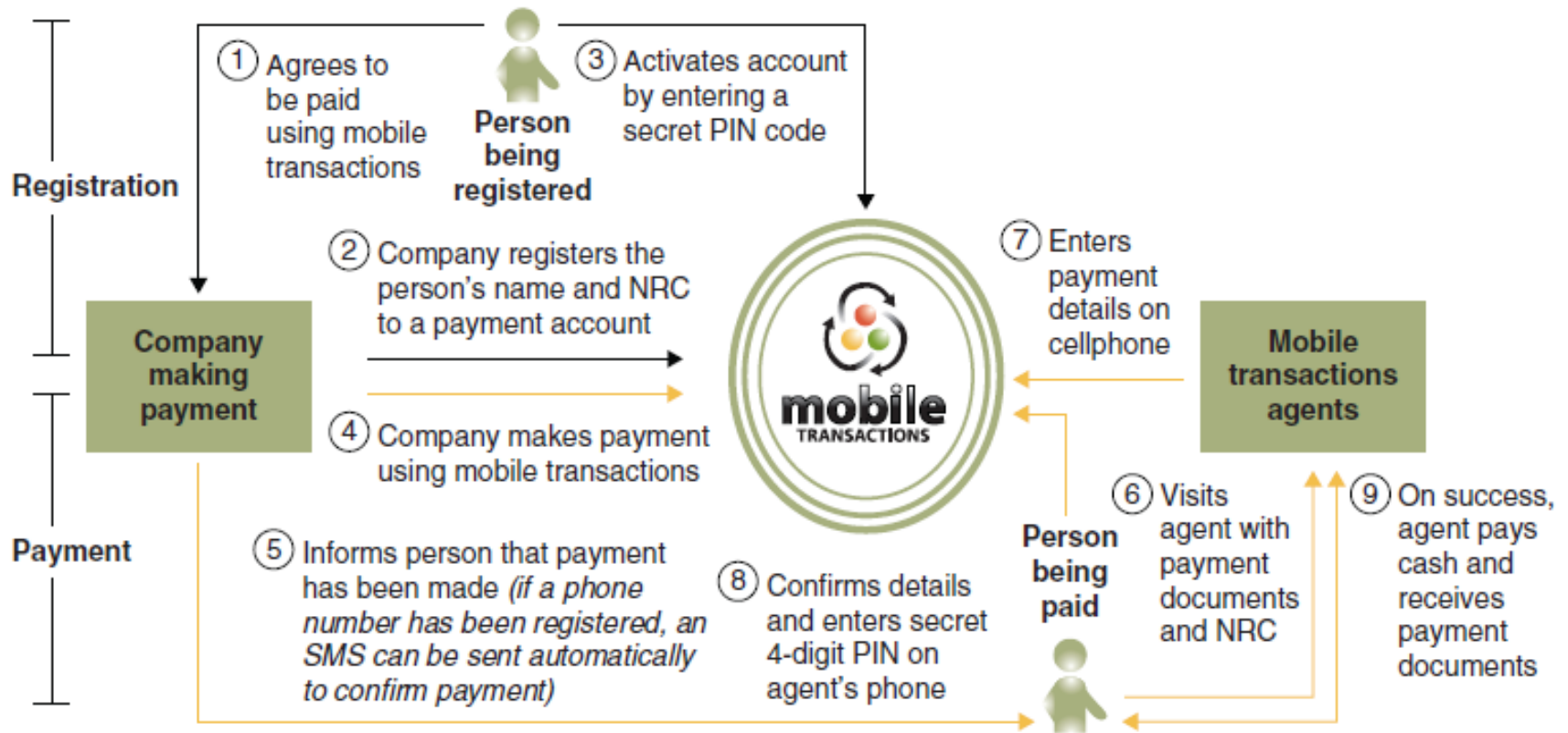
Virtual City - AgriManagr

- Kenya based company
- Automates the collection of produce from smallholders and rural centers
- Farmers possesses small handheld PDAs running AgriManagr software and smartcards
- Payment is done electronically and printed receipt is given to farmers
- Brings Transparency

Virtual City - AgriManagr



Collaboration between Multiple actors



The Process by Which Dunavant and MTZL Collaborate to Pay Farmers

ACDI/VOCA's ICT Solutions

- ACDI/VOCA collaborated with Infosys to develop SCM software freshConnect, that reduces the barriers in Supply Chain Management
- The software has 3 main modules:
 1. Order Placement
 2. Order Fulfilment
 3. Order Shipment
- Infosys charges for setup cost and a transaction cost
- Hypercity and Radhakrishna foodland (RF) became the first to use this software to source directly from more than 300 farmers

ACDI/VOCA's ICT Solutions

- Impact
 - Farmers report earning 15-20% more
 - HyperCity and RF report a 10–15 percent reduction in post harvest wastage.
- Scalability
 - Scalable with additional hardware
- Sustainability
 - Additional customers have not signed on to use freshConnect because the product is more expensive compared to those of new market entrants.

TIPCEE's ICT Application in Ghana

- Project is supported by donor
- The project had two initiatives:
 - include smallholders in supply chains by systematically improving product quality and reducing costs and bottlenecks in each supply chain
 - implement broad policy reforms to improve the enabling environment around the supply chains and make them more competitive
- The TIPCEE project used GIS and barcode applications with GPS readers, barcode scanners, a wireless mobile network, and networked computers to address the traceability problem.
- Coordinates stored in barcode using GPS can be used to track back source of the product
- Also, it can be used to track the path of the product

Other Initiatives

- i-community, Kuppam
- i-kisan
- Information Villages of Pondicherry
- n-Logue
- Gyandoot (Govt Of Madhya Pradesh Initiative)

Challenges faced by ICTD

- Internet Connectivity
- Illiteracy of people
- Maintenance of kiosks
- Capital cost of Kiosks
- Failure of online trading on Soybean
- Middleman does not support transparency

Suggestions

- Online close bidding
- Use of Geographical Information System (GIS)
- Contract Farming with the use of SCMs
- Infrastructure development through Private Sector Participation (PSP)
- Harmonisation of taxes
- 100 percent tax breaks in Research and Development (R&D) sector
- Easy Financing
- Promotion of Indian Food in global markets



Questions ?