

Agribusiness in South Asia

Extended Version of the Industry Case Study Done for:

South Asia's Turn

Policies to Boost Competitiveness and Create the Next Export Powerhouse

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Executive Summary

Agribusiness (including agriculture) accounts for almost one third of South Asia's GDP and has the potential to almost double over the next fifteen years (reaching US\$1.5 trillion by 2030). This increase will be driven by rapid growth in population, incomes and urbanization, as well as accelerated transformation of the sector towards higher value products and downstream activities. The highest growth will come from processed food and related services, such as food retail and restaurants which will create millions of productive jobs outside agriculture and positive backward linkages for farmers. Removing restrictions on trade, markets and prices would support this transformation; reforms in these areas are already showing promising effects. In addition, governments should continue to support smaller and poorer farmers, who may not benefit from this transformation. More targeted and pro-active support should be provided to raise productivity, rather than blanket subsidies and price controls that encourage the status quo and threaten the sustainability of the sector in the face of climate change (for example, large untargeted water subsidies).

How we went about the case study

The objectives of this chapter are: (i) to assess the region's agribusiness potential based on international benchmarks of productivity, output (including trade) and consumption along the main value chains; (ii) to identify the main constraints through firm-level data analysis, analysis of the rice value chains, and interviews with 36 leading firms at the forefront of the agribusiness transformation; and (iii) to propose reform strategies based on stakeholder interviews (including producers and policy makers) and international experience. This chapter also relies on recent results from the World Bank's Enterprise Surveys covering thousands of agribusiness firms in South and East Asia, manufacturing census data from India, detailed trade data available for most countries, and several World Bank and FAO studies.

Content of the report

After a discussion of the motivation and approach, we review the agribusiness sector's performance in output, trade and productivity. The experience of 36 leading firms is used to understand the regions' potential, the drivers of competitiveness, and the policy constraints that limit these firms' ability to scale up and replicate elsewhere. The chapter synthesizes lessons from both successful and unsuccessful efforts at the firm and country level, to understand the sector's most pressing needs.

The chapter draws lessons from every country in the region – e.g. the innovative Agriculture Development Fund in Afghanistan to improve access to credit; the linkages between agribusiness and tourism in the Maldives and Nepal; the private sector's role in linking farmers to markets in Bangladesh, Bhutan, Pakistan and India; and the success of leading firms in India and Sri Lanka in developing premium global brands in rice and tea by investing in R&D.

Beyond the need to reduce and improve the targeting of subsidies, and to pursue market liberalization along the value chains, the chapter emphasizes the importance of encouraging investment; promoting inclusivity through backward linkages; building the knowledge agenda in the sector by promoting public-private alliances; and strengthening public and private sector leadership to develop and implement the urgently needed new policy paradigm.

1. Motivation and Approach

1.1 Motivation

South Asia's agribusiness value chain is large and has a strong potential for growth. Including agriculture, food processing and food related services (e.g. food retail and restaurants), the agribusiness value chain accounts for almost a third of South Asia's GDP. Future growth will be driven by population growth as well as rapid income growth and urbanization shifting the demand towards higher-value products (e.g. premium branded rice, horticulture and livestock), and to higher processing and food related services. South Asia's demand for agro-food products and services is expected to almost double over the next 15 years, reaching \$1.5 trillion by 2030 (see Annex 1A).

Development of the agribusiness sector stimulates economic activity far beyond the farm, as post-farm activities such as logistics, processing and retail contribute about 55 percent of the total global value of the sector. Investments in agro-food processing result in higher input and income multipliers than in any other industry, and the employment effect is about 2.5 times that of other sectors (World Bank, 2014). Despite increasing trade in food products, the agribusiness sector in all countries remains primarily domestic for reasons of taste, convenience and preference for fresh food over frozen. Food processing is often the largest manufacturing industry – for example 90% in Afghanistan (World Bank, 2014).

Global experience shows that the development of agro-food value chains plays an important role in rural poverty reduction and in the creation of off-farm jobs, especially for women. The increased demand for higher value agricultural products and interactions with increasingly sophisticated buyers often increases the productivity and income of poor farmers (e.g. through backward linkages as discussed below). Furthermore, some of the agricultural products with the highest growth potential, for example dairy, can disproportionately benefit women.

Three main challenges stand in the way of capturing these opportunities in South Asia:

- i. **The competitiveness/productivity challenge.** Low agricultural yield and high waste continues to plague the upstream parts of the value chain, while downstream activities remain small, informal leading to low productivity across South Asia. Outdated support regimes (support prices for cereals, farm input subsidies, etc.) impede diversification to more productive systems. Distorted trade policies also hinder competition, thereby rendering the sector insulated and limiting growth.
- ii. **The small-holder challenge.** Agricultural production in South Asia is predominantly small scale, making it cumbersome for processors to secure a steady supply of quality products at reasonable cost. Concerns that large processors will by-pass smallholders by integrating vertically with intermediaries/aggregators or by importing the produce, coupled with fears that large processors would exploit smallholders, have led some governments to put in place counterproductive policies – e.g. restrictions on contract farming in Punjab, India and generous fiscal incentives for small-scale food processors in Bihar, India. Section 3 considers successful examples of linkages between large processors and smallholders, and section 5 considers policies governments could use to foster these linkages.
- iii. **The natural resources challenge.** Much of the region's agricultural development has come at a high cost in terms of natural resources. In particular, over use of water has been driven by substantial direct subsidies (e.g. irrigation charges in Pakistan only covers 10% of the cost) and indirect subsidies (e.g. free power enables farmers in Punjab, India to pump beyond

sustainable levels). The stress on land and water resources is exacerbated by rapid income growth, urbanization, and climate change. Climate change also leads to interruptions in supply and volatile prices for the food industry.

1.2 Approach

Recognizing the interface between agriculture and agro-processing, this chapter focuses on how the South Asian agribusiness sector can be made more competitive within the context of agricultural development. The main goals are to:

- (i) assess the potential of agribusiness in South Asia based on international benchmarking of productivity, output (including trade) and consumption along the main value chains;
- (ii) discuss the main constraints standing in the way of this potential (mainly for agribusinesses but also in primary agriculture, given the inter linkages); and
- (iii) propose strategies to remove these constraints while promoting sustainable agribusiness practices and fostering productive backward linkages between processors and smallholders

The analysis covers agribusiness in all eight member countries¹ of the South Asian Association for Regional Cooperation (SAARC). The term agribusiness encompasses all for-profit activities that connect the agriculture value chain, from farm inputs to retail, restaurants and hotels. To provide a broad overview of domestic and international competitiveness, a range of value chains (rice, meat, dairy, poultry, aquaculture and horticulture) are considered. First-hand interviews and field visits in Afghanistan, India, Pakistan and Sri Lanka are combined with material from a wide range of reports and studies on the other countries, as well as data from enterprise surveys, government sources, and trade databases.² Interviews of 36 lead firms (see Annex 1B) covered their background, reasons for success, the difficulties encountered along the way (particularly with respect to issues affected by policy), and an overview of future plans for investment in expansion or diversification. The extent of any backward linkages to suppliers was explored to assess how the relationship can benefit producers, as well as the impact and reaction to prohibitions against direct purchasing (for example in the Indian Punjab).

2. Performance Analysis

We discuss South Asia's performance in terms of the size of the food processing industry, trade, productivity and production cost.

2.1 Output and trade

South Asia is still predominately a producer of primary agricultural products, which are larger in value than food processing in all countries. Except for Pakistan other South Asian countries do not come close in terms of value added as a proportion of primary agriculture. Also, South Asia is poorly connected to the global food value chains both in terms of exports and imports. South Asia's share of world agro-food trade is only 3 percent for exports and 2 percent for imports, as compared to 14 and 9 percent, respectively, for East Asia (figure 1). South Asia's recent increase in export market share is driven by India (figure 2), mostly due to the removal of the export ban on rice (see below) hinting at

¹ Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka

² See bibliography for detailed listing

revealed comparative advantage. All countries except Pakistan export more raw material than processed products. And with few exceptions, imports of processed agro-food products exceed exports, and are equal, or almost equal, to the value of primary agricultural products. This shows that the region has distinct regional taste and consumption pattern and also maybe considerable potential to increase production of agro-food products, both for domestic consumers and export markets.

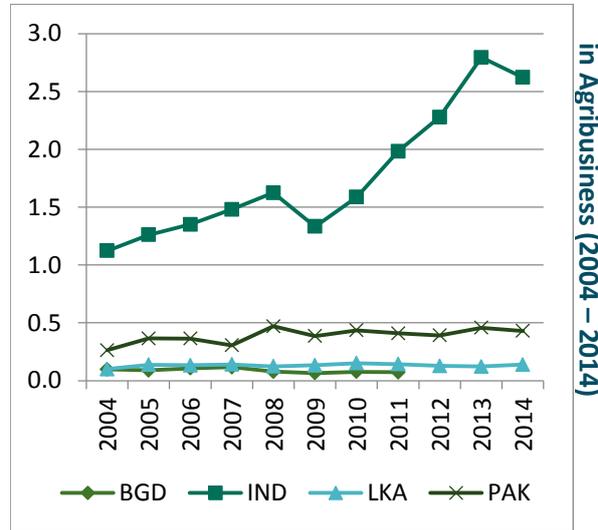


Figure 2: Export market share in Agribusiness (2004 – 2014)

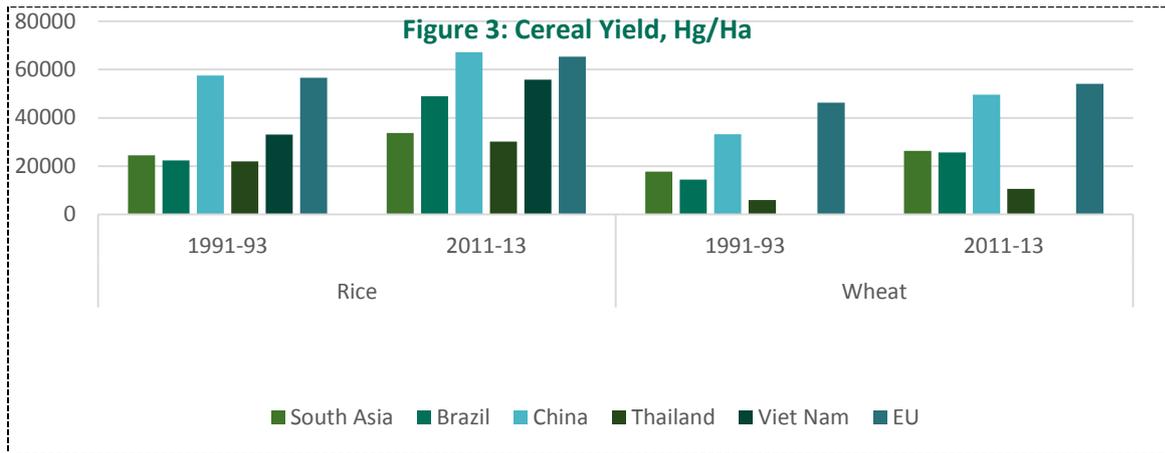
2.2 Productivity and cost along the agribusiness value chain

Productivity remains low in South Asia, especially in higher value agriculture products and processing activities. We discuss in turn South Asia’s performance in lower value agricultural products (cereals), higher value agricultural products and food processing.

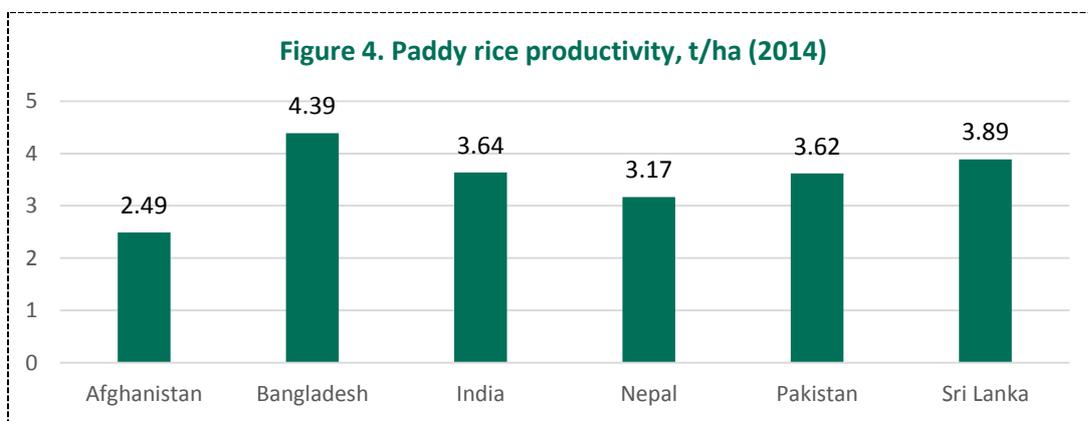
Cereals

South Asia’s yield performance has improved as the result of longstanding, intensive support for cereal production. However, yields remain well below levels in other regions practicing intensive agriculture (such as China and the EU--figure 3), due to lower adoption of productive seeds and new technologies as well as less efficient use of resources, water in particular.³ Even though investment in irrigation has maintained growth, irrigated rice and wheat production face diminishing returns to investment in long run (for example, in India). Bangladesh and Sri Lanka have the highest average rice productivity in South Asia (figure 4), although yields vary considerably within countries depending on policies and the allocation of public investment.

³ Underlying causes behind under-investments in new technology seems to be the low effectiveness of extension services and market incentives, including prices and proximity to markets, while efficiency in the use of resources seems to be linked to policies resulting in free water – including free electricity for pumping. However, it may be noted that countries in EU and China resource abundance allows deployment of technology



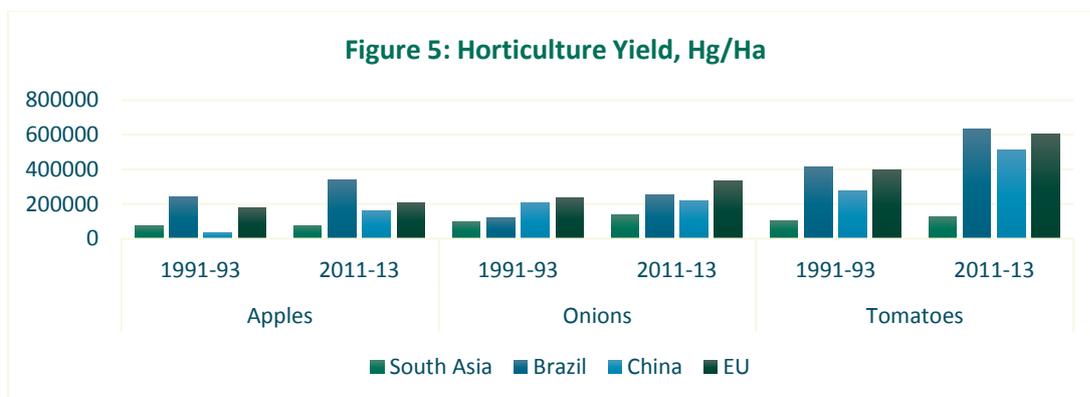
Source: FAOSTAT, August 2015. *hg/ha is Hectogram per Hectare where hectogram = 100 grammes



Source FAOSTAT; t/ha is tonnes per hectare

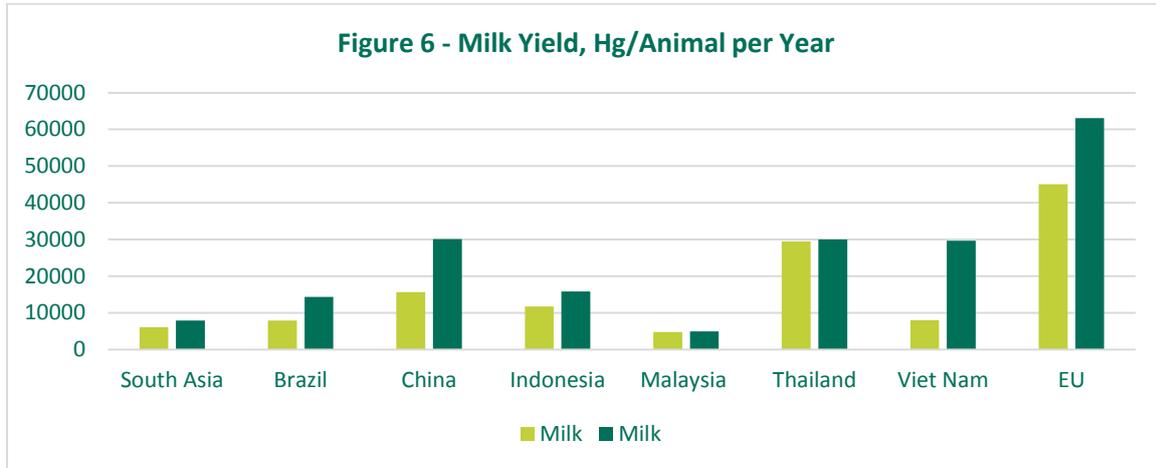
Higher-value agriculture products

Horticulture yields are quite low in South Asia (figure 5), and this is compounded by high post-harvest losses due to poor transportation and inadequate storage.



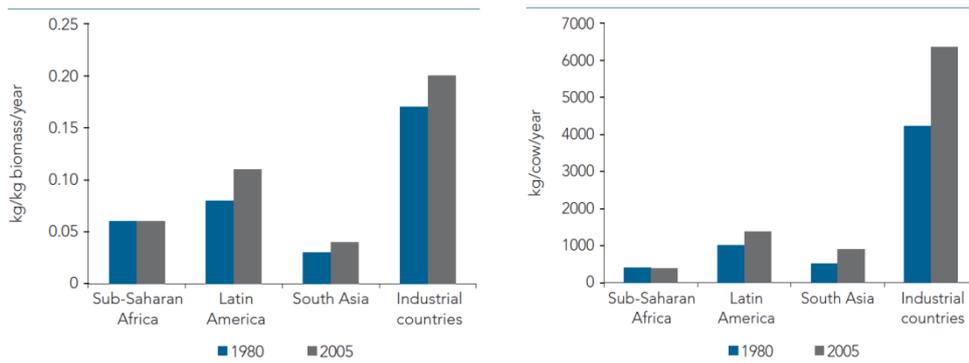
Source: FAO STAT, Aug 2015 *hg/ha is Hectogram per Hectare where hectogram = 100 grammes

South Asia has seen important increases in milk productivity over the past three decades, but yields remain very low compared with international giants such as China, the EU, Brazil and Indonesia (figure 6). South Asia’s cattle meat productivity is the lowest in the world (figure 7).



Source: FAOSTAT, Dec 2015. Hg is Hectogram where 0 Hg = 1 Kg

Figure 7: Changes in livestock productivity, meat and milk (1980-2005)



Source: ILRI 2011.

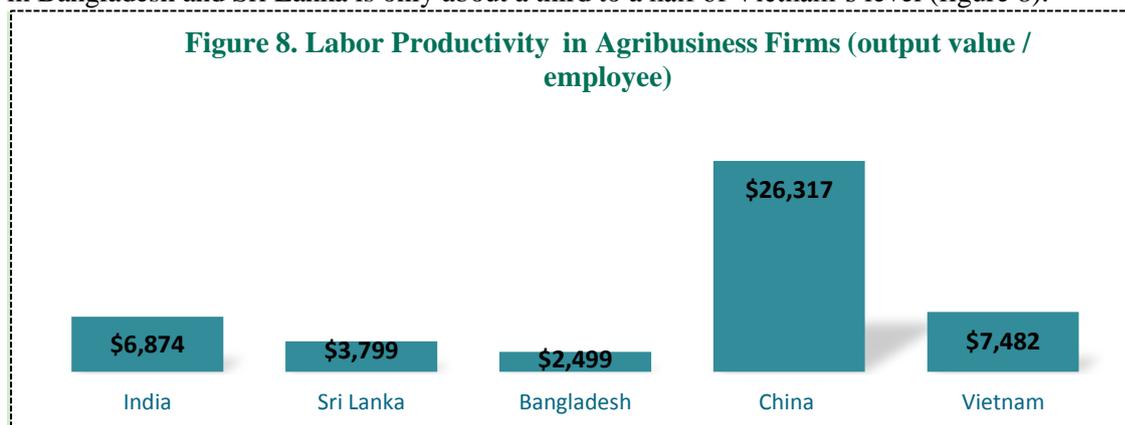
Source: ILRI 2011.

Source: Growing Africa Report. Hg is Hectogram where 0 Hg = 1 Kg. In the above figs, first figure pertains to meat and second pertains to milk

Agro-processing

Finally, South Asian countries also lag behind their East Asian neighbors in agro-processing. According to the World Bank Enterprise survey, labor productivity in Indian, Sri Lankan, and Bangladeshi food-processing firms ranges between 10 and 25 percent of Chinese firms’ productivity. And only India is anywhere close to Vietnam’s labor productivity, while agro-processing productivity

in Bangladesh and Sri Lanka is only about a third to a half of Vietnam's level (figure 8).



Source: World Bank Enterprise Survey 2014.

Note: China (2012) - 110 firms surveyed; Vietnam (2009) = 97 firms; India (2014) 382 firms; Sri Lanka (2011) 98 firms; Bangladesh (2013) 142 firms

2.3 Productivity drivers in South Asian agribusiness value chains

According to the World Bank Enterprise Surveys, the usual drivers of productivity, including firms' size, age, export status, foreign ownership, and propensity to innovate and agglomerate, are not significantly related to productivity in South Asian agribusiness value chains (Annex 11 Tables). This is likely the result of extensive import protection, regulations and subsidies that mute competition and reduce rewards to higher productivity or innovation (see section 4).

Half of the 507 firms interviewed had spent resources on innovation, including R&D, training, patents and acquisition of machinery and/or equipment. Investment in innovation equaled about 5.5% of turnover, and generated new products equal to about 10% of sales (table 2). This suggests that every 1% spent in innovation generated around 2% of participation of new products in firms' sales.

Table 2: Innovation Descriptive Statistics (Agribusiness)

Size	No. of Agrib. Firms	% of Firms with Innov. Exp.	Innovation Expenditure per Sales	% New Products in Sales
SMEs (<100)	402	48.51%	6.04%	10.05%
Large (>=100)	105	64.76%	4.00%	12.31%
Total	507	51.87%	5.50%	10.64%

Source: World Bank Enterprise Survey 2014

These results were analyzed using the CDM model of innovation, which is described in Volume I of this flagship. The model is used to assess the drivers of firms' innovation inputs (innovation expenditures over sales), the impact of these inputs on innovation outputs (new products over sales), and the relationship between these outputs and productivity. No significant relationship was found between innovation inputs and outputs, or between outputs and productivity (Table 3).

Finally, using a methodology from Martin et al (2011), the impact of agglomeration on firms' productivity was assessed at the district level in India (at the two and three digit sector classification using the ASI data--see Annex 11 table). Surprisingly, localization (agribusiness firms co-locating together) is negatively correlated with productivity. This result might reflect lower input prices enjoyed by isolated food processors than by a cluster of food processors competing for inputs. The analysis also shows a positive correlation between productivity and urbanization (agribusiness firms locating next to firms in other sectors), perhaps because agribusiness firms next to cities may be able

to charge more for their outputs. Overall, it appears that value chain effects are more important than cluster effects in the agribusiness sector.

3. Drivers of Competitiveness

The development of South Asia's agribusiness will depend on firms' capacity to adapt new technology and inclusive business models, connect with consumers, and respond to changing demands. Lessons from lead firms can show how to foster the development of agribusiness and the role the public sector should play. Key issues include how lead firms introduce new technology, develop new products, leverage existing research, and collaborate with their communities to generate broader benefits to the sector.

Lead firms play an important role in establishing logistics and opening up markets. Perhaps most importantly, they set an example for what can be achieved, attract and spread knowledge, and have an innovative role in the area in which they operate. Lead firms in the agro-food sector:

- ⇒ provide access to markets, inputs, knowledge and finance to farmers and promote integration into the value chain
- ⇒ create jobs directly, as well as indirectly in support services such as packaging, distribution and advertising
- ⇒ pay taxes and social benefits⁴
- ⇒ produce safe food
- ⇒ contribute to most of the high value agriculture exports
- ⇒ demonstrate what can be achieved in terms of productivity and innovation
- ⇒ may be significant in tackling environmental issues
- ⇒ share a mutual interest with their suppliers in the success of the value chain

This section summarizes the experience of 36 lead agribusiness firms in South Asia, representing the financial, production, process, logistics, and retail sectors.⁵ These large, productive firms have been successful in their areas of operation and have a significant presence on the market. They represent the entire agricultural value chain and a broad set of sub-sectors, and they usually have forward/backward commercial linkages and engage with enterprises of all sizes.⁶

3.1 Learning and innovation

Innovation through the introduction or adaptation of global technology, from their own research, or from public institutions has been essential to the success.

3.1.1 Founder has technical knowledge

Due to innovative packaging approaches brought from abroad and continued investments in R&D, Sri Lanka tea company Dilmah has remained competitive despite rising wages among tea growers. Today, Dilmah Tea is Sri Lanka's largest exporter of tea and the sixth largest tea company in the world, exporting premium tea to more than 80 countries. It started in 1974 with 18 employees, and

⁴ In Pakistan, income from agriculture is exempted from tax, which imposes a substantial loss of revenue for the budget.

⁵ More detailed write-ups from the interviews conducted with the 36 firms for this report can be found in Annex 1B.

⁶ This section is based on interviews with lead agribusiness firms in India and Pakistan, as well as with government agencies, development partners and NGOs. Inputs to this section from the rice value chain are based on interviews with farmers, traders, commission agents and millers and wholesalers. Annex 1B lists the companies interviewed.

now has 35,000. The founder, from a middle class Sri Lankan family, acquired his skills during training in London in the fifties, where he spotted the opportunity of developing higher value tea by having the tea treated and packed in situ as opposed to being shipped as a raw commodity to London. Dilmah was able to circumvent traditional distribution channels by leveraging new premium channels such as high-end retail and hotel chains, as well as airlines. This innovation led to superior tea and in a much higher share of the value being created in Sri Lanka.

3.1.2 Partnerships with leading global firms

The Fauji Foundation is among the largest business conglomerates in Pakistan. Its product lines include Pakistan's leading cereal brand and a global fertilizer enterprise, both the result of collaboration with international companies. The Fauji Foundation was established in 1954, and entered into a collaboration in 1956 with the UK Quaker Oats company which brought manufacturing and marketing expertise. Fauji Cereals now has 80 percent of the breakfast cereal market in Pakistan. The interests of the group gradually diversified, and by the 1970s attention turned to the production of fertilizers. To acquire leading manufacturing and product development capabilities, a joint venture was established with the Danish chemical catalysis company Haldor Topsoe A/S to form the Fauji Fertilizer Company (FFC).

3.1.3 Making use of existing public research

At the turn of the past century, managers at KRBL attended a demonstration by the Indian Agricultural Research Institute (IARI) where a new “evolved” variety⁷ of basmati rice, numbered 1121, was presented. KRBL staff were shown the variety's extraordinary cooking characteristics, which resulted in the longest cooked grain of any basmati type. Subsequently, KRBL acquired a small sample of 3.5kg from IARI, and in 2001 began growing it for reproduction even before the line had entered national trials. Three seasons later, when the variety was officially released as Pusa-1121, KRBL had 20,000 tons ready. Over the next three seasons a portion of the crop was saved for reproduction and a portion milled for test marketing. KRBL had already established a network of farmers, initially through contract production. The knowledge that KRBL would buy 1121 in the *mandis* reduced the marketing risk facing the farmers growing the new variety. The results of testing were overwhelmingly positive. Growers recognized the higher returns from higher yields on a shorter growing cycle, with a lower water requirement. And consumers in the Gulf markets found that a cup of milled rice gave 4.5 cups of boiled rice, compared to the more typical 4 cups. Adoption of the new variety spread rapidly to cover 84 percent of basmati plantings in Punjab and 68 percent in Haryana by 2013.

Plant breeding, and indeed much experimental research, is beyond the resources and capabilities of typical companies in the value chain, except those established to develop and exploit new technology as input suppliers. Plant breeding and other agronomic research is generally perceived as a public good that needs the support of public funding. That creates a dislocation between research and product development, and the dissemination of new varieties and novel technologies is slowed by high risk perceptions. Farmers are reluctant to grow a new variety, listed and certified or not, unless assured of a market.

Linkages between research institutes and the private sector can be encouraged through private-sector funding of research or through a foundation established to exploit research. There are a number of examples of this latter approach, such as the Fundación Chile⁸ and the Negev Foundation⁹.

⁷ Only one parent was a basmati type

⁸ www.fch.cl

⁹ www.negev.org

3.1.4 Being forced to learn and innovate through competition

K&N, the Karachi-based fully integrated poultry enterprise, operates in Pakistan where 98 percent of chickens are sold live through the wet market. Despite solid growth, the formal market for processed chickens is small. Operating in this segment requires competing directly with global leaders such as McDonalds and KFC. Where these global chains were once customers of K&N, they began importing chicken parts at a lower cost than K&N could meet. At the same time, restrictions by US on imports of meat from Pakistan made it impossible to export halal chicken products to North America. The management of K&N opened a factory in New York State, and the exposure to international markets and world class suppliers has kept K&N at the leading edge of the processed poultry business.

The Indian seed industry was transformed from domination by public enterprises in the 1960s to a private sector-driven model by the 2000s. The first generation seed corporations (national and state seed corporations) played a critical role in delivering the seed to both commercial farmers and the small, marginal farmers. The next two decades saw structural changes with the entry of private sector firms that were predominantly family owned. The Indian government embarked on an ambitious reform agenda with introduction of the new seed policy in late 1980s and economy-wide reforms in early 1990s, which paved the way for the entry of the multinational seed giants in India.

Few multinational seeds companies began operations in India independently; instead, most entered into partnerships with domestic private firms. Initially the industry thrived on the genetic plant material supplied by public agencies such as the Indian Council of Agriculture Research and the State Agriculture Universities. Subsequently, the private seed sector achieved rapid growth and now supplies most of the hybrid seeds in the country. Several studies indicate that the market share of the private seed sector is as high as 70-90 percent in major commercial crops like cotton, maize, and vegetables. Similarly, the private sector supplies 60-80% of commercial seeds in self-pollinated crops like paddy (especially in the states of Punjab, Haryana, and Andhra Pradesh). Private sector participation has been encouraged by the low marginal cost and risk in producing paddy seed, and the potentially lucrative market for hybrid maize and vegetables. Recent trends also indicate increasing consolidation in the private sector.

India also strengthened the intellectual property rights (IPR) regime to comply with World Trade Organization agreements. The Protection of Plant Varieties and Farmers' Rights (PPVFR) Act, 2001 and the amendments of the Patents Act brought the domestic IPRs regime on par with the international regime as envisaged under the WTO. These initiatives have promoted increased choice to farmers, thereby enhancing access to quality seed material in rural India.

3.2 Driving development throughout the supply chain.

Lead firms in South Asia have had to develop linkages with smallholders, who dominate production of raw materials in the region. Firms have increasingly relied on joint ventures with smallholders, including in its most developed form contract farming. However, many other, more flexible arrangements exist to link numbers of small scale producers to a larger agri-business firm. While such arrangements are not without challenges, they also can be powerful means of disseminating new technology, introducing diversification, improving returns to farmers, securing timely supplies of the right quality for a processor or exporter, and eventually driving higher levels of productivity.

3.2.1 Facilitating smallholder access to markets

Lack of market information and logistical difficulties prevent small-scale producers in South Asia from accessing markets efficiently. Market information is essential to delivering the right product, in terms of quality or market expectation, at the right time and at the right price. Without a good understanding of these criteria, and preferably for more than one market, the small scale producer is

seriously disadvantaged. Distance to market is another key constraint on the small scale farmer, who may not have access to regular transport. Generally, distances to market in excess of four hours of travelling time act as a major deterrent to marketing perishable products. If the product is to be exported, the logistics and financing requirements are usually beyond the capabilities of the small scale farmer. In any event, further processing may be needed prior to export.

Linkages between producers and down-stream agribusinesses can open up market opportunities and connections that smallholders would otherwise find difficult, if not impossible, to reach. On the export side, the rice processors provide the small scale farmer with access to global markets. In the case of the basmati rice variety Pusa 1121, the rice processor KRBL transferred crucial market information to farmers by ensuring that they produced the “right” product for the overseas markets. In the banana trade, Desai F&V and its partners recognized the logistical difficulties of moving perishable and easily damaged fruits from the farms to the markets. By taking control of the logistics and managing the process from fruit formation onwards, Desai succeeded in supplying remote urban centers with quality bananas, and achieved the ultimate success of exporting Grade ‘A’ fruit.

Aftab Bahumuki Farms Limited (ABFL), established in 1991, is one of the leading poultry farms in Bangladesh. ABFL first introduced contract farming for commercial broilers on an experimental basis, by working with a select group of 20 farmers. The number of farmers involved had increased to 650 by 2003, but an epidemic of bird flu reduced the number of participants to 200. Since then numbers have risen again. While contracting helps the farmer to move from raising scavenging poultry to commercial poultry production, the principle attraction in the contract is the market access. An assured market and favorable prices circumvents the high transaction costs involved in finding markets, collecting market information and negotiation. A study¹⁰ finds that contracted farmers achieve a significantly higher level of output (11,783 kg/year) than the non-contract farmers (6,763 kg/year), with higher labor productivity. The gross margins of 18.2 taka¹¹ and net returns of 17.2 taka for contract farmers were substantially higher than those of the non- contract farmer, 12.9 taka and 10.0 taka respectively. These improvements led to higher gross income for the poultry farms.

Linkages also form between producers and middlemen. In Bhutan for example, citrus and in particular mandarin has become the primary agricultural export. The future crop is sold at flowering time to contractors, who take responsibility for the crop as it develops. These contractors provide support to farmers and maintain the post-harvest logistics necessary to deliver a quality crop to the exporter. The contractors also act as assemblers on behalf of the exporters, who are unable to maintain relationships with large numbers of farmers. The position of the contractor is insecure, since farmers could form marketing groups with the ability to deal directly with the exporters. Mostly the relationships are informal and based on trust rather than contract.¹²

3.2.2 Access to inputs

Lead firms are increasingly providing extension services, either exclusively or in tandem with the government and development partners. Pakistan’s Government began including the private sector in extension in 1988, and most leading firms now participate (Riaz 2010).¹³ Contracting a future harvest in return for receiving inputs on credit is another common model, often carried out without a written contract by traders and farmers. More formal arrangements are also set up where, for example, the buyer has need of a particular variety. One example is menthol production in Uttar Pradesh in India

¹⁰ Begum, I.A. 2008. Prospects and potentialities of vertically integrated contract farming in Bangladesh. Department of Agricultural Development Economics, Hokkaido University, Japan.

¹¹ Taka is the currency of Bangladesh. 1 Taka ~ USD 0.013

¹² Further examples of linkages providing market access are shown in Annex 2.

¹³ Annex 3 provides more examples of some of the extension and advisory services provided by the interviewed Lead Firms.

(see Section 5.3). In India, Pepsico provided potato varieties suitable for the processing of potato chips to thousands of small-holders supplying its processing facilities.

In Bhutan, Mountain Hazelnut Ventures (MHV) was established in 2010 to plant and process hazelnuts. The company imports hazel tissue, cultured plantlets as well as seed, from a related operation in China. These are distributed among farmers; in three years of operation 2,000 ha have been planted and 5,000 farmers trained. Commercial harvesting may begin this year. In a landlocked country with a population heavily dependent on subsistence agriculture, the opportunities for adopting change and accessing remote markets are extremely limited. This linkage between processor and farmers provides a rare opportunity for income generation in a challenging environment.

3.2.3 Access to finance

Linkages with downstream producers can improve farmers' access to finance. This is achieved directly through a variety of contract farming arrangements, with inputs provided on the basis of agreements to sell the output at a later date. There are indirect benefits as well, as banks are more willing to lend to farmers that have a contractual arrangement with a processor. Godrej Agrovet (GAVL), for example, is a diversified agribusiness company with interests in animal feed, oil palm plantations, agricultural inputs, and poultry. The oil palm plantation business works with 54,000 ha of smallholder production spread across eight states. The land is owned by the farmers, and GAVL provides assistance to them in switching to oil palm. GAVL buys fruits and crushes them to produce crude palm oil (with the potential to reduce the crippling dependence on imported vegetable oils). GAVL's involvement and in particular the guaranteed price arrangements, has encouraged banks to lend to farmers. GAVL has developed a standard financing model with the banks for the farmers.

Finally, agricultural insurance is not well developed in South Asia, and ABT, for example, provides insurance to their dairy farmers.

4. Constraints on Competitiveness

The World Bank Enterprise Surveys can be used to analyze the impact of cross-cutting domestic investment climate constraints (political climate, crime, corruption, taxes, electricity, finance, labor regulations and skills) on agribusiness firms' productivity in all South Asian countries except the Maldives. Remarkably, the only constraints found to be significant are electricity (Afghanistan and Pakistan) and the political climate (Afghanistan and Nepal - see Annex 5 for more details).

Most of these challenges are related to agricultural policies that in the past were successful in increasing cereal crop production and improving food security, but that today are impede the growth of higher value food products and related services. The combination of import protection, restrictions on markets and prices, and extensive passive subsidies has stifled competition and rewarded the status quo. This is why the traditional drivers of competitiveness are not significantly related to productivity in most of South Asia's agribusiness (see section 2). This section provides an overview of the agribusiness policy constraints, and discusses the positive impact of recent reforms.

4.1 Trade policy and facilitation

Almost all South Asian countries liberalized their external agricultural trade during the 1980s and

Table 3: Tariffs on imported agricultural products

Agricultural Products	Average Bound Tariff	Average Applied MFN rate
Afghanistan	--	7.1
Bangladesh	192.0	16.8
India	113.5	33.5
Nepal	41.5	13.8
Pakistan	95.5	15.4
Sri Lanka	50.0	25.7
Thailand	38.9	29.9
Vietnam	19.1	16.2
Indonesia	47.0	7.54
China	15.8	15.6

Source: <http://tariffdata.wto.org/TariffList.aspx> website:

1990s. Sri Lanka led the way, with others following in the 1990s. The extent of liberalization varied, but in any event many countries reversed or reintroduced trade policies in the 2000s, shifting to a more inward looking stance. Non-tariff trade barriers are now pervasive and increasing.

4.1.1 Tariffs

Overall, bound tariffs in 14 South Asian countries remain high (Table 4). While the applied MFN rates are significantly lower, the difference between actual and bound rates implies a potential unpredictability in national trade policies. Table 3 sets out the average tariffs on imported agricultural goods in South Asia.

The tariffs imposed by India on most agriculture products is 30%, compared to 25% in Pakistan and 10% in Nepal. Also, India maintains high tariffs on the imports of higher value added dairy products such as cream, butter, yoghurt, cheese and sweetened milk powders. An analysis of MFN duty rates on basmati rice in countries which are leading exporters and importers is given in Table 4.

The tariffs imposed by India on most agriculture categories are higher than in other South Asian countries. For example, the Indian duty on dairy

Table 4: Comparison of MFN Duty Rates on Basmati Rice

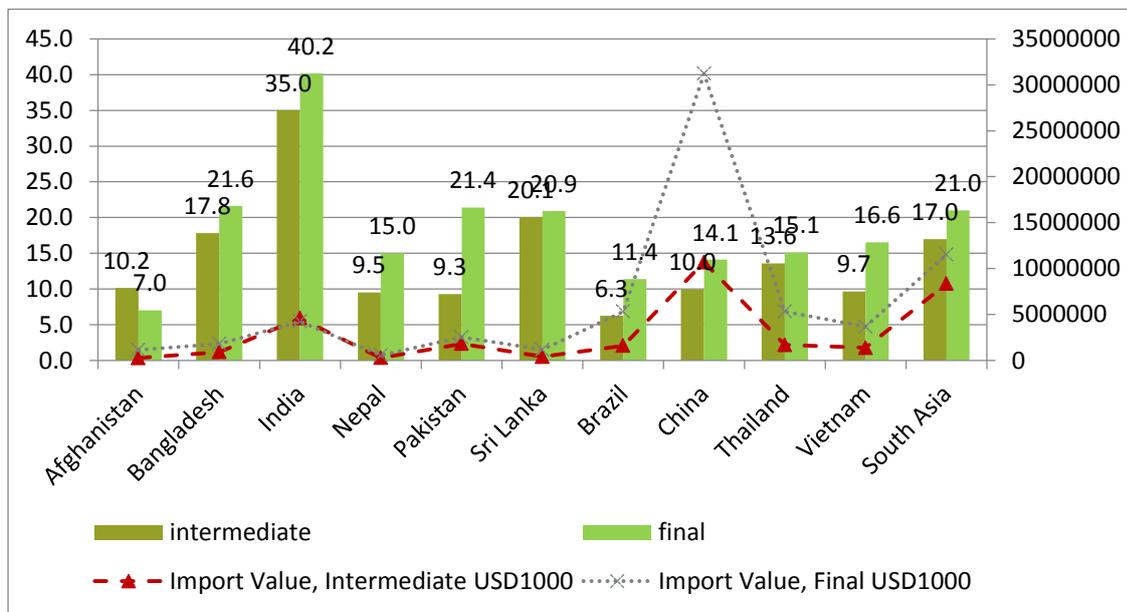
Import Country	to MFN Duty Rate	Sales Tax	Additional Duties & Taxes
India	80%	0	Landing charges (1% CIF) CESS (3% (Duty + CEX (Education & Higher Education CESS) + Countervailing duty))
Pakistan	10%	17%	
Bangladesh	10%	0%	AIT(Advance Income Tax) (5% CIFD)
UK	0% + €30.00 per tonne (1000 kg)	0%	
USA	0% + US\$0.0083 per kg	Depends on State	
Iran	40%	8%	
Thailand	52%	7%	

<http://tariffdata.wto.org/TariffList.aspx>

¹⁴ The bound tariff is the maximum MFN tariff level for a given commodity line.

The region’s agriculture sector is also hampered by some instances of inverted tariff structures. For example, in Afghanistan the average tariff on intermediate goods is significantly higher than the average tariff on final goods, while imports are negligible (figure 9). Field interviews with stakeholders also point to highly inverted tariffs in particular subsectors. For example, Pakistan’s import duty on finished poultry products from Malaysia is zero, and from China is 16 percent, but local poultry processors must pay 15-30 percent duty plus 17 percent sales tax (GST) on inputs. The Poultry Association estimates that these tariffs raise local producers’ costs by 5 percent, and that reverting to the zero rating (pointing out that all foods in the EU and many other countries are zero rated) could lead to an additional slaughter by the processing industry of 20 million birds per year. This would increase domestic consumption and exports, raise government revenues by PKR 3.8 billion over five years, create over 14,000 jobs, and generate an extra PKR 7 billion for the allied industries of packing, marketing and ingredients. Similarly, the fruit juice industry in Pakistan faces import duties of 25 percent for glass and 20 percent for cans, compared with 10 percent on imports to India, and 5 percent on glass and 15 percent on cans on imports to Nepal.¹⁵ While exporters can often be reimbursed for import duties on inputs, the process is reported by processors in Pakistan to be slow.

Figure 9: Recent Average Intermediate & Final Tariffs along with Import Values (2013 in case of Afghanistan, Bangladesh, India; 2014 in case of other countries in the Graph)



Source: WTO Data, December 2015

4.1.2 Export bans

Government intervention in the export trade adds a level of political risk that is a strong deterrent to investment in large scale processing and export operations. As the world food price crisis unfolded, the Government of India banned the export of non-basmati rice in October 2007 in order to increase supply for its food distribution program. The ban was lifted temporarily, and was then reapplied in April 2008 and remained in place until 2011. As a result, none of the large, transnational rice traders invested in the Indian non-basmati trade. Once the ban on exports was lifted, India rapidly moved to

¹⁵ Import duties on juices in Pakistan vary from an MFN rate of 25 percent, to 20 percent on juices from China and 5 percent on product from the SAFTA. Some origins, for example Malaysia or Iran, also receive preferences on specific juices. For India the MFN rate for juice is 30 percent with a preferential rate for SAFTA of 20 percent. The Indian processor is at a significant advantage compared to its Pakistani counterpart.

become the leading exporter of rice in the world. More recently, new large scale mills with an export focus are being installed in Andhra Pradesh.

Export restrictions probably added to the rise in commodity prices, primarily by causing panic buying in importer countries.¹⁶ Alternatives that would be less disruptive to external trade include the application of safety nets, such as cash transfer programs to the poor, the relaxation of import controls and release of stocks, and longer term investment to increase agricultural production.

4.1.3 Non-tariff barriers

Declines in tariff rates in South Asia, especially in India, have not been accompanied by strong growth in intra-regional trade. For example, while India is the largest or the second largest (after China) trading partner for all other SAARC countries, with 73% of all intra-SAARC exports, it only registers 13% of intra-SAARC exports. Also, India's exports to SAARC countries equal only 4.7% of its total exports, and India's imports from the region remain an insignificant 0.5% of its total imports (according to IT Trade Map data for 2011).

Non-tariff barriers have long been cited as one of the major reasons behind the low intra-regional trade. NTBs are far more pronounced in India and Pakistan than in the other countries. These barriers can broadly be categorized as the positive list approach, technical barriers to trade and sanitary and phyto-sanitary measures, trade facilitation and customs procedures, financial measures, para-tariff measures and visas. For example, Sri Lankan exporters express concerns over quantitative restrictions imposed by Indian authorities on certain products, e.g., hydrogenated vegetable oil. Afghan goods entering Pakistani territory either for Pakistan's market or for transshipment to other countries are subject to repeated inspections, leading to delays in shipment. Further, India's food safety and standards regulations (2011) provide a new definition for cheeses that prohibit the use of animal-derived rennet, and thereby exclude any cheese from the EU (see Annex 7 for the most common non-tariff measures in South Asia).

The external trade environment for agriculture in South Asia thus remains highly restricted, with important variations between countries. Bangladesh, Nepal, Bhutan and Afghanistan generally have open trade regimes, while trade policy in India, Pakistan and Sri Lanka is unpredictable and ad hoc, with multiple shifts in policy, often varying by commodity and export/import orientation.

4.1.4 Infrastructure

The efficient flow of product through a port and quality storage infrastructure are especially important for perishable products, where delay can mean partial or complete loss of a shipment. Up-country customs clearance and container sealing can simplify the process, but in Pakistan this is not available, while procedures at Karachi are considered cumbersome, particularly due to the lack of risk-based inspection. Several attempts are being made in the region to speed procedures and improve storage and transport infrastructure, for example the establishment of export processing zones in both Pakistan and Bangladesh.

4.2 Restrictions on domestic agricultural markets

The extent and severity of market regulations and the distortions they impose on marketing varies markedly across countries. Domestic markets and marketing function freely and efficiently in Bangladesh, Nepal, Bhutan and Sri Lanka, while agricultural markets in India and Pakistan still operate under regulations formulated many decades ago, which tend to significantly impede efficient, modern transactions. For example, the mandatory sale of produce in licensed markets with a limited number of licensed traders has over time created an imbalance in market power, impaired transparency, and limited direct purchase and contracting between agro-processors and farmers. In

¹⁶ IFPRI (2010) Reflections on the global food crisis

addition, all countries face problems in physical market and road infrastructure that significantly raise marketing costs.

Reforms have been introduced, but implementation has been uneven and their impact has been limited. Much more needs to be done, as the regulatory framework for markets and marketing is essential to move towards higher value added agricultural activities.

4.2.1 Market regulations

Most countries in the region have recognized the need for reforms in agricultural marketing. India and Pakistan, which have the most distorted marketing policies, are taking several steps to this end. For example, India introduced a model Agriculture Produce Marketing Act (APMC) in 2003, which provides for the creation of alternative marketing channels, thereby restricting monopolistic practices and encouraging the creation of efficient infrastructure by the private sector. Despite such attempts, the reforms have not been implemented fully by most states in India, as is also true for Pakistan.

The case of agricultural marketing in Punjab, India is an example. The Government of Punjab through Punjab Agro Foodgrain Corp (PAFC) engaged in contract farming from 2002-03 to encourage diversification away from rice. Success was limited, and the scheme was closed in 2012. In 2013 the Government of Punjab introduced the Punjab Contract Farming Act, which provides for buyer registration, dispute resolution, direct purchases through farms/markets and oversight by the Punjab contract farming commission. However, because the APMC Act has not been amended to allow for direct purchasing, contract farming is still not permitted. The APMC markets therefore remain in place and all rice, basmati and non-basmati, is traded through them. A number of taxes¹⁷ remain in place, which in total amount to 14.5 percent of the sale value. By contrast, in Tamil Nadu the APMC was reformed and market fees and taxes have fallen.

Similar differences in policy regimes are observed in Pakistan. For example, the mandi in Pakistan's Punjab adopted its Agricultural Produce Markets Ordinance in 1978, which was virtually unchanged from the original Act of 1939 and provides for strict control over the marketing of agricultural produce via market committees. Also, produce must be traded through the market, mostly with a fee levied by the market. As a consequence, there are no private markets to compete with the established markets. There are about 150 fruit and vegetable markets and 150 grain markets in the Punjab. Services are poor and the setting of fees is opaque. With a limit on the membership of dealers and traders, there are allegations of collusion and misbehavior in the market. Mostly the problems affect the fresh produce supply chain, where excessive commissions reduce the return to the farmer and raise retail prices to the consumer. By contrast, in Pakistan's Sindh Province, the 1939 Act was replaced by the Sindh Wholesale Agricultural Markets Act, 2010. The new Act abolished notified market areas and market committees, and allowed private markets and direct buying. Private initiatives have emerged as a result. One such example is being developed by the Pakistan Agricultural Coalition, which is establishing a chili trading platform in Kunri, Sindh Province with the goal of introducing a more direct linkage between grower and buyer in order to reward quality. This new venture relies on bringing a number of actors together to provide a full range of quality services, including logistics, storage and an auction platform. If successful, the concept will be rolled out to other areas and for other crops.

4.2.2 Other impediments to private investment in agricultural markets in Bihar, India

The state of Bihar attempted to improve the enabling environment for agricultural marketing, and in particular reduce rent-seeking, by repealing the APMC Act in 2006. This paved the way for the establishment of many private market yards, while trade in the formerly-regulated market yards

¹⁷ Sales tax 5 percent; Market fee 2 percent; Agents' commission 2.5 percent; other 5 percent (of MSP)

continued. However, infrastructure services are deplorable in the market yards that are owned by the state and continue to be the major trading platforms. Basic amenities such as power, water, security, sanitation and general upkeep are inadequate, but no private investment will take place so long as the yards remain in state ownership. Unfortunately, Bihar lacks alternative channels for marketing produce. While Bihar ranks among the top vegetable and fruit producing states in India, the inadequate market network makes transactions onerous and costly for both producers and consumers.

4.2.3 Policy impediments to logistics

The Indian logistics industry has grown by 16 percent per year over the past few years, and was valued at an estimated US\$ 130 billion in 2012-13.¹⁸ The industry includes freight and passenger transportation via road, rail, air and water, as well as warehousing and cold-storage. It is estimated that the aggregate freight traffic is about 2-2.3 trillion ton kilometers. The costs of freight transport constitute about 16% of agribusiness industry turnover, and about 14% of outbound food grain industry turnover. Of the total warehousing space of about 1,800 million sq ft, the industrial and agricultural segments constitute about 86 per cent and 14 per cent, respectively. Two thirds of food storage is owned by the public sector. The lack of adequate storage infrastructure in India is one of the primary reasons for high costs and avoidable food wastage. Some of the constraints to development of higher value chains are enumerated below:

- *Inadequate storage infrastructure:* The Warehouse Development Regulatory Authority has recently estimated the existing capacity of storage at 118 million MT¹⁹. The planning commission estimates the current gap between agricultural warehousing supply and demand at 35 million MT. Currently, public sector agencies like the Food Corporation of India (FCI), Central Warehousing Corporations (CWC) and the various State Warehousing Corporations (SWC) have a storage capacity of 83 million MT, while the private sector has close to 19 million MT. To put the scarcity in perspective, food grain stocks held by the government totaled 80 million MT at last year's peak, according to the FCI annual report. India's current cold storage capacity at 25 MT is barely sufficient for 10 percent of fruit and vegetables produced in the country.
- *Skewed distribution of storage capacity:* Skewed distribution of the cold storage capacity is another issue, with North India having access to 56 percent of the total public storage infrastructure, compared to only 8 percent in Eastern India. Six major grain producing states account for almost 67 percent of storage capacity in the country. Bihar, Odisha, MP, Chattisgarh and Jharkhand, which have recently become major grain producers, only account for 13 percent of storage capacity.
- *Lack of collateral management options:* Collateral management refers to financing of agricultural goods stored at warehouses, and is only in nascent stages in a few states in India. This presents a huge opportunity.
- *Inadequate freight infrastructure:* India's freight depends heavily on roads, despite the traffic being bulk in nature. With a conservative annual growth rate of 7.5%, India's freight traffic is projected to leapfrog by 2020. The poor quality of roads, trucking and port handling

¹⁸ Report by India Brand Equity Foundation: Indian Logistics Industry- gaining Momentum; November 2013

¹⁹ Report by committee for strengthening negotiable warehouse receipts by the warehousing development and regulatory authority in the country; Department of Food and Public Distribution ; February 2015, <http://wdra.nic.in/FinalBook.pdf>

infrastructure will continue to impair service levels and transit times, and will hamper the competitiveness of agribusiness (among other sectors).

- *Regulatory Barriers:* Outdated regulations, such as the Agriculture Produce Marketing Act (first promulgated in 1956), and Essential Commodities Act (from 1955), have hindered the development of storage and processing infrastructure in India. In particular, stock limits and price limits can be imposed, with penalties that include potential jail sentences of up to seven years²⁰. Not surprisingly, the private sector has been hesitant in engaging in storage. The tax regime in India does not encourage multi-modal logistics systems, which means that firms often rely only on road transport, despite the cost.

Recent measures, like the inclusion of agri-warehousing under priority sector lending by the Reserve Bank of India, several subsidy schemes (such as capital investment subsidy scheme offered by NABARD which ranges from 15-33 percent of project cost), tax incentives and the Warehousing Development Regulation Act 2007 (which will promote negotiability of warehousing receipts) are aimed at compensating for the high regulatory/penal risk discussed above. Similarly, several sub-national governments have introduced Private Entrepreneur Guarantee Schemes, under which the FCI guarantees hiring of warehouses for 10 years, in order to encourage private sector construction. But these are second best and expensive solutions, as a low risk, low cost environment would be superior to an artificially high risk, high reward/cost one.

4.2.4 Limits on retail competition and FDI in India

India's merchandise retail market, which accounts for nearly half of private consumption, is forecast to increase to US\$1.4 trillion in nominal terms by 2021. Traditional brick and mortar stores make up 93% of the total retail market. Corporate brick and mortar retail caters to about 7%, and e-commerce about 0.1%.

FDI in the retail sector is subject to some limits. Fully-owned foreign firms are allowed for single brand product retail trading, and in some states a maximum of 51 percent foreign ownership is allowed for multi-brand retail trading. In either case, Government approval is required, the availability of which varies from state to state. Andhra Pradesh, Assam, Delhi, Haryana, Kashmir, and Maharashtra, among others, permit foreign retailers while W Bengal, Bihar, Karnataka, Kerala, Madhya Pradesh, among others, do not. Global retailers such as Wal-Mart, Tesco Plc., Metro AG, Shoprite Holdings GAP, JC Penney, H&M, Karstadt-Quelle and Sears (Kmart) have expanded their presence in India. The variety of FDI approval policies has led to different degrees of competition among states. For example, unorganized players have improved their services in states that have opened doors to foreign firms, showing that competition can increase pressure for performance even among the unorganized local retailers who dominate the Indian retail landscape.

4.3 Restrictions on prices and products

Price controls are the most common intervention in regional agricultural markets, with a significant impact on agribusiness. The drive to food security in the 1960s and 1970s led to multiple public interventions to support the production of cereals, most notably output support prices and subsidized input prices. Although almost all countries in the region have achieved self-sufficiency in food

²⁰ The ECA is not applied evenly across all states: in 2014 Maharashtra was apparently not applying stock limits to onions and potatoes and UP is not enforcing the Act. <http://www.business-standard.com/>

production and have the potential to generate surpluses, these price policies have become politically very difficult to remove. Minimum Support Prices (MSP) in India (initially for rice and wheat, but in recent years expanded to cover a wide range of other crops) and support prices for wheat in Pakistan are backed by large procurement programs. Bangladesh announces minimum support prices, but with limited procurement (although procurement takes place mostly in the dry season irrigated *boro* rice crop, which limits the otherwise considerable potential for farmers to diversify in that season). Sri Lanka also announces minimum prices; while its procurement operations are limited, the policy continues to distort market prices.

4.3.1 Pricing restrictions and higher-value products

As discussed in chapter one, higher incomes and urbanization is increasing the demand for higher value food products such as fruits and vegetables, tubers, and livestock products such as meat and dairy. But even though this means important income opportunities for farmers, India is already unable to meet its domestic demand for higher value products. In part, this reflects policies which bias production towards non-basmati rice and wheat (World Bank, 2014). Importantly, Minimum Support Prices (MSP) for production discourages farmers from moving into higher value crops that would increase income and employment, and boost investment, for example in post-harvest infrastructure. In addition, the MSP discourages local processing, even when other incentives for processors are provided. In Bihar, the state Government provides investment support for the establishment of small-scale mills. However, the MSP on the input means that rice processors are not able to compete with the prices of imported rice from India's Western States, so that building mills is not profitable.

Although only 23 percent of farmers in India actually benefit from MSP, the MSP together with heavily subsidized inputs (see section 4.4) provide a low-risk operating environment for farmers to continue to produce crops that may not be profitable under free market conditions. Table 5 shows the margins for MSP relative to production costs. Initially the MSP was directed at encouraging the production of rice to achieve food security. Lately, the MSP has become a means of supporting farmers and had led to surpluses that are now exported.

In order to encourage the production of higher-value commodities, which are often more perishable than grain products and thus inherently carry more risk for producers and other actors in the supply chain, a level playing field must be created in the sector.

The wheat market in Pakistan is heavily controlled by the Government, which has several negative effects. For example, the quality standard used for public sector

purchases of wheat is Fair Average Quality (FAQ), and specifies only the most basic criteria of moisture content and presence of impurities. By contrast, a miller might expect to buy on the basis of parameters such as test weight, gluten content, and falling number. These rudimentary standards provide no incentive to maintain quality during storage. The mills use a wheat washing or wet cleaning process that requires a lot of potable water and generates problems due to effluents and handling of the wastewater, and which is generally considered outdated and in some countries banned. The millers have little incentive to operate efficiently: since only flour mills are permitted to store wheat and subsidized wheat is supplied to the mills on a quota system related to the number of roller stands in the mill, millers can earn profits by reselling subsidized wheat when the market rises above the support price. In order to counteract such widespread practices the government monitors

Table 5: MSP trends and cost comparators in India

	C ₂ cost (in ₹)		MSP (in ₹)		% margin over C ₂	
	Paddy	Wheat	Paddy	Wheat	Paddy	Wheat
FY07	569	542	650	700	14	29
FY08	595	574	775	850	30	48
FY09	619	624	930	1,000	50	60
FY10	645	649	1,030	1,080	60	66
FY11	742	701	1,030	1,100	39	57
FY12	888	826	1,110	1,170	25	42

Note: MSPs fixed include bonuses, whenever announced, MSPs were generally fixed as per recommendations of CACP, with a notable exception of paddy in FY09 when it was fixed at R880+bonus of R50 against R1,050 recommended by CACP. Other exceptions being paddy (FY07) and wheat (FY08)
C₂ = Comprehensive costs incl. rent and interest on owned land and capital
 Source: CAG, report no 7 of 2013 (tables 2.2 & 2.3)

electricity consumption at the mills, but this encourages running the mills empty, with further wastage of water.

4.3.2 Unrecognized quality and food safety standards

Although the premium for better quality products can be high, food safety and quality standards can pose challenges for South Asian traders and exporters. Sanitary, phyto-sanitary (SPS) and food safety regulations are the main obstacles. The issues vary among countries, but a general concern among processors and traders consulted for this report is that food safety regulations often are rigid, do not reflect scientific advancements, and are not in line with WTO's Agreement on Sanitary and Phyto-Sanitary measures. In Bangladesh, India, and Pakistan, the regulatory authorities are spread across ministries or other agencies, with overlapping responsibilities and without coordination (e.g. livestock and plant health fall under the Ministry of Agriculture and food safety under the Ministry of Health). Enforcement of regulations is reportedly inefficient or lacking, and food safety laboratories are not recognized by international bodies and lack the capacity for tests for pesticides, mycotoxin and antibiotic residues.

The system lacks the capacity to ensure the safety of food products for consumers, and also reduces access to foreign markets that demand compliance with international standards. For example, in May 2014, the EU imposed a temporary ban on imports of Indian Alphonso mangoes and four vegetables²¹, as a result of what the European Commission described as "significant shortcomings in the phytosanitary certification system of such products exported to the EU". The main concern was that pests found in Indian exports could pose a risk to agricultural production in the EU. The UK alone imports some 16 million mangos (US\$9 million) per year from India, so the ban affecting all EU imports could have important effects on producers and actors in the supply chain. The EU lifted the ban 6 months later, after facilities had been upgraded, new handling practices implemented, and the capacity of inspecting staff improved.

Quality is also of concern to sector participants. A survey of traders in Bangladesh showed that the premium for both high quality and sanitary standards ranged from 10 to over 30 percent (although the study showed higher returns for quality than for meeting sanitary standards). Nevertheless, few of the traders that participated in the survey reported that they increased costs in order to improve quality. Similarly, an overview of agro-food processors in Afghanistan revealed that many operated with equipment dating back to the 1970s and few have invested in the quality assurance necessary to access foreign markets. Thus, although there is a potentially high international demand for Afghan fruit products (regionally renowned for their high quality), existing processing lines prevent such exports. Annex 8 provides an overview of challenges to food safety/SPS and quality cited by the interviewed companies.

²¹ Eggplant, the taro plant, bitter gourd and snake gourd

In the longer term, inability to meet quality and safety standards may prevent South Asian products from being available in supermarkets as retail develops. Across the globe, middle-class consumers demand appealing packages, informative labels, and consistent quality and safety. Retailers impose higher standards (the most well-known example being the Global GAP standard) to ensure that these demands are met and to prevent any contamination throughout their complex supply chains. Increased consumption of animal-sourced food and processed products typically increase concerns over quality and safety. In South-Eastern Europe, however, horticulture producers also struggle to access these new markets, as not even their fresh produce meets retailers' requirements for quality and shelf life. As a result, retailers often import fresh produce from export giants in the EU and Turkey.

At the same time, not all markets have the same requirements, especially not in low and middle-income countries, and farmers and firms should adapt their practices according to the requirements of the intended market. For example, the organized milk industry in Pakistan and India maintains international quality standards to produce a superior packaged product with minimal health risk to the consumer, and these standards are used in marketing the product. However, there is only a limited segment of the market prepared to pay for this level of quality assurance and therefore, raw and unpasteurized milk continues to be sold on the informal market to consumers. Although accessing high-end markets can potentially generate substantial revenues, it is unlikely that small actors have the capacity and resources needed to comply with the required standards. Instead, it is advisable to access new markets a step or two at a time.

Complying with quality standards and food safety requirements can be both challenging and costly, in particular for small-scale actors, and the Government can therefore play an important role as supporter and facilitator. The provision of public goods such as SPS and food safety infrastructure (harmonized regulations, certified testing facilities, and information and training) can help small actors comply with food safety requirements. An example of successful Government support in this area can be found in Bangladesh. In July 1997, the EU banned shrimp imports from Bangladesh due to unsatisfactory product safety. Fortunately for the industry, FAO was already working with the processors and the Government to implement Hazard Analysis Critical Control Point (HACCP) principals throughout the chain, and so the food safety concerns were addressed over the next 5 months. In this period, Bangladesh's shrimp sector lost US\$15 million. The cost to upgrade the supply chain was around US\$18 million in total, and included investments in new processing equipment, public laboratories, and technical skills. The annual maintenance cost for this is estimated at US\$2.2million for the private sector and US\$225,000 for the Government. However the benefits have included both reclaiming the banned market and further increases in exports following the HACCP implementation. The industry notes that it can now charge a higher

Only 0.1 percent of the Nepalese budget is spent on food safety, and the country has only 5 food safety testing laboratories and 40 food inspectors¹. Adverse consequences for health and hygiene have limited the number of tourists visiting Nepal. Nepal's main export items, such as tea, honey, and coffee, are also affected. Nepalese tea was banned in Germany after pesticide residues were found in shipments. The coffee sector is also vulnerable, as Nepal's poor testing facilities are unable to certify the absence of pesticide residues. These higher-value products, and in particular Nepal's premium quality tea, are major foreign exchange earners, so that food safety risks are problematic for the economy as whole.

WBG's Toolkit on Food Safety prescribes eight fundamental pillars to reforming food safety: i) food safety should be secured along the entire food chain; ii) regulation by itself cannot ensure food safety; iii) in a food safety system, primary responsibility (and liability) for the safety of food rests on food business operators; iv) the role of consumers should be strongly emphasized; v) preventative and risk-based approaches should be the basis for regulatory reform, decision making, control, and self-control of food safety; vi) the role of international standards and scientific justification is key; vii) the impact of food safety reform on trade should be carefully considered; and viii) co-ordination and collaboration are vital.

Source: Food Safety Toolkit : Guiding Principles of Food Safety Reform, Published by Investment Climate-WBG ; March 2014

premium, as shrimp from Bangladesh is no longer seen as a low-quality product (Cato and Sunasinge, 2003).

Since complying with SPS/food safety requirements and specific quality standards often necessitates investments in facilities, equipment, processes, and/or packaging, access to finance is often a prerequisite for successful implementation. The government can play a role as a guarantor of commercial credit lines targeting agribusinesses, but rule-based, transparent lending is essential.

4.4 Seed regulations and sector development

While it is prudent for Government to monitor the introduction of new plant varieties, the process often is cumbersome and deters technology infusion in the sector. Also, devolution of powers between federal and provincial governments and misinterpretations of law add to problems. In Pakistan, the devolution of responsibility for agriculture to the provincial level resulted in regional variations in interpretation and implementation of the 1976 Seed Act. In addition, the Act was drafted when there was little private sector activity, so it did not provide an appropriate regulatory framework. As a result, private sector companies are largely unregulated/informal. The government of Pakistan's proposal for a new Seed Act will address a number of these issues, and it is viewed positively by the formal private sector.

Bangladesh has streamlined the seed certification process, based on the Dutch model.

The states also have responsibility for regulation of the seed industry in India. Several reform measures at the state level have encouraged private sector-led R&D, innovative approaches to seed multiplication (often introduced by multilateral seed companies and absorbed by the local seed industry) and the growth of a vibrant domestic seed industry that caters to South Asia and to Africa.

4.5 Land regulation and long-term investment in high value crops

Land is a challenge at several levels in South Asia. Access to readily available and affordable industrial land is increasingly a challenge, due to competition with rapidly growing cities for agricultural land. Access to land for productive farming is also problematic. Land holdings are small - on average 1.15 ha in India (down from 1.23 in 2005/2006) and 2.1 ha in Pakistan (2010 census), and land is often split between multiple parcels. For example, the average land holding in Nepal is 0.96 ha, but split between four parcels (Sharma, 1999). Although the population is growing, the changes in land sizes vary as more people move to urban areas. Nevertheless, pressure on agricultural land is high, and marginal land is increasingly taken into use. As a result, land depletion and soil salinity is increasingly a problem (World Bank, 2014). There is thus an urgent need to invest in more sustainable land management in South Asia. Also, with the on-going structural transition from a rural-based labor force to increasingly urbanized societies, it is important to maintain flexibility in land use to ensure that land resources can be accessed by sector participants.

At the time of independence, land systems in several South Asian countries mainly consisted of large landowners and poor landless farmers; consequently, reforms were initiated and have been implemented at various scale and with different results. One example is the sharecropping policy in Bangladesh, which has been in place since 1984 and was originally intended to facilitate access to land and improved inputs for landless, cash constrained farmers. The sharecropping system guaranteed landowners 30 percent of the harvest, or 50 percent if inputs had been provided. Studies showed that the use of high-yielding varieties increased among small-scale farmers as a result, but also that the applied "rent" has been extortive and that the system provided little incentive for farmers or landowners to invest in the land. Similar systems exist elsewhere in South Asia, e.g. in Bihar.

In India, land policy was under the purview of states. In some states, for example Tamil Nadu, Kerala, and West Bengal, reforms have favored smallholders. Overall, tenancy reforms and abolition of intermediaries tended to reduce poverty, while land consolidation tended to increase productivity. Interestingly, imposing a ceiling on the size of landholdings does not seem to affect either poverty or productivity.²² In other states, such as Punjab, reforms have focused more on ensuring tenancy rights, which have resulted in highly fragmented land with lower productivity. There are several places in South Asia where only limited progress has been made, because political pressures, a traditional caste system, or domestic conflict have impeded reforms and resulted in large, underutilized land holdings and the exclusion of large sections of the rural population from the land market.²³

Overall, land users in South Asia have little incentive to invest in the land or to re-parcel land into bigger holdings for those who seek to expand their farming activities. Land re-parceling can often be a tedious activity, with exchanges of leases and land user rights taking place between multiple parties. It is therefore important that the right to use the land is conferred for an extended period. Similarly, investing in long-term land management and soil improvement requires assurance that the land will be available for a longer period of time. For example, the application of agro-forestry practices and the planting of shade trees, which will become increasingly necessary owing to climate change, require decades' worth of investments. Similarly, certain water harvesting infrastructure and pumping mechanisms have limited mobility, and any investor would require secure land rights, or alternatively long-term leasing agreements if the owner is not willing to invest.

4.6 Large, untargeted subsidies on inputs and unsustainable practices

Free water use, and subsidized electricity and diesel for irrigation, have encouraged inefficient use of water and depleted water resources, which is threatening the sustainability of agribusiness. Much of the region's irrigation depends on groundwater tables (e.g. 60 percent in India, of which 15 percent are already overexploited--World Bank, 2013). Water productivity in rice production in Bangladesh is particularly low, both compared with other countries in South Asia and internationally (World Bank, 2015).²⁴ Studies also show that the efficiency of water use varies between and within countries, depending on the level of subsidies.

Inefficient use of water is becoming an economy-wide issue. Agriculture's share of total fresh water use is very high in some countries (e.g. 98.6 percent in Afghanistan and 90.4 percent in India, compared with 65 percent in China and 55 percent for Brazil), and competition for water is likely to increase with growth in manufacturing and in household consumption (FAO Country Profiles, 2014).

Climate change will exacerbate these problems, and appropriate land management will be crucial for stable and sustained agribusiness growth. In the summer, extreme heat will affect 70 percent of the land area in the region, and variability in rainfall is projected to increase (although precipitation forecasts vary depending on scenario and timeframe). The combination of higher temperatures and variable rainfall, along with a rise in the sea level that will overflow coastal zones and thus raise soil salinity, are expected to significantly reduce crop yields, even assuming improvements in technology. An increase in average global temperatures of 2 degrees centigrade is anticipated to reduce crop production by 12% compared to a baseline with stable global temperatures by 2050 (World Bank, 2013).

²² LSE: <http://personal.lse.ac.uk/GHATAK/landref.pdf>.

²³ Only in India, landless farmers make up for 25 percent of the agricultural labor force (<http://planningcommission.nic.in/reports/articles/venka/index.php?repts=m-land.htm>).

²⁴ The cost of resources is not included in the calculation of TFP discussed in section 2.

Several governments subsidize fertilizers, and until recently favored urea or nitrogen-based fertilizers over other fertilizers, resulting in overuse. India's large subsidies get the most publicity, but the subsidy bills of Sri Lanka and Bangladesh are also enormous – nearly as large as all public expenditures on agriculture. Pakistan does not have explicit fertilizer subsidies, but low prices on natural gas used in the production of urea provide an indirect subsidy. Nepal also has subsidized fertilizer prices, but the subsidy level is modest given the open border and heavy subsidies by India. The subsidy is mostly designed to offset high transport costs in the more remote parts of the hilly country.

Subsidies for water and fertilizers impose a great burden on public finances. In India, subsidies to the food sector amount to US\$85 billion annually.

A removal of subsidies should be implemented to charge the true cost of water and inputs, taking into account externalities, including with respect to the depletion of groundwater reserves. A road map with a clear, time-bound conversion of subsidies would help actors in the sector adapt to the new rules. A first step is to make direct subsidies on inputs and price controls conditional on complying with certain agricultural practices. A second step would be to replace supply side, blanket subsidies with a targeted demand side system leveraging technological progress (e.g. mobile payment and electronic ID).

Climate smart agriculture (CSA) comprises agricultural practices that (i) increase productivity; (ii) adapt production to climate change; and (iii) reduce emissions from agriculture. An example is deep placement of fertilizer, which can increase yields, reduce nitrogen pollution, and save costs on fertilizer application. Rice farming under this method in Bangladesh increased yields by over 30 percent. Similarly, alternative wetting and drying in irrigated rice cultivation in Asia has reduced water use by up to 30 percent and reduced greenhouse gas emissions by over 40 percent.²⁵ Other common CSA practices include introducing short-duration, drought-resistant and salt tolerant varieties, shared cultivation, zero tillage, rainwater harvesting and micro-irrigation, constructing ditches and contour planting, mulching, harvesting manure, and using cover crops. These approaches must be consistent with local conditions, and generally require incentives or regulatory measures. A starting point for many countries, for example Sri Lanka, has been to develop so-called Climate Smart Agriculture Profiles, which map out current practices, emissions, and projected climate change implications for the sector, as well as existing financing and institutional requirements for adopting new practices.

4.7 Exposed, vulnerable groups

While an analysis of issues concerning exposed, vulnerable groups is far beyond the scope of this chapter, it should be recognized that policies are needed to ensure efficient and fair labor markets and protect human rights. In general, labor regulations and minimum wages do not apply to small farms with under 10 employees, which maintain flexibility in labor use. This situation keeps the rural labor market relatively free and allows flexibility to fit agricultural needs, such as seasonality. However, financial crises affecting poor families, non-availability of credit, and limited vocational training often force unskilled workers in rural areas to enter quasi-bonded work contracts with landlords who pay them lower than the market wage rate. Many workers are also bonded through debt obligations. Widespread child labor in rural areas is also a result of desperate family financial situations and the absence of schools.

²⁵ The Bank's Lima position paper Towards a Climate Smart Food System By 2030.

5. Recommendations

The agribusiness sector provides the essential transition between production systems and consumption. This complex sector involves volatile production systems, global and domestic supply chains with different regulatory systems, varied quality regimes, trade access and subsidies, with unpredictable implications for income and employment. Nevertheless, agro-industry can have profound implications for shared prosperity. The primary conclusion, therefore, is to make policies for agro-industry central to the country and regional development strategy.

5.1 The urgent need for a new paradigm

Removing the constraints on the development of a competitive agribusiness industry in South Asia could have a dramatic impact on development, while failing to address these constraints could be disastrous, given the mounting challenges of depleting water resources and climate change. New approaches to supporting the poor and ensuring food security are essential to facilitate the removal of the blanket regulations and subsidies which prevent strong, sustainable agribusiness growth in South Asia. The development of large leading agribusiness firms does not need to come at the expense of farmers; many successful firms created backwards linkages to farmers and thereby generated benefits to the broader agriculture sector. At the same time, unleashing large scale agribusiness will not benefit all small farmers and could leave many of them even more vulnerable. There is thus a need to combine supply side reforms, public support to increasing agricultural productivity, and additional targeted support to the poorest farmers.

As countries move from agricultural-based to urbanized societies, agricultural policies generally move from production-oriented policies that emphasize social protection towards policies that support a more specialized, knowledge intensive sector, made up of larger entities that are responsive to market demands. At the same time, independent social safety net mechanisms should be developed to safeguard the poorest and most vulnerable in the sector. Several countries in South Asia are entering a transitional phase, where productivity increases in agriculture have allowed labor to be released into other sectors while generating consumer demand beyond that of food. However, in order for the domestic agribusiness sector to reach its potential in raising incomes and employment, agricultural policies must support sustainable agribusiness development that is responsive to consumer demands.

5.2 Strong leadership and data for the new paradigm

Successful agribusiness sectors have required strong, high-level leadership to develop and implement the agenda, which often affects the interests of powerful groups. Implementing subsidy programs is easier than reforming them, and creating a conducive agribusiness environment inevitably requires coordination among several different ministries (i.e. agriculture, trade/commerce, industry, and sometimes health, infrastructure, and environment). Achieving a comprehensive and internationally acceptable food safety regulatory framework, which requires a farm-to-fork approach, has proven challenging in many countries: food safety often falls under the Ministry of Health while SPS regulations are typically the purview of the Ministry of Agriculture. In several countries of South Asia, any such reform program will also involve close coordination with the Ministry responsible for social protection to safeguard vulnerable groups that might be at risk in this transformation.

Malaysia established a dedicated transformation team at the highest level, staffed with highly-skilled public sector and foreign experts, which had a mandate to drive a cross-sectoral agribusiness agenda

and coordinate between ministries. The success of such efforts requires an on-going dialogue with the private sector (see Annex 6 on high level task forces). A good approach is to establish steering groups (preferably private sector led) with representatives from the different components of the value chains (including different sizes of farms, firms providing logistic services, and processors) and relevant public institutions to meet regularly with the Government-led agribusiness team to advise on how to overcome constraints in the subsector. Industry groups in South Asia, some of them well-organized like the Poultry Associations in India and Pakistan, do not represent the broader value chain and they do not have the formal role in policy formulation that these value chain steering groups hold.

Important lessons can be drawn from countries that have successfully developed their agribusiness sectors. A review of the Governments' roles in agribusiness development in Uruguay (See Annex 10), Indonesia and Malaysia provides examples of what governments should and should not do:

1. Stable macro-economic policies, a tolerable business environment, and a major emerging market opportunity (often led by China) were common to all three countries.
2. State support was largest in countries with high upfront investments in processing and tree crop establishment, combined with close coordination of production and processing.
3. Incentives that distorted relative prices, especially for production inputs, have had significant welfare costs. Cheap land in Indonesia favored deforestation rather than intensive agricultural production.
4. The more that state support is directed to individual firms, without well-defined rules determining eligibility for that support, the greater the risk of rent seeking. The best results were obtained when strong, rule-based governance prevailed, as in the case of plantation forestry in Uruguay.
5. Public-private partnerships directed involving smallholders achieved a more equitable distribution of benefits. For example, smallholders now produce nearly 40 percent of the palm oil in Indonesia.
6. Neighbor effects—when investment and technology spill into a country from nearby countries—were important in nearly all cases in reducing the costs of establishing the industry.

Strategy should look beyond the farm-gate into inputs, logistics, processing, and retail. It should also define clear roles for the public and private sectors, recognizing that these roles may change as the sector transforms. For example, in areas with limited agribusiness development, it may be justifiable for the public sector to provide time-bound support to so-called first movers, whether local or foreign. Successful first movers can generate positive externalities in knowledge, skills, and market linkages. This initial support can be justified by the high startup costs and risks associated with developing new agribusiness value chains. State support can also be important in underwriting the high transaction costs of linking investors to smallholders in the startup phase.

Understanding the sector is key to successful and adaptive policy making, not the least to ensure efficient and transparent use of taxpayers' money. Policy making is a continuous process that must be constantly evaluated and revised as objectives are achieved and the agro-food sector evolves. Impact evaluations are critical, in part because policies may have inconsistent effects across sectors. For example, trade policies may impair production, or impede nutrition and economic development objectives.²⁶ Institutions such as extension services and market information systems play an important role in providing information to both private actors and policy makers. Farm, animal, and land registers can also be used to manage agricultural support policies. Integrated institutions also are required to monitor the impact of sector policies on water and soils. Importantly, the entities involved in developing agricultural policies should be separate from those responsible for payments and controls.

²⁶ For example, prohibiting exports of a grain commodity would discourage production, while reducing prices for that grain may divert consumption from other crops with better nutritional value.

5.3 Investment and linkages

The private sector may be more effective than the public sector in tackling constraints on profitability. For example, Desai Fruit and Vegetables and its investors, have helped to "professionalize" the banana value chain in India and thus improved their competitive position. This kind of externality may justify providing incentives to strategic first movers.

Facilitating contract farming also can promote positive externalities. The term contract farming covers a range of different pre-harvest agreements, joint ventures, and pledges that link producers either upstream to the input suppliers or downstream to the processors. Upstream linkages can help input suppliers increase sales and improve farmers' access to credit and technical support. And downstream linkages can reduce buyers' costs and improve supply reliability, while providing farmers with an assured buyer for new and more profitable products, reduced transaction costs or higher prices. Alone and without links, the small scale farmer must cope with unmanageable production risk and market an irregular surplus in a spot market. Linkages can provide more robust support than any public service extension scheme.

Linkages are not without their disadvantages, and failure to meet contract terms can lead to a breakdown of trust. However, in general mechanisms for strengthening linkages generate far reaching benefits and ultimately lead to greater flows through the supply chain.

Promoting linkages can supplement other initiatives to augment rural finance. In Afghanistan, the Agriculture Development Fund began in 2010 as a US\$100 million USAID project to provide much needed long term financing along agribusiness value chains, at decent interest rates on a commercial basis (meaning the loans have to be repaid). The fund was rated as the most successful USAID project in Afghanistan, with a more than 95 percent reimbursement rate and 60,000 farmers benefiting. The fund is facing excess demand and discussions are underway to scale it up.

The key innovation of the ADF is to provide long-term loans to sophisticated business intermediaries along the value chains (e.g. agro-food processors), on the condition that they on-lend a portion to their suppliers-farmers. These intermediaries have the knowledge and incentive to lend to the most deserving of their suppliers, to ensure repayment. By contrast, commercial banks mostly cater to urban areas and lack such access and knowledge. The ADF has been operated by professionals with extensive experience in commercial banking and agribusiness from other countries, and incorporates financial products that are fully compliant with Sharia. This approach helps improve access to long term finance along the value chains (including for farmers) and encourages the development of linkages between farmers and processors.

Farming systems, products, markets, business environments and above all participants in agricultural value chains are extremely diverse, so there is no single model for success. However, an important principle is that contract farming must be built on a viable business model. Shepherd²⁷, for example, notes that donors tend to view contract farming as a "development tool where commercial principles do not apply". Other elements (see World Bank Toolkit²⁸) that determine success include the nature of the product (staples are more difficult than high-value cash crops), the nature of the participants or groups of participants, the presence of third party support, the shared risk and responsibilities defined in the contract, the pricing mechanism, and above all the management of the relationship between buyer and seller – see Annex 11 for an example of a successful contract farming initiative in Vietnam.

²⁷ Shepherd, A. (2013) An Introduction to Contract Farming. <http://makingtheconnection.cta.int/node/206>

²⁸ World Bank (2014) An analytical toolkit for support to contract farming. Internal Paper.

The development of trust is important because contract farming requires a long term commitment between two parties. In this respect the term “contract farming” is misleading²⁹ since it implies a dependence on a contract that can be enforced. In practice, enforcement is difficult on either side of the contract, and recently more emphasis has been given to alternative dispute resolution techniques of arbitration and mediation. Here the long term goals of the participants are given more importance than the immediate rights of a transactional exchange.

Overall, the role of government in support of contract farming lies in facilitation rather than regulation. Much has been written about the regulatory needs and the legislation required, but for the most part such measures (competition, employment and labor, environmental issues, safety and health, land) are already on the statute books. These policies might benefit from some refinement. However, in view of the diversity of contract farming schemes and the widespread use of informal contracts, it is unlikely that regulatory policies would be able to cover the breadth of contract farming relationships without being unduly prescriptive. Government support to the emergence of contract farming can develop on a number of levels³⁰:

- Market promotion – trade and investment policy should be supportive of investment and development of exports, and encourage investment and competition downstream;
- Logistics – improvement of roads, especially at the farm level, and storage facilities in conjunction with private operators increase the ability of small-scale farmers to participate in contract farming;
- Seed import legislation – the inability to import improved planting material efficiently can impede upgrading production, particularly where the sponsor intends to introduce new varieties or new crops;
- Producer groups and cooperatives – policies and legislation to formalize producer groups can help lower procurement costs and facilitate the distribution of inputs and technical knowhow;
- Innovation and extension - innovation is key to competitiveness, and the ability to disseminate knowledge and technology through extension can be encouraged through cost sharing.
- Finance – access to finance is a persistent problem in the rural economy, and contract farming can increase farmers’ access to finance.

5.4 Public and private knowledge collaboration

Innovation will always be difficult in an environment dominated by small scale farmers. The priority for the smallholder is survival, and without support the small scale farmer cannot afford to experiment with new crops or varieties. However, a downstream commercial partner ready to support production and buy the output can significantly reduce farmers’ risk. There are well-known examples of contract farming being used to modify farming practices, for example the introduction of dairy farming in Rajasthan or cultivation of potatoes for processing in Bangladesh and in India.

The production and export of Indian menthol products stands as one of the most spectacular achievements in creating a new industry through contract farming. Smallholder mint cultivation, which is popular in northern Uttar Pradesh, was made possible by private sector investment in a speculative venture. Once the industry became established, the further development of varieties and agronomy were carried out by public institutions. After years of stagnation, CIMAP initiated its ‘Improved Technology for Menthol Mint (*Mentha arvensis*) Essential Oil in India’ project in 1993.

²⁹ “relational farming” might be preferable

³⁰ World Bank (2014) An analytical toolkit for support to contract farming. Internal Paper.

Within a few years, the introduction of new varieties together with agronomic research increased yields and oil recovery. The development of short cycle varieties allowed farmers to fit mint cultivation between the *rabi* and *kharif* crops in the rice-wheat or rice-potato/pulse crop cycles. The Fragrance and Flavor Development Centre (FFDC) at Kannauj took over the distribution of planting material and organization of extension and training. This public-private collaboration has resulted in an industry that today supports at least half a million families. At current prices (INR930/kg), raw mint oil adds over US\$700 million a year to the rural economy in Uttar Pradesh. India has an estimated 80-90 percent share of global exports of menthol products.³¹

5.5 Nurture inclusivity

The anticipated rise in demand for agribusiness has the potential to generate enormous income opportunities in rural areas and along the value chains. However, without support, some groups risk being left behind. This is problematic in any country, as the core of the food supply is produced domestically and by family farmers. Not including small-scale producers would be especially problematic in South Asia, where the majority of producers hold less than one hectare of land, and women now constitute over half of the agricultural workforce in Bangladesh and a third in Afghanistan, India, Pakistan, and Sri Lanka. Most linkages between farmers and processors will be established directly by the private sector. However, the public sector can help reduce the transaction costs facing processors, logistics providers and retail firms in working with a myriad of small scale producers, for example by providing production information and facilitating access to seeds for emerging value chains. Similarly, publically-financed services can be provided to small-scale farmers and agribusinesses to reduce prohibitively high market access costs, for example implementation and certification of market standards.

Few companies work directly with small-scale producers, and successful small-holder inclusion in value chains has often been through aggregators or producers groups. At the global level, the cocoa sector may provide the most successful example of small holder inclusion in global value chains, as much of the industry relies on producers with less than a hectare of land. Increasing global demand and supply constraints due to climate change have led companies like Mars and Cadbury to work with hundreds of thousands of smallholders to improve practices and to certify their production. This has required that producers are organized in cooperatives or producer organizations. This private sector-led approach has been successful in the high-value cocoa industry because the costs can be recovered rapidly. Public support may be more important in other sub-sectors, for example in the form of technical support through the extension services in organizational skills, and access to finance to help establish cooperatives.

An important target group for this support is women. Together with West Africa, South Asia still has the world's largest gender gaps. Increasing access to education can boost agricultural productivity, so the region's low school enrolment ratios for girls will impair agricultural growth. Other measures, such as ensuring that women have equal access to assets and inputs (including land and credit) have proven to close productivity gaps in the agricultural sector as well as among entrepreneurs.³²

The poorest smallholders are at greatest risk of being left behind, but other groups such as landless agricultural workers and women also are at risk. Modern agribusiness requires skills and technological know-how, which may prevent certain groups from participating further down the value

³¹ The success story of menthol production in India can be found in full in Annex 4.

³² Globally, FAO estimates that ensuring equal access to productive resources for women would raise agricultural output in developing countries by between 2.5 and 4 percent (World Bank, 2014; WDR, 2012). Barriers to full female participation also have implications for the competitiveness of larger industries. Internationally, companies that exclude women in management positions have proven to have lower skilled management on average, which over time leads to lower innovation and competitiveness (WDR, 2012).

chain. Collaboration with the private sector is essential to understand deficits in skills and to ensure that smaller participants can access different points along the value chain. Finally, public investment in training and infrastructure to support the poorest segments of the sector can also be achieved through social protection schemes, such as well-targeted cash for work or cash for training programs.

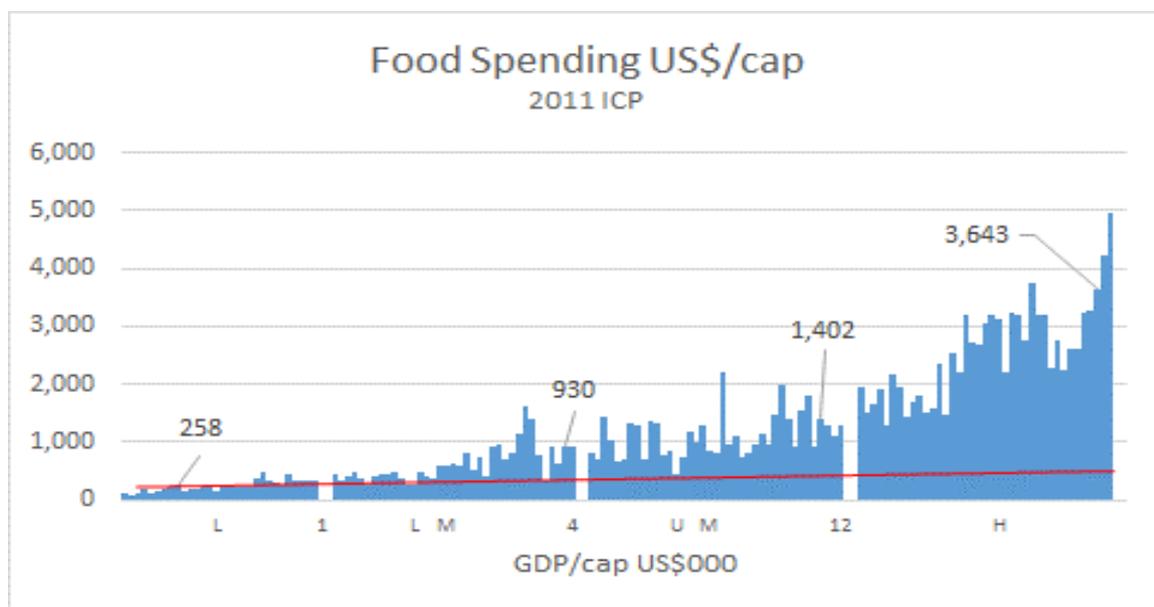
Annexes

Annex 1A

Estimating the Size of South Asia's Food Market by 2030

With growing incomes and population, and with rapid urbanization, South Asia's food market is projected to more than double over the next 15 years, reaching US\$ 1.5 trillion by 2030. Household expenditure data on food shows that South Asia's food market is currently worth about US\$ 500 billion (2011 year household food and beverage expenditure data). Because the majority of South Asians still reside in rural areas, rural food consumption account for 65 percent of South Asia's food market. This holds even though the majority of poor live in rural areas and their food spending is significantly below the average, (although they spend proportionally more of their income).

By 2030, the UN estimates that South Asia's population will increase from 1.7 to 2 billion people. To estimate the value of the total food market, it is assumed that household incomes will double from \$1,500 to \$3,000 over the next 15 years in line with the past 20 years' increase in per capita GDP (5% annual growth on average) and that the share of household incomes that goes to food consumption will drop slightly from around 30 to 25% based on the observation that the share of food consumption decreases as income grows as per the figure below.



Source: Source: Analysis of World Bank 2011 ICP report

Annex 1B List of Companies interviewed

	Pakistan	India	Sri Lanka
Financial	<ul style="list-style-type: none"> • Habib Bank, • Allied Bank, • State Bank of Pakistan 		
Inputs	<ul style="list-style-type: none"> • Fauji Fertilizer Company, • Four Brothers Group, • Pioneer, • Bühler 	<ul style="list-style-type: none"> • Pioneer Seeds , • Bühler India 	
Rice	<ul style="list-style-type: none"> • Engro Foundation, • Long Grain Rice Mills, • Guard Agricultural Research & Services, • Mazco, • Matco 	<ul style="list-style-type: none"> • KRBL, LT Foods, • Kohinoor, • LalQilla Basmati 	
Dairy	<ul style="list-style-type: none"> • Nestlé, • Engro Foods 	<ul style="list-style-type: none"> • ABT Foods 	
Meat/ Poultry	<ul style="list-style-type: none"> • K&N, Menu/SeasonsFoods 	<ul style="list-style-type: none"> • Suguna Poultry 	
Maize	<ul style="list-style-type: none"> • Rafhan 	<ul style="list-style-type: none"> • Anil Starch Private Ltd 	
F & V	<ul style="list-style-type: none"> • Fauji Fresh and Freeze, • Mitchell's Fruit Farms, • Green Springs, • Roshan, Imtiaz, • Noon, • National Foods 	<ul style="list-style-type: none"> • Desai F&V Pvt Ltd 	
Retail	<ul style="list-style-type: none"> • Metro 		
Multi-sector		<ul style="list-style-type: none"> • Godrej Agrovet 	
Tea			<ul style="list-style-type: none"> • Dilmah

Annex 2 Examples of market linkages

Sub-sector	Company	Engagement	Comments
Cereals	Engro	2,000 farmers under contract; prices set daily, selling to Engro is voluntary but payment is swifter, transparent and often higher than mandi.	Established brand in UAE marketing basmati; provide input and advisory support to farmers including machinery
	Rafhan	30% of their maize supplies bought from contracted maize farmers. Provide written contract, hybrid seed, technical advice, bags and freight to mill.	Rafhan produce a range of starches and other derived maize products such as dextrins, sugars and syrups.
	Matco	10-15% of needs for paddy for milling come directly from about 250 farmers.	Export to 60 countries using brand Falak. Own agency in Dubai for trading.
	KRBL	Tried contract farming but reverted to using commission agents to buy through the mandis but retain a contact farming model where services (quality seed, technical advice) are provided to 94,000 families.	Operate one of the largest rice milling operations in the World. Exports to all major markets. Leading position of the India Gate brand
	LT Foods		
Horticulture	Desai	Contract farming. Managed logistics for highly perishable product and marketing	Premium domestic market and export 50-60% to Middle East
	National	No contracting now but provides technical assistance and some equipment eg geotex sheets for drying chillies	Engaging in PAC in creating a marketing platform for chillies for quality product
	Fauji F&F		All the farmers have existing markets for their produce.
	Pepsico	Guarantee purchases for potatoes	
Miscellaneous	Godrej Agrovet	Buy from 54,000 ha of small-scale owned production of oil palm across 8 states giving access to consumer markets through quality crushing	Reducing Indian dependency on the major food import

operations. Potential to buy from 200,000 ha. Also engaged with small-scale producers in dairy, poultry and aquaculture.

	Hindustan Lever	Contract farming operations in chicory, tomato and tea	
Poultry	K&N	Limited contract farming; most chicks sold to farmers and bought back at market.	Processing and value added products; own stores and direct deliveries to retailers
	Suguna	Supply to and buy from 25,000 farmers. Buy back.	Provide consumer with a guarantee of quality that secures demand from small-scale producer. Large range of value added products. Own stores. Export to the Middle East and Japan
Dairy	ABT	Buying from 16,000 farmers, through 1,300 collection points procuring 250,000 litres/day	Selling quality milk and dairy products to urban markets including door step delivery. Export ghee.
	Nestle	Work with 190,000 farmers	Access formal market for dairy products
	Engro	Operate through 1635 milk collection centres plus 330 mobile milk collecting vans plus 1300 medium to large farms with own chillers plus own production.	Have 56% of formal milk sector – provide milk, tea whiteners, ice cream etc

Annex 3 Examples of linkages giving access to inputs

Sub-sector	Company	Engagement	Comments
Seeds & Agro-chemicals	Pioneer	Operate through a network of dealers who in turn finance and support the farmers	
	Fauji	Support to dealers through their farm advisory services which have reached 1.5 mn farmers since inception.	Crop demonstrations, field days, meetings and crop seminars, farm visits. Soil and water testing
Rice/Grain	Engro	Reach 1.5mn farmers with PKR77bn of chemical inputs. Has developed new variety of rice Basmati 515 based on foundation seed from the research station; kits to upgrade combines; training;	Gross margin /ha improved by at least 25%.
	Rafhan	Access to seed, pesticide, and fertilizer for contracted farmers.	
	Matco	Supply seed to contracted farmers	
	Guard	Advisory services through a toll free number, field days, yield competitions etc to support their seed and input sales. Contract farmers are supplied with seed and chemical inputs.	
	KRBL	Provide technical assistance and inputs; close relationship with Pusa research institute	
	Kohinoor	Only technical advice	
	Horticulture	Desai	Supply plantlets from own labs and fertilizer; manage farms from fruit set
PAC/National			
Fauji F&F		Use contract farming to achieve international standards in broccoli, potatoes, okra, taro, bitter gourds and apple gourds inter alia. Seed is imported from Holland. Korea.etc	
	Pepsico	Seed on credit; demonstrations	

Poultry	Suguna	Provide inputs, advice, manage associations.	
	K&N	Breeding units; 4 hatcheries; feed production; laboratories and diagnostic research.	
Dairy	ABT	provides extension, training and insurance	Average daily yields increased by 22% so far
	Engro	Provide literacy, computer training, inputs and improved stock. Partnering with Telenor to develop mobile payment system.	

Annex 4. The Success Story of Mentha Arvensis in India

Menthol is an important component for the flavouring and fragrance industry. It conveys a mint taste or scent to a variety of products from pharmaceuticals and toiletries to foods and confectionery and tobacco. Mint oil is extracted by distillation from a species of mint, namely Mentha arvensis, and the oil is chilled to yield crystals of menthol leaving dementholised mint oil behind.

The first introduction M. arvensis in India was in 1954 at the Regional Research Laboratory at Jammu where it was introduced from its native Japan. There was limited commercial interest in the crop until the company Richardson Hindustan Ltd (RHL) began to explore the possibilities of cultivation on a larger scale. RHL was established in 1964 as the Indian division of USA based pharmaceutical company Richardson Merrell, to manufacture its Vicks brand of medications³³. The Indian market presented an opportunity for the company, and an alternative to imported menthol was sought for RHL's production.

An assessment by RHL staff indicated that the northern part of Uttar Pradesh offered appropriate soil and climatic conditions for the cultivation of M.arvensis. The company established its own research base, processing unit and laboratory at Bilaspur, on the edge of the Terai region, and company personnel began working with local farmers to introduce the crop by providing planting material and technical advice to contracted growers.

The introduction proved successful and cultivation expanded. In the mid 1980's the Central Institute of Medicinal and Aromatic Plants (CIMAP) in collaboration with RHL developed a new variety of M.arvensis that outperformed the existing clone that had been the only planting material since its introduction decades earlier. Indian menthol output grew from a few tonnes from around 20ha in 1965 to over 5,000 tonnes on 40,000 ha in 1992/93.

Production then stalled. RHL had been assimilated into Procter & Gamble in 1985 and a corporate decision to withdraw from agricultural research and production followed shortly afterwards. The upstream Indian menthol operation was restricted to buying on the open market. The farmers were left without support and without contracts. In the face of low prices and without alternative institutional support nor selected disease-free planting material, crop yields and oil output in India fell.

On the market side, production had far outpaced domestic demand and the mentha farmers were now directly impacted by global demand. The Indian menthol was considered a lower quality than the product from China and the dementholised oil, a by-product of menthol production, was not acceptable on global markets. China was the leading exporter and export sales controlled by government agencies where profit was not the driving motive. Furthermore the collapse of the USSR, which had been the main market for Indian menthol, saw international demand fall away.

The situation appeared to be dire: it was not only the crop that was well established in the farming cycle, but the know-how had spread across a wide region engaging a large number of farmers together with an industry of metal-workers able to produce the boilers and distillation equipment and an infrastructure of buyers and traders together with processors of value added products and exporters.

In 1993 CIMAP initiated its 'Improved Technology for Menthol Mint (Mentha arvensis) Essential Oil in India' project. Within a few years the introduction of new varieties together with agronomic research brought higher yields and oil recovery than previously attained. The development of short cycle varieties

³³ Cough medicines, lozenges, rubs and other inhaled breathing treatments

was key in allowing the farmers to fit mint cultivation between the *rabi* and *kharif* crops in the rice-wheat or rice-potato/pulse crop cycles. The Fragrance and Flavour Development Centre (FFDC) at Kannauj took over the distribution of planting material and organisation of extension and training.

By 2000 the output of mint oil in India had grown to about 10,000 tonnes but with remunerative prices and declining output in other origins (notably China), production of mint oil increased rapidly. Indian mint oil production peaked in 2013/14 with about 55,000 tonnes but has since fallen back below 50,000 tonnes per year. India currently produces about 20,000 tonnes of menthol with about 9,000 tonnes of dementholated oil and some 3,000 tonnes of derivatives. Some 30,000 tonnes of menthol crystals and powder and mint oils exported annually. Uttar Pradesh accounts for 90 percent of the production of mint in India. The balance is found across the semi-temperate regions of Punjab, Haryana, Himachal Pradesh and Bihar.

Today, the industry supports at least half a million families and, at current prices (INR930/kg) raw mint oil adds over USD700 million every year to the rural economy in Uttar Pradesh. In mint cultivation, popular in northern Uttar Pradesh, India now leads global exports of menthol with an estimated 80-90 percent global market share. The establishment of mint cultivation as a smallholder crop was only made possible by the initial investment of a private company in a speculative venture. Once the industry became established, the further development of varieties and agronomy were carried out by public institutions. After years of stagnation, CIMAP initiated its 'Improved Technology for Menthol Mint (*Mentha arvensis*) Essential Oil in India' project in 1993 and within a few years the introduction of new varieties together with agronomic research brought higher yields and oil recovery than previously attained. The development of short cycle varieties was key in allowing the farmers to fit mint cultivation between the *rabi* and *kharif* crops in the rice-wheat or rice-potato/pulse crop cycles. The Fragrance and Flavour Development Centre (FFDC) at Kannauj took over the distribution of planting material and organization of extension and training.

Despite the success story, the future of the sector is somewhat uncertain. Prices of mint oil on the MCX Futures Commodity Exchange peaked in 2012 on a wave of speculative activity that compounded short supply, but prices softened quite rapidly and the harvest that year turned out to be good. The volatility of the oil prices has encouraged the development of synthetic alternatives to menthol that offer stable prices comparable to the natural product. Overhanging stocks of mint oil and synthetic alternatives are adding downward pressure on prices in the near term and a ban in many Indian states on the consumption of *gutka*³⁴ has also impacted negatively on mint oil prices.

³⁴ Masticant of areca nut and tobacco often flavoured with mint oil. It is a stimulant and known carcinogen.

Annex 5. Cross-cutting constraints to productivity (WB Enterprise Surveys)

In the World Bank Enterprise Surveys, firms are asked to rate the importance of domestic cross-cutting investment climate issues. Firms classify them into no obstacle (value zero), minor (one), moderate (two), major (3) and very severe (4). Table 1 shows the averages for each obstacle for all countries in South Asia except for the Maldives as well as for Vietnam and China. Although, firms in South Asia report higher averages compared to China and Vietnam, they only rank electricity (Afghanistan and Pakistan) and the political climate (Afghanistan and Nepal) as having a significant impact. This result is confirmed by the lack of correlations between these factors and productivity performance (see Table 2). The real issues are related to agribusiness specific policies as discussed in Section 5.

Table 1: Firms' Obstacles by Country (Averages)

Country	Finance	Political	Crime	Taxes	Corruption	Informality	Labor Reg.	Labor Educ.	Electricity
Afghanistan	2.39	3.16	2.49	2.02	2.56	1.92	0.95	2.10	3.15
Bangladesh	1.46	2.77	0.69	1.07	1.95	1.24	0.87	1.16	2.48
Bhutan	0.88	0.38	0.38	1.17	0.63	0.75	1.13	0.63	1.00
India	1.14	1.09	0.54	1.43	2.18	0.91	1.16	1.13	1.92
Nepal	2.22	3.66	0.98	1.17	2.29	1.58	1.56	0.93	2.88
Pakistan	1.23	1.79	1.70	1.60	2.15	1.22	1.17	1.11	3.18
Sri Lanka	1.52	1.04	0.67	1.39	0.84	1.48	1.21	1.25	1.60
Average	1.55	1.98	1.06	1.41	1.80	1.30	1.15	1.19	2.32
China	0.83	0.24	0.37	0.66	0.26	1.00	0.53	0.99	0.69
Vietnam	0.96	0.09	0.25	0.43	0.39	1.19	0.46	0.75	1.15

Source: World Bank Enterprise Survey

Note: Afghanistan (2014); Bangladesh (2013); Bhutan (2015); India (2014); Nepal (2013); Pakistan (2013); Sri Lanka (2011); China (2012); Vietnam (2009).

One possible investigation is assessing whether there is any correlation between these obstacles and firm's productivity. Following Ayyagari et al (2008) and Lage de Sousa (2016) methodology, we investigate which obstacle is hampering firms to achieve higher levels of productivity in the agribusiness sector.

Table 2 shows the results for South Asian firms in these 7 countries in terms of labor productivity, total factor productivity (TFP) and labor productivity growth in the last three years.

Although firms have ranked these obstacles higher than in comparable countries, they do not seem to be correlated with firm's productivity. According to the outcomes, political aspects are negatively correlated with labor productivity, suggesting that firms facing higher political instability tend to have lower levels of productivity.

Yet this result is not backed up with TFP or productivity growth, which weakens its initial outcome. Corruption shows a positive correlation with TFP, but as for political aspects, results are not corroborated with other measures of productivity.

Table 2: Obstacles to Productivity – Agribusiness

VARIABLES	(1) Labor Prod	(2) TFP	(3) Prod Growth
Log(Size)	0.0112 (0.097)	-0.0445 (0.070)	0.0049 (0.014)
Log(Age)	-0.0265 (0.053)	-0.1224 (0.067)	0.0119 (0.010)
Foreign	0.6205 (0.340)	-0.7141 (0.409)	0.0069 (0.128)
Exporter	0.3604 (0.387)	0.2940 (0.277)	-0.0081 (0.029)
Finance	-0.0172 (0.046)	-0.0465 (0.068)	-0.0123 (0.014)
Political	-0.1470* (0.065)	-0.0737 (0.039)	0.0008 (0.018)
Crime	0.0174 (0.086)	0.0003 (0.062)	0.0042 (0.028)
Taxes	0.0351 (0.063)	-0.0481 (0.042)	-0.0081 (0.046)
Corruption	0.0843 (0.046)	0.0720** (0.020)	0.0015 (0.010)
Informal Sector	0.0057 (0.065)	0.0006 (0.039)	0.0174 (0.014)
Labor Regulations	-0.0078 (0.040)	0.0588** (0.022)	0.0020 (0.026)
Workforce Education	-0.0676 (0.065)	-0.0946 (0.065)	0.0002 (0.012)
Electricity	-0.0352 (0.036)	-0.0388 (0.021)	0.0019 (0.009)
Constant	9.6758*** (0.276)	1.5080*** (0.162)	-0.4796*** (0.128)
Observations	993	692	828
R-squared	0.1013	0.0692	0.0370

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Annex 6: Tasks of High Level Agribusiness Transformation Team

The agribusiness transformation team has a key role to play in generating and leveraging knowledge. One cannot underestimate the value of knowledge in motivating and informing the right kind of actions on behalf of the government and the private sector. The knowledge that the agribusiness transformation team should generate and leverage falls under four categories:

1. Identification of the main agribusiness opportunities. This effort should entail: (a) identification of potential production areas by product, based on agro-climatic suitability; (b) a demand analysis to identify the most promising markets (both domestic and international); and (c) for specific agro-climatic zones and markets, a detailed productivity/cost benchmarking (starting with the leading players) to evaluate the competitiveness distance with the main competitors.
2. Identification of the main constraints standing in the way of realizing the main opportunities.
3. The detailed cost benchmarking done in the previous step will help identify the steps in the value chains where productivity/cost need to improve the most, differentiating by type of player. The root causes (namely market and government failures along the lines discussed in this report) for the lower quality and/or higher costs should then be established in these areas through in-depth interviews of leading players with international exposure and comparative analysis.
4. Identification of practical solutions to remove the main constraints. Active dialogue with policy makers to remove key constraints is a core responsibility of the agribusiness team. The team can also collect information on how other countries have dealt with these constraints from a technical, financial, and political point of view.
5. Monitoring and evaluation of progress so as to take corrective actions. Last but not least, the agribusiness transformation team will need to put in place monitoring and evaluation systems to carefully assess implementation progress. These assessments will enable countries to terminate or correct failing initiatives while scaling up and replicating successful ones. The team can then identify successes for scaling up and also publicize opportunities.

Source: Byerlee et. al., 2013

Annex 7: Most Cited NTMs specific to Countries in South Asia

Afghanistan				
Port Access: Afghan shipments accessing Karachi port and goods from other countries to Afghanistan passing through this port are subject to long and thorough inspection by Pakistan officials	Licensing and registration requirements for both imports and export. Provision for a post-transaction levy or royalty at pro-rata basis on the invoice price. The range is wide, from 0.01% to up to 15% of the invoice price.	150 categories of SPS and TBT measures related to packaging, labelling, certifications, and conformity assessments, or other restrictions pertaining mostly to food, petroleum	Range of para-tariffs in the form of export levy, licensing fees, royalty, etc Afghanistan is the second country other than Sri Lanka, to impose a variety of tariffs on exports	Additional payments such as bank guarantees, collateral money for shipments/ trucks passing through Pakistan Other Issues: Large volume of informal trade creating disincentives for Afghan manufacturing and revenue loss to the Afghan government
Bangladesh				
Para-Tariffs in the form of Supplementary Duty and Regulatory Duty imposed on imports in 270 categories. government's revenue collection from supplementary and regulatory duties exceeded revenue collection from customs duty in the 2012-2013 fiscal year	Port Restrictions: Export restrictions from India and import restrictions. For eg: imports under Bonded Warehouse system to enter Bangladesh through Chittagong Sea Port only	Sanitary and Phyto-Sanitary measures pertaining to Human, Animal and Plant health and related food safety issues are applied to over 300 product categories for Bangladesh	TBT Restrictions: Packaging, labelling, certifications, & conformity assessments, or other restrictions are found for 218 product categories.	Fluctuating Standards and Procedural Steps: poor coordination and dissemination between government officials and business community leads as well as fluctuation standards & procedures often hamper prospects for Bangladesh Food Processors
India				
Port Restrictions: Currently 137 Indian imports are allowed to enter Pakistan only through Attari-Wagah border between India and Pakistan. India itself imposes specific port entry restriction measure (C3) for many categories of products applicable	SPS Restrictions: Sanitary and Phyto-Sanitary measures applied to 250 product categories. There are complex procedural steps. For	TBT Restrictions: found for about 228 product categories for India. products belong to machinery, equipment, and chemicals for industrial use, processed food	Fluctuating Standards & Procedural Steps: arbitrary interpretation of regulations. Frequent changes to the standards and conformity assessment procedures.	Import prohibition: Import of beef in any form and import of products containing beef in any form is prohibited for religious reasons. Import of Genetically Modified Food, feed, Genetically Modified Organism (GMOs) and Living Modified

for all or different countries, depending on the nature of the product. Indian traders, particularly exporters, also face such port entry restriction measures in Bangladesh.	example, each consignment is subject to testing instead of the standard practice of risk based inspection.			Organisms (LMOs) or any product containing any of these is subject to several kinds of certification, and other TBT measures
Bhutan				
Quantitative Restrictions: For imports from countries other than India, an importer can import only 4 containers a year.	License Requirements: Each import consignment requires separate import license for the already registered importer.	Para-Tariffs: Bhutan faces a variety of discriminatory para-tariffs from India and Bangladesh.	A total of 14 categories of items are restricted for import from all countries and are subject to licensing requirement with special permission Import of raw materials for industrial use must have a value addition of minimum 40%.	
Maldives				
The quota regime has been 'operationally' eliminated, and now both public and private parties are allowed to import staple foods,	Time consuming import and export licensing requirements		Quality Standards: Maldives' exports often face restrictions on quality and SPS issues in importing countries due to the absence of proper testing and inspection facilities.	
Nepal				
Quantitative restrictions are in place for exports of rice, wheat, sugar & grains for food security reasons.	Special permission is required for exports of some timber products and forest resources related to biodiversity and environment conservation.	Six categories of products, including beef, plastic materials with less than 20 micron thickness, and some other products prohibited under other laws are banned for import on religious, public health, and environmental grounds.		
Pakistan				
Political Restrictions: The NTM inventory for Pakistan found E329 (Prohibition for non-economic reason n.e.s. or 'not elsewhere specified') applicable to 585 categories of products under different levels of HS chapters and codes for imports from India.	SPS Restrictions: Sanitary and Phyto-Sanitary measures (Category A under UNCTAD classification) pertaining to Human, Animal and Plant health and related food safety issues are applied to about 79 product	Technical Barriers to Trade (TBT) in Category B of the UNCTAD classification have been found for about 186 product categories.	Port Restrictions: Currently 137 Indian imports are allowed to enter Pakistan only through Wagah border. Imports from Afghanistan are also subject to port specific restrictions	162 categories of products/items, are subjected to bans/restricted bans for imports and exports broadly. Imports of a number of products are subject to quality standards. Import of a number of products is subject to regulatory duty.

	categories.		due to security considerations.
Srilanka			
<p><i>Para-Tariffs</i> in the form of export levy (referred to as ‘cess’ from a 10% to 35% range), and a 5% infrastructure development levy on imports, both specific and ad valorem exist in Sri Lanka. A differential treatment in VAT calculation for imported products is also a form of para-tariff faced by importers.</p>	<p>Licensing Requirements: 335 categories of products with different levels of HS chapters and codes for imports are regulated under E129 (Licensing for non-economic reason n.e.s.) in Sri Lanka.</p>	<p>SPS Restrictions: Sanitary and Phyto-Sanitary measures (Category A under UNCTAD classification) pertaining to Human, Animal and Plant health and food safety issues are applied to over 101 product categories for Sri Lanka.</p>	<p>TBT Restrictions: applicable to about 90 product categories.</p>

Annex 8: Weaknesses in the food safety/SPS regulation according to Lead Firms

Interviews with lead firms around South Asia revealed various weaknesses in the food safety/SPS regulation:

- National standards do not comply with international norms (e.g. WTO Agreement on Technical Barriers to Trade and WTO Agreement on Sanitary and Phyto-sanitary Measures) and therefore prevent market access for. The international recognition of the apex authorities and of monitoring laboratories is patchy.
- Weak ability of farmers to achieve the standards required by the industry or exporters.
- Weak implementation of regulations and technical capacity among institutions and their inspection agencies need to be upgraded.
- The large number of regulatory authorities leads to confusion over areas of responsibility. There may be regional discrepancies within countries where responsibility has been devolved to state or provincial level leaving uncertainty over responsibilities and unique technical regulation regimes
- Voluntary standards and mandatory technical regulations are not always clearly separated. Insufficient representation of the private sector in the governance structures
- There is no high level oversight of the national quality infrastructure or the technical regulation framework and so no co-ordination and collaboration across ministries to ensure WTO compatibility. In Pakistan a National Quality Policy³⁵ was formulated in June 2014. Its current status is not known.

³⁵ See also Policy paper on sanitary and phytosanitary management and controls in Pakistan. Ministry of National Food Security and Research, Government of Pakistan (2014)

Annex 9: The Kyrgyz Agribusiness and Marketing Project

As consumer preferences change, accessing even the domestic market can be a challenge for processor as Kyrgyz food companies are well-aware of. In the years that followed independence after the collapse of the Soviet Union, a new market started emerging especially in urban areas in the Kyrgyz Republic. Companies that had existed for decades and supplied Kyrgyz consumers with processed products such as juices, milk products, and cheeses, all of a sudden had trouble keeping up with new demands and saw their products being pushed aside on the super market shelves by products from Kazakhstan with better quality and more appealing packaging. At the same time, much of the processing equipment dated back to the time of the Soviet Union, and many managers were uncertain how to approach the challenges in this changing environment.

The World Bank-financed Kyrgyz Agribusiness and Marketing Project provided a three-pillar approach to upgrading agro-food processors. 42 companies, selected on the basis on interest and viability, were supported with subsidized consultancy services by food-technicians, marketing, and financial management specialists – all helping the processors to upgrade processing equipment, marketing strategies (including market identification, packaging, and labelling), and IT-based financial management systems for up-to-date business-oriented approaches. In addition to the subsidized consultancy services, the project also financed a revolving credit line through five commercial banks to ensure financing (at market rates) for some of these investments and to the agro-processing industry in general.

Overall, the 42 participating companies showed an average increase in sales and profit with 114 and 107 percent respectively at the end of the project, reaching the shelves in Bishkek and beyond with their upgraded products.

Source: ABMP ICR/Authors

Annex 10: The Uruguay Case Study

Uruguay—soybean, rice and plantation forestry: This small country (3.5 million people) has increased its world market share in 8 of its 10 top agricultural exports over the past 20 years. During this period, it has maintained a stable macro-economic environment and an open policy toward foreign direct investment. It had the highest score for governance indicators among the countries reviewed—although it scored relatively poorly in the Doing Business Indicators. It has also developed two significant new export industries. The new soybean industry garnered US\$ 327 million in foreign exchange earnings in 2008; the new pulp and paper industry, based on plantation forests, provided US\$ 902 million. Uruguay also increased rice exports nearly four times to 1 million tons, worth US\$ 461 million in 2009, with significant exports to Africa in recent years.

The state has played different roles in the development of these industries. The soybean industry received no specific government incentives and was not jump-started through a special program. Large Argentinean agribusiness companies, which are highly taxed on soy exports in their own country, were able to import seed to Uruguay (thanks to flexible regulations) and openly acquire land through rental or purchase (thanks to Uruguay's well-defined property rights and well-functioning land markets). For rice, Uruguay forged a unique public-private partnership to finance rice research and technology transfer, with co-financing shared equally by producers and the government. This highly effective rice innovation system has achieved one of the highest national average rice yields in the world (around 8 tons per hectare) and a benefit-cost ratio of 7.9 on the investment in research and development.

In contrast, the government played a very activist role in developing a new forest policy and passing a forestry law that provided special incentives to the sector and to some firms. Incentives included a 50 percent subsidy and land tax exemption for plantations on land designated as low-quality pastures and tax-free status for five export pulp mills. The rationale for special forestry incentives appears to relate to (1) the long gestation period of about 10 years from forest establishment to harvest, which ties up capital; (2) the very large scale of processing investments (more than US\$ 1 billion per mill); (3) the need to coordinate the investment in the feed supply to pulp mills with the investment in the mills; and (4) the fact that neighboring countries were offering equivalent or higher subsidies for plantation forestry.

A study by Morales (2007) estimated an internal rate of return on investments in the forestry industry of 32 percent, including subsidy investment provided by the government. The program attracted about US\$ 4 billion in private investments, including the largest single foreign investment in Uruguay's history. Risks appear to be minimal. Plantation forestry and downstream processing were estimated to have provided four times the jobs per hectare relative to the low-productivity cattle ranching that it replaced. Environmental impacts have likely been neutral or positive. The plantation subsidy was removed in 2005.

The downside was that soy, rice, and forestry industries greatly increased wear and tear on rural roads as they moved millions of tons of new product to mills and ports. In 2011, Uruguay was debating a special tax on large land owners to finance road maintenance.

Source: Byerlee, et. al., 2013

Annex 11: Contract Farming in the Coffee Sector (Nedcoffee in Vietnam)

The coffee roasters in the consuming markets of the World are increasingly demanding that their suppliers can provide assurance that the coffee is produced under sustainable conditions. Nedcoffee Vietnam is Vietnam's third largest coffee exporter with annual exports around 90,000 tonnes per year. It was established in 2008 with a factory in Buon Ma Thuot with a fully integrated, state-of-the-art processing line and designed capacity of 60,000 tonnes per year. Nedcoffee buys through four buying stations and coffee beans are brought by truck to Buon Ma Thuot. The buying stations are staffed by employees but Government regulations do not allow the exporter to buy direct from the farmer so the procurement is achieved through independent collectors in the surrounding areas, including the 22 partner collectors of Nedcoffee.

Nedcoffee Vietnam is ahead of the national average in supplying sustainable coffee, with 15 percent of its coffee produced (2013) under certified sustainable conditions, and a target of 25 percent in the next years. Coffee verified or certified as produced under sustainable conditions attracts a premium of USD40-60/tonne for the exporter. Of this premium half will stay with the exporter to cover the costs of handling the coffee separately and for maintaining the traceability of the supply. The remainder is split equally between the collector and the farmer. There is therefore an incentive for each player in the supply chain to maintain the integrity of the certified or verified coffee.

A typical partner collector for Nedcoffee will buy 500t/year of coffee and all is sent to Nedcoffee. The collector may also trade pepper and rice and supply agrochemicals and a small operation can easily turnover USD1mn per year. From May each year the collector starts to pre-finance the crop with advances of fertiliser providing the linkage between Nedcoffee and the farmers that permits the development of traceable certified sustainable coffee. In the Nedcoffee factory the coffee is prepared, cleaned, graded with colour sorters and sieves, maybe polished, and bagged. A range of grades is produced according to customer specifications. Certified coffee is handled and stored separately.

Source: Authors

Annex 12: Productivity drivers regression results

Table 2: Firm characteristics and productivity – Agribusiness

VARIABLES	(1) Labor Prod	(2) TFP	(3) Prod Growth
Log(Size)	0.0112 (0.097)	-0.0445 (0.070)	0.0049 (0.014)
Log(Age)	-0.0265 (0.053)	-0.1224 (0.067)	0.0119 (0.010)
Foreign	0.6205 (0.340)	-0.7141 (0.409)	0.0069 (0.128)
Exporter	0.3604 (0.387)	0.2940 (0.277)	-0.0081 (0.029)

Table 4: CDM Model for Agribusiness

Stage Dependent Variable	(1) 1st Stage Log(Innov. Exp./Sales)	(2) 2nd Stage Log(New Products/Sales)	(3) 3rd Stage Log(Labor Productivity)
Predicted Log(Expenditure/Sales)		-2.6759 (6.310)	
Predicted Log(New Products/Sales)			1.9169 (2.251)
Log(Size)	0.0051 (0.005)	0.0427 (0.040)	0.2693* (0.150)
Log(Age)	-0.0007 (0.009)	-0.0513 (0.047)	
Export	-0.0213 (0.017)	-0.0056 (0.155)	
Foreign Status	0.0094 (0.055)	0.2218 (0.335)	
Internal Funds	-0.0278* (0.015)	-0.0113 (0.193)	
Duopoly / Monopoly	-0.0182 (0.022)		
Capital Labor Ratio			0.0000*** (0.000)
Process Innovation			0.3216 (0.260)
Organization Innovation			0.0195 (0.270)
Observations	477	489	181
R-squared			0.1629

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Agglomeration Economies - District Level (Agribusiness)

Dependent Variable: TFP	1	2	3	4
	Two-Digit		Three-Digit	
Localization	-0.0820*** (0.020)	-0.1164*** (0.024)	-0.0575*** (0.012)	-0.0329** (0.015)
Urbanization	0.0591*** (0.020)	0.0512** (0.020)	0.0428*** (0.015)	0.0367** (0.018)
Observations	6,135	6,135	6,135	6,135
R-squared	0.0036	0.0052	0.0041	0.0057

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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