Exploring regional industrial development through agro-processing.

Case of the soy value chain in Zambia, Zimbabwe and South Africa

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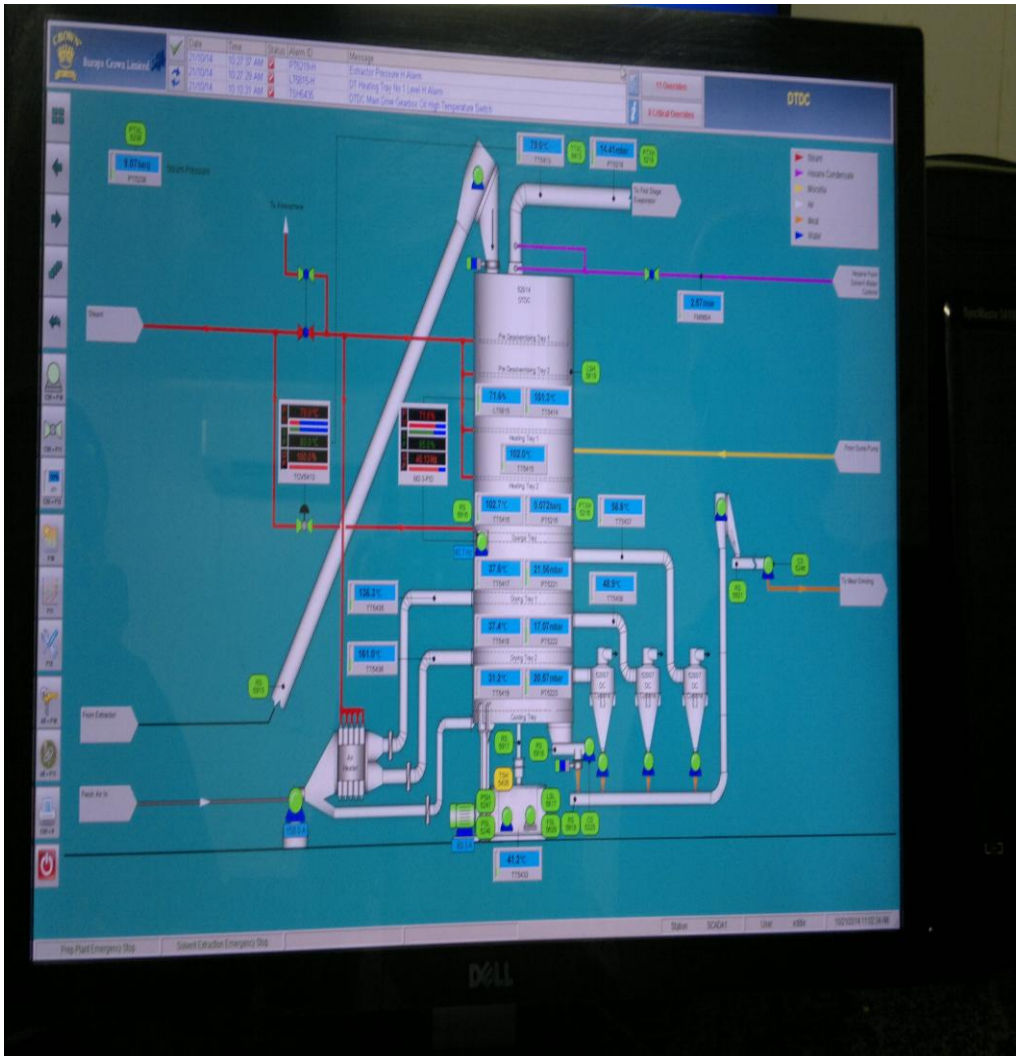
Introduction

- Recent interest in agro-industrialisation with rising price and demand together with developments in theoretical debates on agro-industrialisation.
  - Consumer demand for poultry, rising soy prices
  - Agroprocessing/increased value added as path to industrial development
- Regional collaboration is not emerging other than to fill gaps or cover needs of national industries.
- Competition and production remains national with different challenges and characteristics within and across national production-processing networks.

Presentation overview

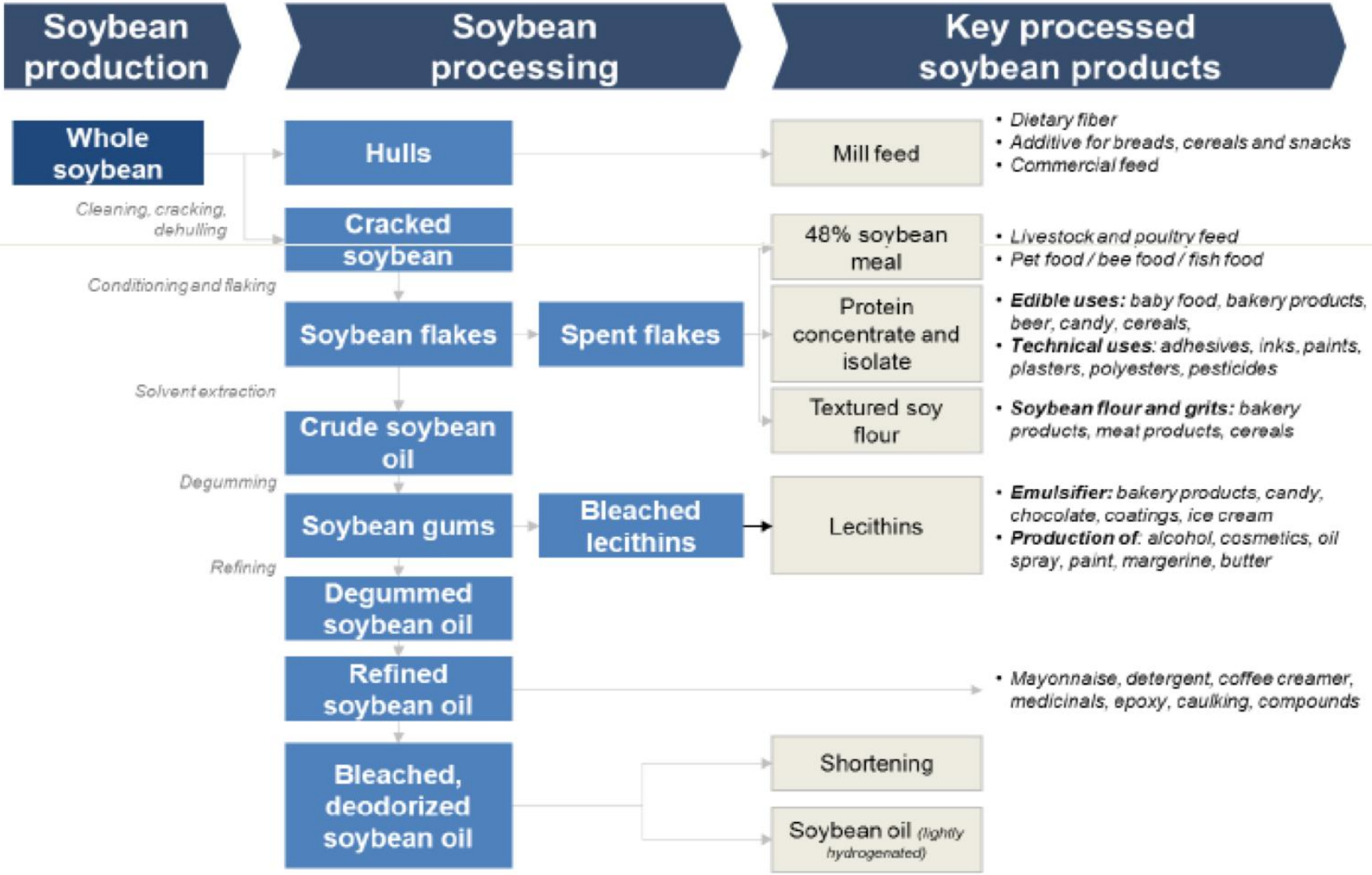
- Select highlights of the national soy value chains
- Connecting to theoretical debates
- Policy and further research implications



Main conclusions

- There is space for regional collaboration but this will not emerge from the current state and structure or the market
  - with firms focus on national, intra-chain development limited competition in processing and imports of soy meal and undeveloped soy oil market
- Growth potential in regional import substitution and leveraging different national VC attributes, but can also be in developing new joint production or non-production areas (e.g. infrastructure)
  - obstacles in national interest and disinterest/mistrust, transport, trade agreements, developing market for oil, and growing production (with challenges varying from inputs, information, funds, logistics, volume, quality, competition with other crops)
- No significant development of employment or intra-chain linkage strengthening in current structure.
- Soy agro-processing is not adequately explained by theory
  - Upgrading (MVA) and GVC describe some activities but not dynamics
  - No coordinated production, employment or linkage development

FIGURE 1.1 PRODUCTS THAT CAN BE GENERATED FROM SOYBEAN

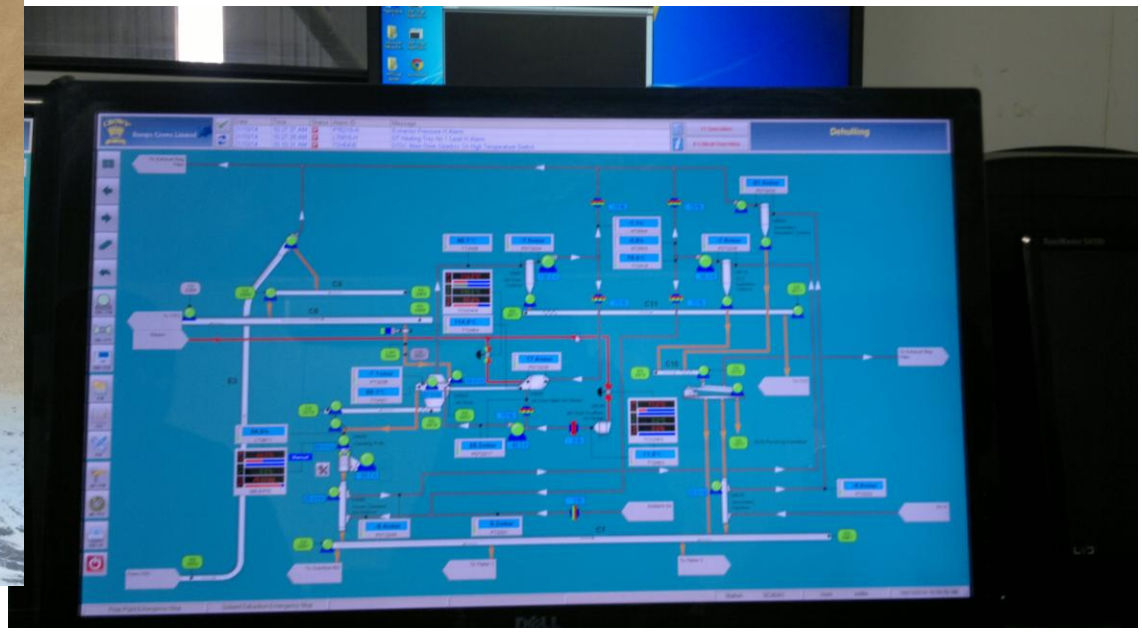


Source: Adapted from the World Initiative for Soy in Human Health.

Source: ACET (2014, p.11)

Some findings from the soy case studies

- Focus on some specific characteristics across industry segments
  - Production, processing, inputs, support
  - Trade, pricing, costs, infrastructure
- Great differences in the challenges and attributes between countries
- Cross-country interaction is limited and primarily based on competition in processing or higher value-added or sourcing missing inputs


Defrosting

What is similar?

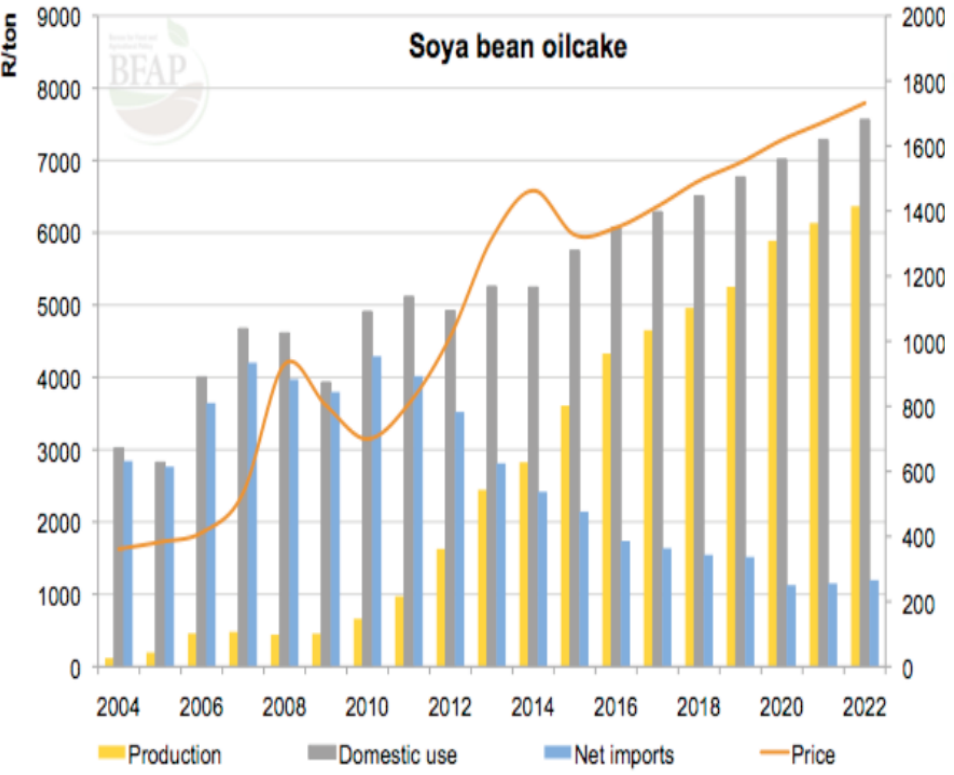
- Price growth
- Limited regulation
- Little export
- Soy oil market is underdeveloped
- Driven by desire to develop higher value-added. Investment into processing capacity
- Concentration of processing
- Focus on domestic market, mistrust/disinterest

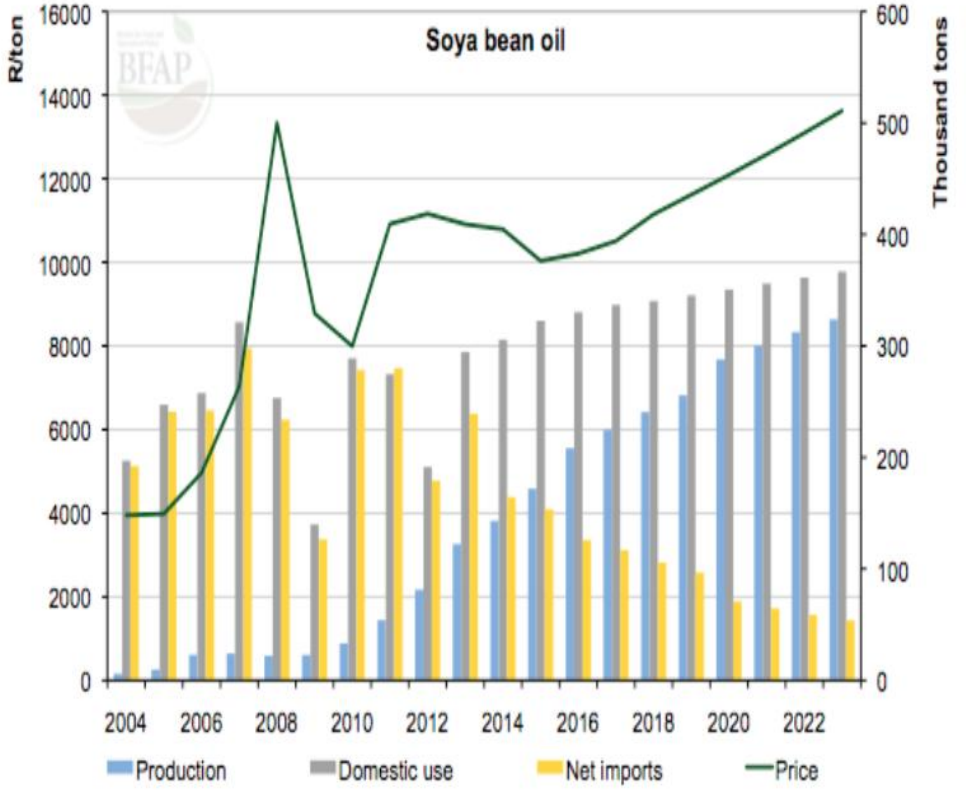
What is different?

- Tension between producers and processors
- Farming structure varies
- Coordination and infrastructure (transport, storage)
- Inputs (technology, fertiliser, irrigation, soil)
- Demand growth
- Tastes (e.g. soy oil)
- Import competition (SA – Argentina, Zambia-Indonesia, Zimbabwe – imports high)

Highlight 1: SA Price, imports, production

- prices influenced by Chicago Commodities Exchange and exchange rates
- SA imports from Argentina
- processing investment (2011) not yet in full force



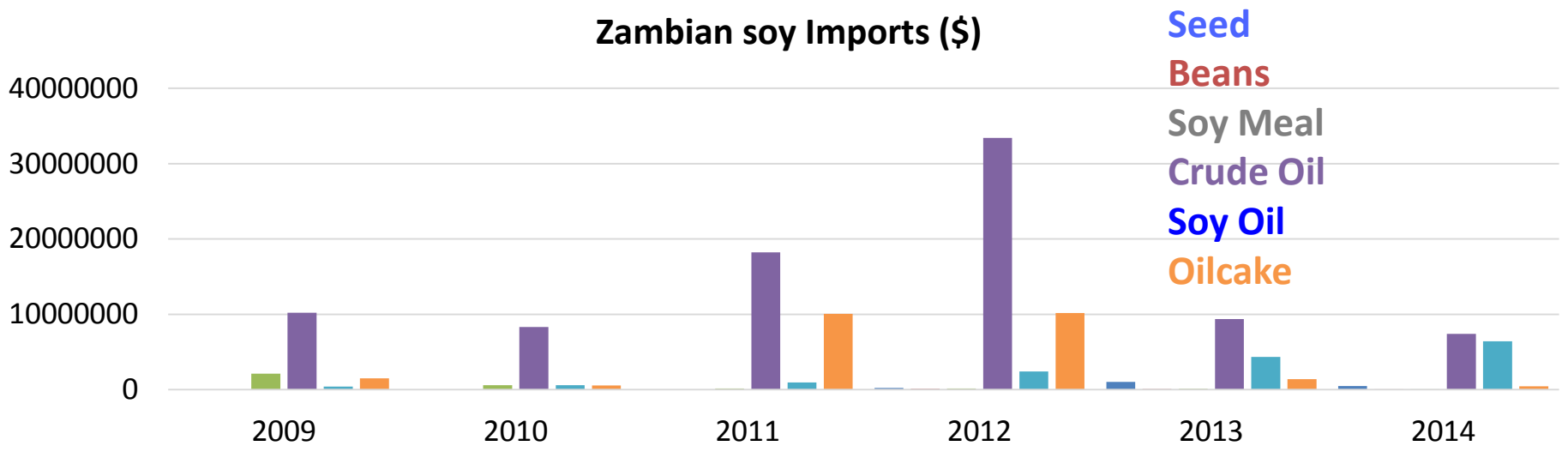


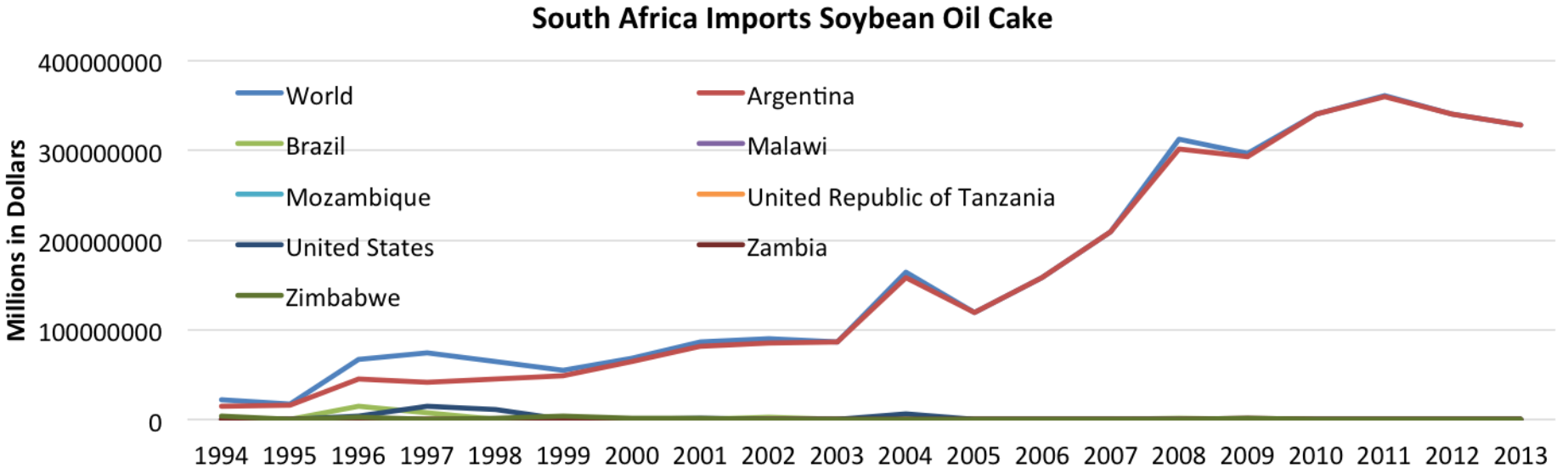
Identifying the challenges

- Main obstacle in the past: insufficient processing capacity,
- Increases in processing not creaing demand-pull**. All 3 c's report good processing capacity devt but limitations in production.**
- Cost- and quality-competitive imports of soy oilcake also hinder growth in domestic production.

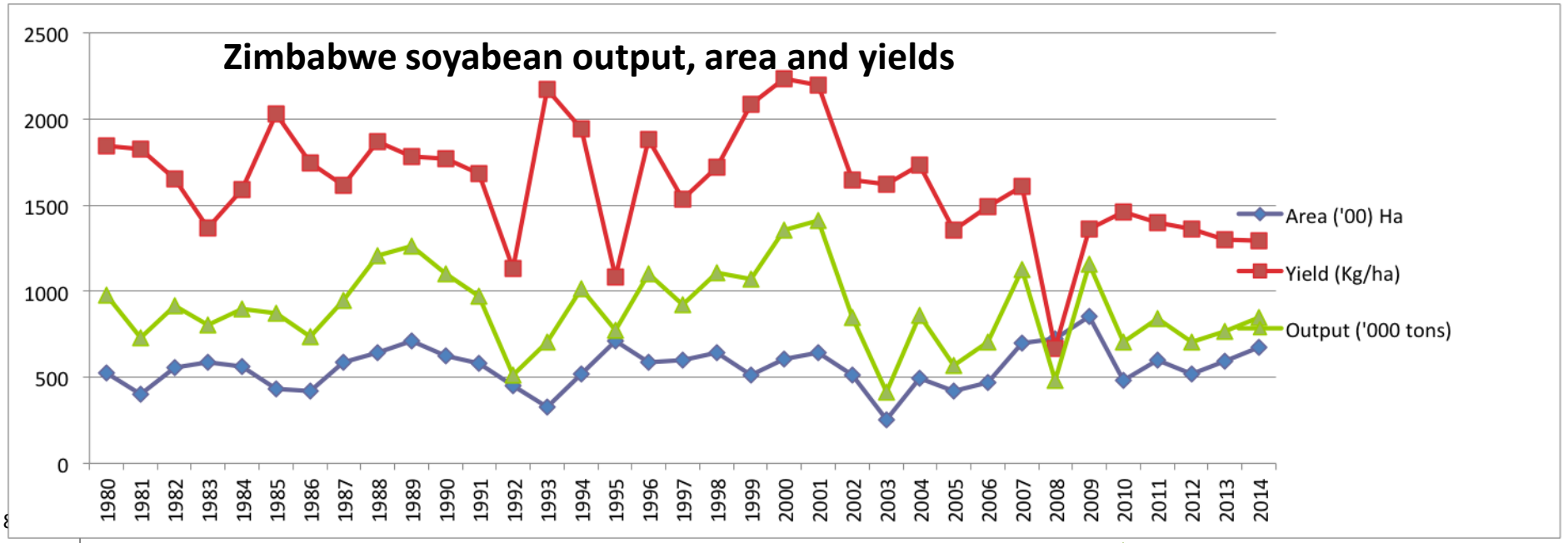
- Production tends to be primarily large scale farming in SA but mixture of large, medium and smallholder farmers in Zambia and Zimbabwe. This creates differences in access to credit, information, inputs, mkt access and negotiation position on price and sale of output.
- There is diversity across the 3 countries VC in terms of: production structure, access to inputs/information/finance and in terms of the competition within the domestic markets (e.g. SA GMO imports from Argentina, Zam/Zim GMO ban).
- There are also several areas of similarity: sufficient processing capacity not creating demand pull, non-harmonised and complex set of trade agreements/domestic regulation confine VC devt, national focus with little or no push towards regional collaboration.

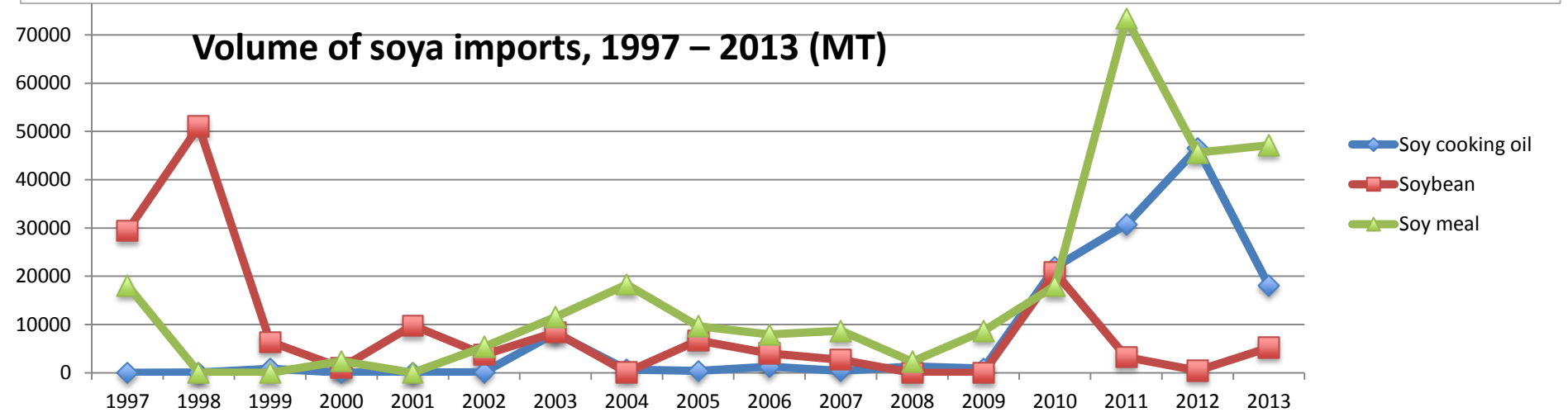
Highlight 2: Imports and exports





Highlight 3: Zimbabwe production & imports

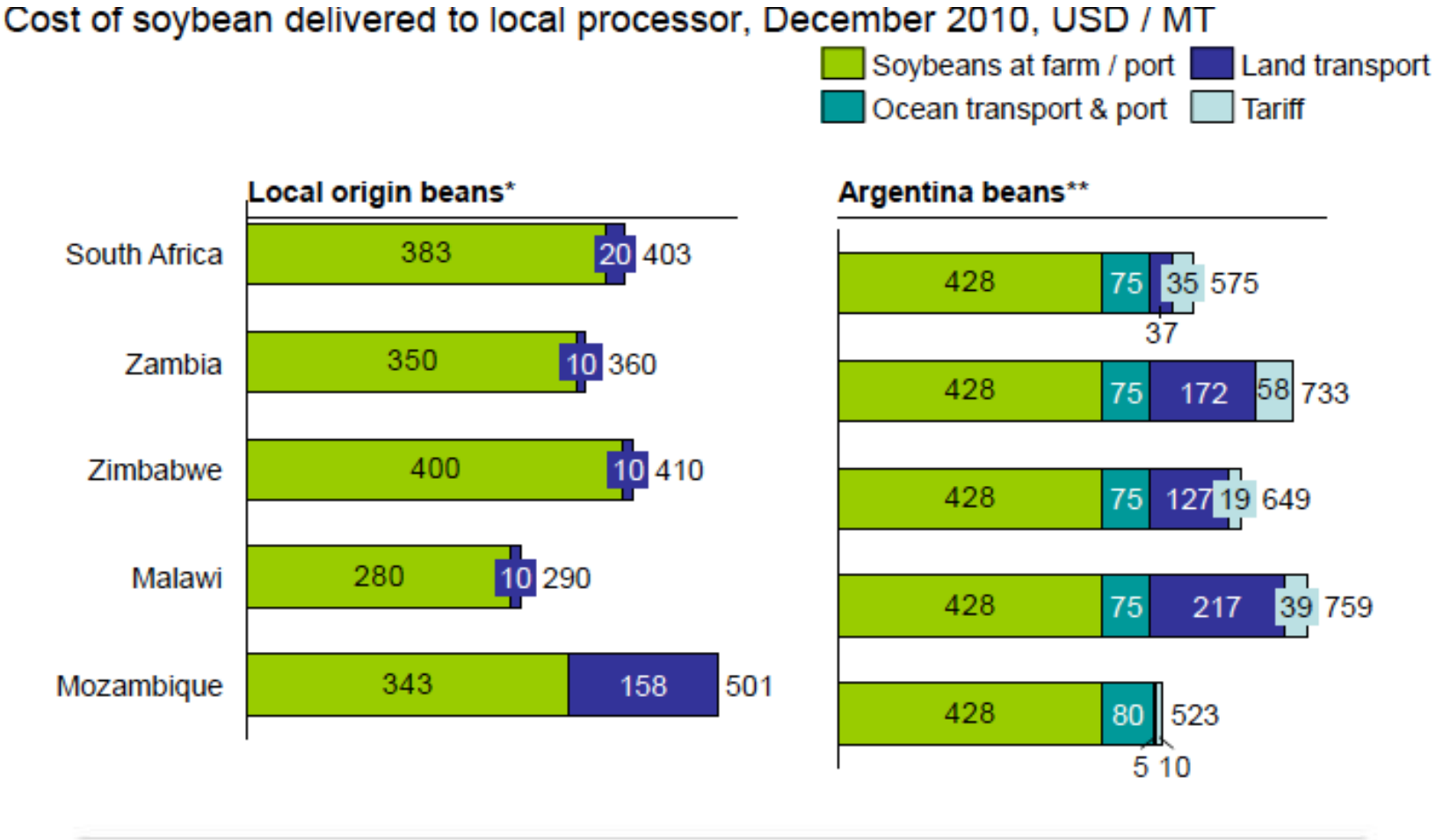




Diversity: production and processing capacity, varying trade partners

- South Africa production increase 200-650,000 betw. 2001-2013, Zambia increase in production 60,000 in 2010 to 200,000 2013, Zimbabwe 60-75,000 in 2013/14 (but far from peak 150,000 in 2002)
- Irrigation costs but increase yields (SA)
- Storage shortages/costs (Zam up to $50/mt)
- Transport costs/coordination to market
  - E.g. Zam to Randfontein $100/ton, internal $30-40/ton
  - Zim internal transport ($20/mt under 100km but negotiable on volume)
  - Border crossing Zam-Zim $60/mt SA-Zim $100/mt
- Excess processing in Zambia (400,000t, ½ used) and Zimbabwe (capacity of 390,000t but underutilised), SA increase in processing capacity (investment) 600,000t in 2012, projected increase to 1,500,000t (projected for 2014 but not yet in place)
- Imports vary (Malawi and Zam to Zim), Argentina to SA, very little to Zam.
- Exports very low – select products. Soy oil to Zim though evidence of resistance processed products (Zam interview), export bans and GMO restriction but border is porous (e.g. SA trader imports from Zam if price is right)

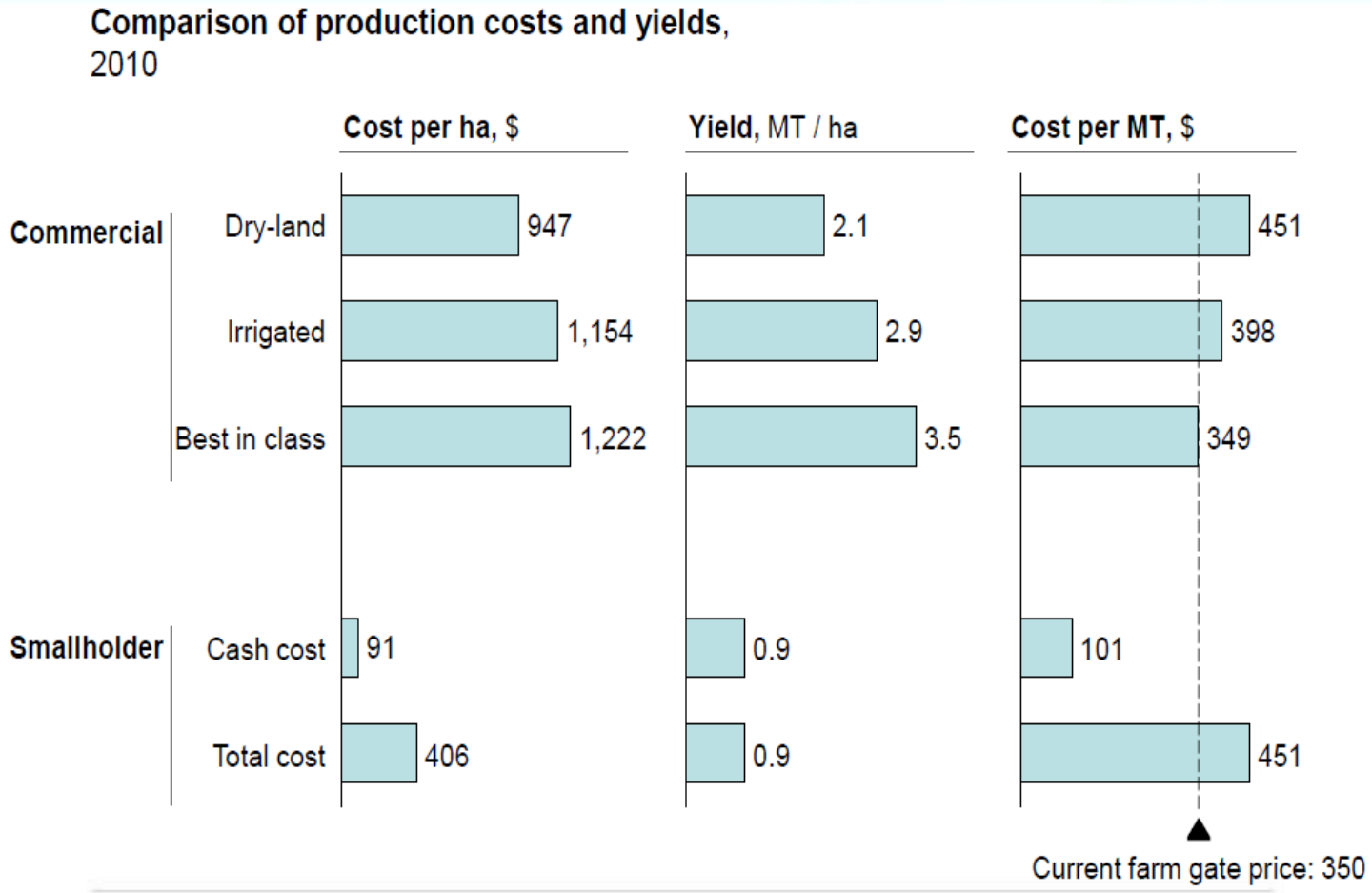
Scope for regional market – price competitiveness



Contradictions/obstacles

- Different needs of producers/processors
  - Focus is on processing capacity, increased production volume at low price (short term gain vs long-term investment/market devt)
  - Very different production structures. SA has commercial farming but competes with other grains for production and processing choices especially as it remains cost-effective to import beans. SA cannot produce enough beans even with increased processing to pull demand
  - Zambia has smallholder farmers with information limitations, input costs, cost of transport, limited processing capacity
- Soy production competes with other grains (maize, tobacco) that are priced differently
- Oil and cake need markets.
  - SA and Zambia both face issues in what to do with oil. Zambia competes with low-cost oil from Malaysia. SA does not have a sufficiently large market for soy oil.
- Soil quality vs access to information/fertiliser/water
- Bean quality and cost
- Transport infrastructure, variation in storage quality and availability
- Export markets small, regional market has scope but firms not interested. Most interest is in poultry sector which is capturing the gains.

Highlight 4: Zambia production costs



Source: "Wheat, Soy, and Maize value chain analysis" ZNFU, 2010; "Commodity Competitiveness Presentation Congress" PROFIT, 2010; Interviews

Note: * Assumed average yield of 2.9 MT/ha for irrigated soy; ** Only accounts for explicit transport costs. Transport costs also increases prices of other inputs

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Scope for regional collaboration

- Variation in nature of and interests within value chain (smallholder costs higher e.g. up to $450/mt) but ability to scale up production is substantial (Zambeef cost down to $400/mt)
- Challenges/attributes are different across the region
  - SA quality of product, competition with maize, previously processing capacity, inputs and storage
  - Zambia to develop own capacity but transport, storage, credit, input knowledge/access issues
  - Zimbabwe needs investment but has high soil quality and demand for oil

- Finding a market for the oil is also important (Zimbabwe and Malawi potential)
- All three share challenges in developing soy-based products with various problems (e.g. market taste, health and safety regulation, competition from other oils e.g. palm, cotton, sunflower)

Connecting to debates in the literature

- Industrial development, global value chains
- Role of agriculture
  - Accumulation
  - Labour and other input surplus
  - Market for manufactured goods
  - Processing to higher value-added produce
- Land reform and role of smallholder farmers
- Employment (farming, wage, linkages)

Agro-processing in theory

- “Agro-processing is shifting the basis of competitiveness …increasingly determined by…economies of scale, efficiencies in logistics, compliance with stringent grades and standards, and capacity to reach global markets with differentiated products.” Henson & Cranfield in da Silva et al (2009 FAO/UNIDO)
- “Contribution to manufacturing value addition and employment generation” Wilkinson & Rocha (2009) and “potential distributional and environmental consequences” Henson & Cranfield in da Silva et al (2009 FAO/UNIDO)
- Empirical evidence to support increasing importance of processed agricultural products in agricultural trade including differentiated and non-traditional exports.
- These are grounded in the global value chain framework with central notions of access to markets, transaction costs, industrial upgrading and rents with a particular governance structure shaping the dynamics. (Bair 2005)

This is in contrast with

- Earlier models understanding the relationship between agriculture and manufacturing through surplus accumulation, labour and input supply, a market for manufactured output (Karshenas 2001, Mundle 1985, Lewis 1954)
- Findings by Wiggins (2005) based on an IFPRI study suggesting that agricultural development is diverse and depends on a wide range of factors both demand and supply (e.g. population density, access to markets and surpluses, attractive prices) and can be difficult to sustain or replicate.
- Debates on role of smallholder farmers (employment), employment types (general, wage), land reform debates

Figure 13. Commercial and Social Drivers for Up/Downgrading

	Economic Up/Down-grading	Social Up/Down-grading
Commercial Drivers	• Cost (wages, transportation, inputs) • Time to market • Volume & quality • End-market demand/preference • Technology and skills • The nature and location of GVC lead firms • Safety/quality standards & certifications	• Cost (wages, transportation, inputs) • Time to market • Volume & quality • End-market demand/preference • Technology and skills • The nature and location of GVC lead firms • Social (ethical) standards & certifications • Corporate social responsibility
Social Drivers	• Policies and regulations: trade/competition; labor/workforce development; technology/innovation • National and regional industrial policy (incl. SEZs, industrial clusters) • Demand for more jobs and higher standard of living • Entrepreneurship	• Effectiveness of labor law • Policies and regulations: education/skills; health/safety; gender; environment • Degree of activation of NGOs • Existence and power of trade unions • Nature of industrial relations (e.g., tripartite cooperation)

Source: Gereffi and Fernandes-Stark (2011, p.32)

Limited upgrading

- Lack of **coherent domestic policy** to support devt of increased production volume/scale, coherence within regional vc, or to overcome production obstacles
  - info and land ownership in Zam, land reform and inputs/tech/production obstacles in Zim, SA competition with other crops/poor soil quality, import competition and challenge for findng oil mkt
- Vertically integrated large-scale farmers dominant position – **policy support needed for small- or medium-scale farming to increase production and employment.** Variation in challenges faced by different firm types create need for policy intervention.
- Market development has been policy-led but narrow-focused
  - e.g. processing capacity increases in SA, or Zim domestic manuf by Zam investors (Zambeef)**. Limited or no interest by SA LSF investing in Zim and Zam.** Export restrictions by Zam and Zim unless domestic demand satisfied.
- **Upgrading processing-led (dual processing or increased proc capacity), not in production or employment.**
- VC dominated by concentrated top end (poultry, animal feed, processors) but uncoordinated (even when there is vertical integration into production)

Conclusion 1/2: scope for regional market

- **Move away from short term and national focus** – ie. cannot have SA as dominant processing hub
- Explore shared interests
  - Transport/logistics obstacles and costs across region
  - Quality and price of domestic produce is competitive (against imports)
  - Development of employment with implications for welfare, consumption linkages, demand for inputs
  - Growing demand due to increase in poultry consumption and biofuel debate (but again conflicting interests)
- Look beyond choices about which segment of the national value chain to promote when several of these attributes exist in the regional production-processing activities
- **Address market forces to generate sufficient production or employment growth in the long-term and regionally**
- Policy choice to increase national processing capacity does not generate much needed regional investment (from processing firms or SA government investment arm)
- Regional demand and shared production are unlikely to emerge from value chain upgrading or increases in trade
- Regional development requires a look beyond price and access to beans into q's of land tenure, agricultural practices, structural agriculture changes, information/extension advice but also an understanding of the conflict of interests and differences between SR and LR

Conclusion 2/2: research and policy

Need a better understanding of:

•scope for developing production in small/medium-size (what needs/obstacles),

•weak intra-industry or sub-sector linkages, weak cross-border linkages (investment, trade, shared production)

•poor agricultural services (advice, inputs, finance) across all c's though taking different forms,

•little or no long-term or regional policy in place other than trade or GMO (relate to literature on limitations)

•nature and needs of animal feed manufacturers (e.g. quality influence)

•potential for developing joint biofuels, developing oil market and other soy-based products (e.g. food)

•employment development (production Zam, Zim), linked sectors, oil-based derivatives

•nature of competition (esp. within SADC)

- import of oil through Kenya, Tanzania, Zimbabwe
- Role of Malawi ,Mozambique, Botswana market development (producers/processors, demand, poultry);
- other crops for animal feed/biofuel/oil (e.g. maize, sugar, sorghum, sunflower)

•policy environment: what is the role of other non-trade policy and agencies (SMME, agricultural support, marketing boards, government production incentives, biofuel)

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