# Part 1

# The Food Production Chains Environment

Chapter 1

# Environmental Changes Affecting Food and Agribusiness: What Are the Trends?*

The objective of this chapter is to share some important changes in the macro-environmental variables that may affect more companies operating in food and agribusiness industry.

I will use the traditional PEST analysis to summarize the major thoughts. The PEST (or STEP) analysis is a traditional tool to understand macro-environmental changes where "P" represents the political–legal environment (institutional environment), "E" refers to economic and natural environments, "S" is for the socio-cultural environment and finally, "T" is for the technological environment. These four environments help to organize the macro-environmental variables and are the first and very important "step" in strategic planning processes.

Starting with the ***political–legal*** environment, we may say that instabilities in Iran and other Middle East countries, North Korea and Northern African countries are affecting oil prices, together with the growth in oil consumption from emerging economies. This will help to leverage the biofuel industry even more, since high oil prices would boost investments in finding alternate resources and stimulate government policy of blending biofuels into gasoline thus resulting in economic and environmental benefits.

Lower interest rates in Europe are driving enormous flow of resources to emerging economies which are suffering with the valuation of their currencies, eroding their competitiveness. Also, some expected reforms are not progressing in important food/agribusiness producing countries resulting in increase in costs of several commodities.

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Developing countries' tax management policies are confusing with newer protections and market access limitations. We face increasing risks of interference (regulation), some examples being the limitations exercised in food advertisements to kids and regulation toward foreign investments in land. In developed economies, we see shorter federal budgets as an argument to remove support for some less efficient agribusiness industries and even farmer support programs.

The ***economic and natural*** environment shows that in this decade, economic growth would probably be coming mostly from emerging countries (it was expected that in 2012, 5.5% average of GDP growth would be achieved by developing economies compared to 1.5% growth in developed economies) due to larger pace of income distribution in populated emerging economies.

Exchange rate policies are being used often thus affecting competitiveness of regions. Flow of capital and investment in food and agriculture brings a new environment of capital availability and increasing risks.

Since there is an increasing influence of weather in some regions, we see a shift in the production regions. Such shifts are also influenced by land prices and labor. New agricultural frontiers are being developed by local and international companies following governmental incentives for value capturing in producing regions (more processing than others). Also, in the economic environment, bigger environmental pressure will increase production costs and we see more initiatives of buyers increasing coordination over suppliers (farmers).

The ***socio-cultural*** environment shows some interesting changes. Migration and urbanization are leveraging the growth of processed food, the protest and mobilization movements are increasing pressure over inclusion, thus signalizing to the companies that such trends could be an opportunity within the supply chain. The companies face growing risks from consumer movements. The demographic trends of reduction on family size and people living alone continue to boost food service and ready to eat markets. There is also an increasing concern about food waste, and we see growing debates in this field.

Consumers are also demanding more information — whether the production treats its suppliers, i.e., farmers with fairness, consumers prefer to encourage direct trade and value what is "local." Natural and health-linked food movements continue strong thus creating an awareness and increase in the demand for certifications of products, companies and food chains. Finally, there is a larger acceptance of biotechnology, with focus over genetically modified products.

Another important point is an increasing pressure thrust by society and buyers against protection of some industries. For example, several sugar buyers in the US are protesting against high import taxes and other support programs for local sugar industry that have led to higher costs than international markets.

Finally, as we enter the era of commodities, there is an increasing pressure over natural resources within the ***technological*** environment. A lot of investments are taking place in the development of biotechnology and nanotechnologies, and in the

**Table 1.1.**

| Facts and impacts to business | |
|---|---|
| List of facts | How they impact our business? |

*Source: Author*

communication side, we can see the rapid transformation of society with digital world and new media improving the speed of communication. Availability and speed of information is facilitating in identify product sources and other relevant information quickly. Technologies that allow to recycle and reuse have higher value than before.

This chapter highlights some of the changes that emerged from recent discussions with business managers and executives. These are facts that will bring specific impacts to the industries and food chain participants that are desiring newer strategies, or improvements in their planning processes, respectively.

## Discussion question

How will all these facts impact your business?

Chapter 2

# Let Us Ensure the Seven Billionth Inhabitant Is Well Fed*

Much ink has been spent on warning us about the future of the planet, scarcity of resources, difficulties in the continuance of present-day lifestyles and consumption, availability of food and land, increased carbon prices and inflation, shortage of water, increase in obesity and other issues that have made us a lot more sensitive to the fundamental changes taking place around us.

What drove this blanket media coverage was the arrival of person number 7,000,000,000 on the planet. By the time you pick up the next issue of the *China Daily European Weekly* seven days from now, the world will have more than 1.5 million new mouths to feed.

Just to illustrate the scenario, global consumption of wheat is growing (three years average) at 10 million tons a year, corn almost 30 million tons a year and soya 20 million tons a year. The consumption of meat grew almost 20% in nine years. In essence, we have access to food but production is not responding the way it should. Last year alone we had a deficit of 50 million tons of grain.

Asia is creating a huge middle-class income population, with a possibility of almost 1 billion people in the middle class segment. All projections done 10 years ago on production, exports and imports in China are found incomplete, and some are plain wrong. In 1995, China produced and consumed 14 million tons of soybeans. Last year it produced 14 million tons and imported 70 million tons, and these figures exceed what has been projected for 2030!

If China wants to be self-sufficient in soybeans today, over 35 million new ha need to be dedicated to the crop. But this is unnecessary, since there are countries and regions in the world full of areas to supply food to China.

All this will become even more complicated in the coming years, due to the five-year strategic plan of China that focuses on income distribution and better working

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wages. Thus, we can expect more income for poor people being reflected immediately in higher food consumption.

It is not only in China that food markets are growing at incredible rates. The food market in India is expected to grow from $155 billion (112 billion euros) in 2010 to $260 billion in 2015. In the same period, Thailand's food market is expected to grow 50% and Indonesia's from $65 billion to $100 billion. Imagine what could happen in Middle East and Northern African countries, in Africa as a whole and in South America, with the booming economies of Brazil and Argentina representing almost 250 million people.

Food commodities prices rose almost 40% last year. This increase is bringing back inflation, hunger and political disturbances in some developing countries, where people spend between 30% and 50%, and sometimes more, of their incomes on food and are net importers of oil.

Two basic questions need to be answered. The first is: Why do commodity prices keep rising and the price of industrialized products keep falling?

Several factors are putting pressure on food commodities markets, some of which are: the big increase in income and distribution in emerging economies (with no accurate consumption data); urbanization; changing consumption habits; emerging countries' government family income support programs; high oil prices and the use of grains and agricultural land for biofuels; food production shortages (due to climate, unsustainable water use, plagues and diseases, cost increases and other factors); the devaluation of the US dollar and investment funds speculation. Two of these factors need to be looked at more closely.

An increasing number of industries are using farmland more intensively as the main source for their products. Farms (agricultural lands) were originally "designed" for food production and now they are being occupied to produce fuels for our cars, to feed animals (habits are changing to eating more protein), for generating biofuels and biomass (electricity), bioplastics, paper and pulp. Agricultural land is also diverted for manufacuturing purposes as in pharmaceuticals, beauty products (cosmetics), clothes (cotton), shoes, leather, tires and other rubber products, construction and furniture and so on. Since land does not grow, the pressure mounts on existing land and as a consequence land prices increase dramatically.

The second question relates to the increase in cost for producing commodities. Traditional commodity suppliers are facing huge changes in cost structures, increase in prices of land, labor, water, fertilizers and crop protection. It is a fundamental change.

For example, a glass of orange juice offered at the G20 meeting in Cannes no doubt came from Brazil (about 90% of world market share). This juice is produced from oranges planted in São Paulo state, crushed in modern factories and moved in dedicated trucks and vessels using world-class logistics to Rotterdam. The cost of all this production and operation per ton of juice delivered in Rotterdam was $500 in 2003. Seven years later, the operational cost is about $1,500.

It is an incredible increase, and if consumers want to keep this chain alive, they will have to accept new price levels. These are the facts, but there are solutions.

How can the G20 countries work together to address the food supply and security issues in the coming decades toward 2030?

Food chains and governments have two ways of solving the future problems related to food demand. One is retreating to an increase in protectionism, stimulating noncompetitive areas to produce in an "economically artificial environment" and resuming war-time policies of "self-sufficiency." The other is a production shock, moving toward growth, global trade and inclusion.

Since 2008, I have recommended 10 solutions (Figure 2.1) to address food supply and security issues for the era of "doing more with less":

We would need to place more emphasis on technology, we need better land use and management, plant and animal production technology, waste management, diffusion and knowledge transfer, storage and movement of infrastructure and creative research and innovation in governance architecture.


**Figure 2.1** 10 Points — Doing more with less.

*Source*: Author.

It is now time to redesign food chains. It needs to be understood that the food system has changed and merged into a much more sophisticated system, taking in commodity companies and consumer companies alike. Food represents culture, economic development and a new integrated partnership system. There is a thin line between private companies, public companies and NGOs, and this conversion is making people sit and work together to avoid conflicts of interest.

Farmers worldwide, but mostly in emerging nations and Africa, need price incentives, technology, credit and buying contracts (market access) to invest and grow production to a level that can meet the increasing food demand in the next 10 to 20 years and solve the food crisis.

If the United Nations, FAO and G20 are worried about food prices, they would need to convince governments to debate their tax systems urgently, even to the extent of giving lower-income people temporary government support, all the while moving as fast as possible toward implementing the 10 points outlined above.

Food production will need to double in 10 years, and the world has the land, technology, water and farmers (people) to achieve it. Food chains should move in the right direction: there should be incentives for achieving sustainable growth in global farm production and trade that would generate welfare, inclusion and peace.

To produce more food with sustainability, there is a lot to do, and I trust it can be done. So let's welcome our 7 billionth kid.

## Discussion question

What are the major opportunities that arise for your company from the discussions of this chapter?

Chapter 3

# Dry Spell Necessitates Plan for a Crisis*

The droughts in some grain, food and biofuel-producing countries particularly in the US, India, Russia, Ukraine and Kazakhstan, may have a variety of possible effects.

The US experienced its most severe drought in the past 50 years. About 37% of its farms and 43% of its agricultural areas faced water restrictions.

The US is the largest grain producer in the world, and the effects of this drought are serious.

In India, the monsoon is delivering less water than needed, which may reduce the production of sugar cane and some other crops. We must recognize that India is becoming a large food consumer due to its economic growth.

In this article, I am sharing my thoughts about the possible impact of droughts. These impacts may be classified as primary, which happen immediately after the news of the drought; or secondary, which are not felt immediately, but as a consequence of a behavioral change that may occur in the following planting season as well as in research, governance and institutional environment.

1. The prices of soybean and corn might go up and pull other grains with them.
2. Depending on the amount of stock used to guarantee supply, reserves of these commodities will be lowered to a dangerous level, which may signal higher prices for commodities for more than just the next crop as stocks are rebuilt to a safe level.
3. Higher prices have terrible effects on less-developed countries that need to import these grains for their population's food requirements. High food prices are also directly related to political instability.

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4. Countries with large middle-income population will also be affected, since the amount spent on importing food will be much higher, which might happen to China.
5. With higher grain prices, the cost of feed for pork, poultry, cattle, fish and other industries increases. In turn, their margins may fall dramatically, since passing costs on to supermarkets is not automatic. Meat will be one of the most threatened industries.
6. The biofuel industry will be similarly affected. Since the prices of the raw materials used to produce them (such as corn) are higher, margins may be reduced, threatening the industry. In addition, prices will be transferred to the final consumers of biofuels, reducing the economic benefits of biofuel use and making some consumers switch back to oil.
7. Food prices will rise in supermarkets and supply chains will be under pressure to cut costs, affecting industries such as advertising and packaging.
8. Since food is the last item to be cut when a family faces income restrictions, this price increase will also hit other industries, because part of the family budget will be shifted towards food (away from entertainment and other industries).
9. Farmers not affected by the droughts will have significantly higher margins, making it possible to buy more land and invest in technology. This may lead to more concentration at the farming level, particularly in the southern hemisphere.
10. Mandatory biofuel programs will be threatened in some countries, particularly in the US. There might be pressure to reduce the mandates in order to use more of the grains for food. If this happens, these industries will lose markets and sales, which will be difficult to recover in the coming years. It is a short-term view, but a risk.
11. If some countries switch back from biofuels to oil (petrol), consumption will grow, putting pressure on oil prices. This will also increase production and transportation costs for food chains, since a lot of oil is used in transport.
12. The reversion to oil will bring more pollution from transport systems' carbon emissions.
13. An increase in food prices may shift some consumption from outside food toward home-prepared food, switching marketing channels from restaurants to supermarkets.
14. There will be an incentive for the southern hemisphere to produce more soybeans and corn, replacing land used for cotton, wheat, cane and sunflowers. As their production will decrease, we may expect higher prices for these products.
15. Better prices will allow farmers to use more fertilizers, chemicals and technology. This will increase productivity, which may help to replenish commodity stocks.
16. Insurance companies and systems will be in line to cover production losses due to the drought. The discussion over who will pay the bill and what percentage of it will be split between the government (mostly in the US) and insurance companies is still going on.

17. India's reduced cane production may raise sugar prices, since the country would probably need to import sugar.
18. Higher food prices may stimulate programs to reduce food waste. A lot of food is lost within the food chain, and price pressure may bring positive externalities for the future.
19. There might be economical effects from trade deficits and surpluses in several countries, affecting their GDPs and even their currency exchange rates. We may expect many more regulations over food trade in several countries (including export quotas and production incentives). We may also expect political tensions over scarce water resources.
20. We could also see more pressure on seed, chemical and genetics companies to produce plants that are resistant to drought. Should this technology come from only one supplier, we will have more concentration in seed markets.

These are some of the impacts that may happen due to the severe droughts. Some researchers recently addressed the notion that these droughts may become more common in the future, which will pressure other countries to be developed for food production.

We must also recognize that these droughts are coming at a time when food consumption is growing internationally. We will need to increase production and productivity faster than we expected.

In addition, the risks in food-production chains are increasing, making their planning more difficult and bringing the food crisis to the discussion table.

From this list, we can see that droughts will have several consequences. This framework may open our minds for discussions on the topic and help us to anticipate future situations both at private and public levels.

## Discussion question

Considering these 20 points as a framework, how would droughts affect your organization and how would you overcome their impact?

Chapter 4

# Effects of Exchange Rates in Food Trade*

The objective of this analysis is to share the possible impact of exchange rate movements in international food and agribusiness trade. The case to illustrate such impact will be Brazil, where its currency the Real (R$) faced huge variations since it was created and is recently going through a devaluation, thus impacting one of the world's largest food exporters.

The article is organized in three sections. The first will talk about the historical background of exchange rates and their impact on food chains. The second section is about the new exchange rate in Brazil and what could be expected from such a change. The third section is related to possible internal consequences of the lower value of the Real and how can the Brazilian Government control these problems.

Traveling to the past, the Real was launched in 1994 as part of the economic plan to stabilize the economy and enhance the institutional progress of the country. This currency is interesting to study since the trade value (exchange rate) towards the US$ varied in the last 18 years from US$1 to R$0.85 at early beginning, to R$3.8 than to R$3.2 and R$1.55 in July 2011. The Real, in 2011, was one of the most valued currencies in the world.

This *strength of the currency* was a consequence of, among other factors, the stabilization of the economy, political stability, improvement of its institutions and exports of basic nonfood commodities. The large amount of international investments in Brazil and higher international prices of food and commodities made annual exports of Brazil jump from US$20 billion in 2000 to US$100 billion in 2012. A silent revolution in food exports and corresponding fast growing world demand for food made an inflow of US$ into the country.

The overvalued Real brought an explosion of imports to Brazil, such as cars, electronic equipment, wines and other products from several sources. By end-2011,

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almost 22% of the products consumed in the country were imported. This brought intense and new competition for companies operating in the internal market, but benefiting consumers at supermarkets with access to worldwide products, although more expensive than, for instance, when purchased in the US.

The overvalued currency also allowed two other movements: imports of equipment (capital goods) and machinery that improved competitiveness and enabled Brazilian companies to invest abroad opening new marketing channels. Several food companies expanded operations outside Brazil, taking advantage of the strong local currency.

Some negative impacts were seen in tourism with reduced international tourists (Brazil was very expensive) and the explosion in outward traveling and expenses of Brazilians. Most products, except the food commodities, had very tight and even negative margins in exporting activities and gradually companies reduced their exports. This happened in shoes, textiles, some processed foods, flowers, fruits and others.

The fact is that the Real went from US$1/R$1.55 to US$1.0/R$2.0. This is an important movement that can recover some margins and stimulate exports again, and as a consequence, more production, productivity, scale gains, efficiency gains and expansion in offering locally manufactured products in international markets. Sectors of more processed food that are cost intensive may now reach positive margins to export.

This new exchange rate will help to compensate food production costs increases due to poor logistics, more expensive labor (disputed by other sectors of the economy, like construction), strict environmental restrictions, higher land costs, higher energy costs, higher taxes that prejudice margins when producing in Brazil.

Finally, the most dangerous effect in all countries that face this situation is the risk of inflation returning, with terrible consequences, mostly for poor people. We have seen this in several neighboring countries of Brazil where imported products become more expensive, more products are exported and other factors contribute to the rise of inflation.

There are several ways for the government to mitigate this risk. Since the government may receive more income in taxes due to higher exports pulling more internal production, lowering taxes and also reducing nonessential governmental expenses may contribute to reducing prices in the internal market. The speed at which interest rates have fallen in Brazil may gradually reduce. A situation of a relative crisis in parts of the world make Brazil a target for international companies to market their products at reasonable prices that may help controlling prices. If we were in an era of excess of world demand, this would not impact positively. Finally, in some markets where prices were raised internally due to the exchange rate, the government may reduce import taxes.

In this chapter, by using the case of a large food exporter, Brazil, we have seen the impact in food chains when the exchange rate changes. For food importing

countries, most of the impact from devaluation of the Real are positive, since Brazil will be stimulated to export more, and will be more competitive in these exports due to all the investments described above. So for China, one of the biggest food importers from Brazil, these are good news, making even possible to expand the diversity of food imported.

## Discussion question

Using this framework of the various effects of exchange rates variations, would an exchange rate movement affect your company? If yes, what preventive measures could be taken?

Chapter 5

# From Farms to... Everything*

This chapter provides an interesting glimpse into the current state of our farms and farmers. From a traditional perspective of a farm producing food, recent technology innovations and other advancements are enabling farms to be multiproduct and service suppliers. At least 13 industries increasingly source their raw materials from farms:

1. **Food and Beverages:** to produce human food, including grains, fruits, eggs, vegetables, juices, milk, beef, fibers and others to an increasing and richer population demanding quantity, quality, procedures, conservation, environment, animal welfare and others.
2. **Feed:** food for the animal's growth and development, involving nutrition of larger animals, for pets and others.
3. **Fuel:** biofuels blending programs, which means fuel coming from the farm using corn, wheat, sugar cane, sugar beet, grasses, residues and other sources.
4. **Pharma-Medicine:** the growing end-use called "nutra-ceuticals" which means food products together with medicine, it involves producing products that have health benefits, like juice with calcium, lycopene, vitamins, proteins, omegas, and several other merged products.
5. **Pharma-Cosmetics:** products from food/farms that have benefits in terms of beauty, skin, tanning, and other characteristics desired by consumers ("nutri-cosmetics").
6. **Electricity:** farm products used as a renewable source of electricity, burning biomass in boilers and generating heat that is transformed into electricity, sold to the power network.
7. **Plastics:** replacing plastic coming from oil with renewable plastic coming from green and farm materials, like plant based bottles coming from cane or corn.

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8. **Environment:** farms are being used in the battle against global warming, recovering forests, creek surroundings, rivers, and even benefiting from participation in carbon credit markets.
9. **Entertainment/Tourism:** use of farms and rural lands for tourism, weekend rest for urban families, festivals, educational purposes with kids in schools, hunting and similar recreational services.
10. **Textiles and Clothing:** natural fibers used to produce textiles and clothes for the fashion industry, like cotton and others.
11. **Shoe and Leather:** leather comes from cattle and other animals.
12. **Construction and Furniture:** wood from planted farms using eucalyptus, compensated woods and other sources.
13. **Paper and Packing:** materials come from processed farmed wood, producing a pulp that is transformed into paper products.

I have covered here 13 industries (see Figure 5.1) whose products come from farmers and consequently benefit from their existence. Surprising!

So the inherent message is: let's respect our farmers, let's give more value to our farmers. They play a much more important role in our day-to-day urban lives than we can imagine.

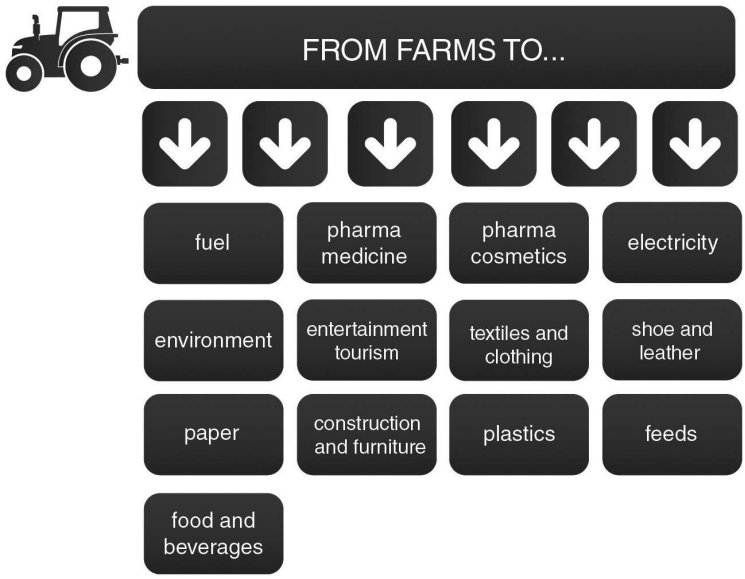


**Figure 5.1** 13 Points — From farms to... everything.

*Source*: Author.

## Discussion question

Which new industries will benefit or use farms in the future?

Chapter 6

# Navigating the Global Food System*

The International Food and Agribusiness Management Association (IFAMA) is an association of academics and industry established in 1990 as a forum that meets annually to discuss the future of food and agribusiness. In June 2010, the 20th Conference of IFAMA (www.ifama.org) was held in Boston. Bringing together around 300 food and agribusiness experts and managers from around the world, the major discussions were about the global food systems in a new era, and companies such as Sysco, Coca Cola, Los Grobo, Novus, British Foods, Fonterra, Alltech, COFCO, Rabobank and GlobalGAP had the opportunity to share their positions.

One of the most important topics discussed was the macro-environmental trend toward an increase in food consumption. Asia is creating a huge middle-class income population, with the possibility of almost one billion people moving toward the middle class. All the projections made 10 years ago in terms of production, exports and imports for China/Asia are found to be incomplete, and some, very inaccurate. Soybean imports today are far above what was projected for 2030. When asked about this subject, a COFCO/China executive and presenter refused to give a projection even for 2020.

Rabobank predicts 109% growth in food consumption 10 years from now. If China wants to be self-sufficient in soybeans today, over 35 million new ha should be dedicated to soybeans. But where is the land? Importing soybeans into China, in fact, amounts to importing fresh water. Overexploitation of water resources is already creating problems in China and India. Half the world's population is located in less than a third of the arable land, and this means a large food trade in the future. We need bigger ships, bigger ports and more efficient logistics and transport systems.

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*First published in *China Daily* (June 25, 2010).

The dilemma of having to use the same land to produce food, fiber, feed and fuel was also discussed. In a global perspective, around 10% of grains in the world go to fuel (biodiesel), 35% of the corn produced in the US goes to ethanol production and 50% of Brazilian sugarcane is used for fuel.

The good point about this is that there is capacity in agriculture to react toward food consumption and biofuels. In the last 40 years, food production has doubled and can double again, since farming is definitely becoming global, with an ever faster daily movement of buying land in the most cost-efficient producing countries. For Olam, based in Singapore and one of the most important sourcing and trading companies nowadays, supply chain arbitrages to produce cheaper and better is the way forward, so they invest toward supply in several countries using this philosophy.

The example of CHS Inc. (a large cooperative in the US) was discussed and is a lesson to other cooperatives across the world. Why? Simply because CHS Inc. is not attached to US land anymore, and is producing in Brazil, Eastern Europe and looking for other areas for expansion globally in the next 10 years. Farmers and cooperatives will be global, and South America is considered, before Africa, to be the next food frontier to be conquered, although it lacks investment in logistics.

The definition of agribusiness in 1955 was quite simple, since in the past most societies were 90% dedicated to agriculture. Redefining it nowadays is much more difficult as the food system has changed and merged to become a much more sophisticated system, from commodity companies to consumer companies. Food represents culture, economic development and a new integrated partnership system. Health insurance companies are working together with food companies, since food is the most important element of health.

There is a thin line between private companies, public companies and NGOs, and this is making people sit and work together to avoid conflict of interests. How do we know that what we are doing is good? To answer this question, third-party evaluators will become the fastest growing industry in the food business.

Those of us involved in education have to create managers who look at the totality of these decisions, since food production, health, nutrition, environment and climate control are not isolated public policy issues. We have to teach in a multidisciplinary way and not treat multifaceted problems as isolated. It is a new world of multidisciplinarity that we are navigating in, with very complex and fast moving waves of changes to be understood.

## Discussion question

Can these messages help in formulating ideas for your company? If yes, please list them.

Chapter 7

# The Roots of Food and Agribusiness Thinking*

January 2010 was a historical month for Harvard Business School, Boston. The traditional Cases Seminar completed 50 years of existence. Every year, around 200 executives from all continents join to discuss 12 case studies of companies that have something new for us to learn and spread this experience toward a more efficient and sustainable world.

The seminar has interesting dynamics. Each case is written up during the year by a team of Harvard professors and researchers. A traditional case has around 20 pages, with 10 pages of text and another 10 of annexes (financial and market data). The case reports the historical facts of each company, challenging times and decisions for the future, in terms of strategies.

In a case discussion event, like the Harvard Seminar, each participant has access to the HBS website to download the cases, materials and instructions and has to read the case in advance. At the seminar, each case is initially discussed with a small group of eight participants, to facilitate a more interactive opinion-building process. Then, the case is discussed at a plenary meeting, and finally, the CEO of the company answers questions and interacts with the audience. It is four-day event in which all participants are fully engaged. It is very difficult to take part in the event if the participants don't read the cases in advance, almost impossible.

Harvard is where the term "agribusiness" was first elaborated, in 1955. The concept was an attempt to bring more integration, considering agriculture as an activity strongly linked with suppliers of inputs, service providers, the processing industry, distribution systems, financial institutions and consumers. Later, in 1968, a new publication emerged. This book introduced the concept of "agribusiness systems." The difference here is that an agribusiness system considers the flow of one product

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over an interactive system or food chain. The sum of all the systems operating in a particular country results in the country's agribusiness.

In the 2010 Seminar, 12 cases were discussed. There is already a tradition of having a case from China and inviting at least 10 executives from China to participate. In 2009, the COFCO case was written, presented and discussed. In 2010, the DaChan Food Company was in the spotlight. From DaChan we had a description of the company, its origins and its operations in feed and meat, how the company contracts farmers in an integrated system of producers, and the most important point was how DaChan developed a reliable system of transparency and traceability to guarantee quality for its buyers. DaChan has conquered an important position as a major supplier for international foodservice chains operating in Asia.

The other cases involved Cosan, which is Brazil's largest ethanol company, and its recent growth strategies. This case discussed the outstanding results that Brazil is achieving with ethanol. Monsanto was also a case, exploring the position of this company in innovation, acquiring seed companies as "transporters of technology" to farmers, and changing communication strategies, toward new trends of farmers. The innovation pipeline was discussed and we can expect more plants resistant to water scarcity in the future. The Woolf case explored the production of horticulture and almonds in California, and how water restrictions are threatening future production.

Rabobank, the largest cooperative bank, based in the Netherlands, was also explored, with its unique characteristics and the future growth strategies, with a focus on food and agribusiness systems. We also had Purecircle, which explored the market of stevia-based sugar, a natural sweetener; Ebro Puleva, the world's largest rice company, based in Spain, and Hungerit, which explored poultry production in Hungary, before and after the communist era.

Interesting experiences also came from GTC Biotherapeutics, a company dedicated to produce medicine and food, providing ingredients, proteins and other medicines from food and animals. Red Tomato was also a case, and this company is dedicated to linking local food producers to supermarkets.

Another intriguing case was Diamond Foods, which started as a farmers' cooperative and is now the leading company in the almond snacks market in the US, with farmers as shareholders of the company. A final case, Codevasf, was written by us. This is a public company in Brazil that is lending 8,000 ha of irrigated land to the private sector in a very interesting bid considering sustainable integration.

## Discussion question

Which examples could be extracted from these companies for application in our company?

Chapter 8

# Understanding the Global Food Consumer*

There is a failure in the introduction of new products for several reasons. Research done in the US, with 11,000 products launched by 77 companies, discovered that only 56% were in the market after five years. Similarly, it is incredible to see, even in 2013, companies providing poor services to consumers and inconveniencing them thus leaving consumers upset, not caring about the consumers' time, comfort and safety and totally disinterested in resolving issues or accepting feedback, are still active in some markets. But, they would not remain so for long. Why is it important to understand the consumer's behavior?

The understanding of a consumer's behavior is mainly to predict, with higher chance of accuracy, the behavior pattern and to discover the cause-and-effect relationships to the product's purchase and, also, to comprehend the education process of the consumer during his/her relationship with the company. It starts with the Buying Behavior Model analysis. The factors that will influence the consumers' buying decision process are the marketing stimulus introduced by the companies through product characteristics, price, place and promotion strategies, the external environment stimulus that contain economic, political, social and cultural aspects and finally the consumer characteristics that contain cultural, social, personal and psychological factors (Figure 8.1).

The Consumer's Buying Decision Process that comprises the Model shown in Figure 8.1 can be analyzed at a more detailed level. At the same time that the details of the stages are commented, there is an attempt to bring some tools that may be used by the food companies and also provide questions that they should ask consumers, in a structured market research or even in the companies' day-to-day activities, to identify their (consumers) preferences and deliver the best possible offer. The model can be seen in the Table 8.1.

Nowadays, food and beverage companies are facing important challenges that result from changes in the preferences of the end consumer. The objective of this

* First published in *China Daily* (April 6, 2010).

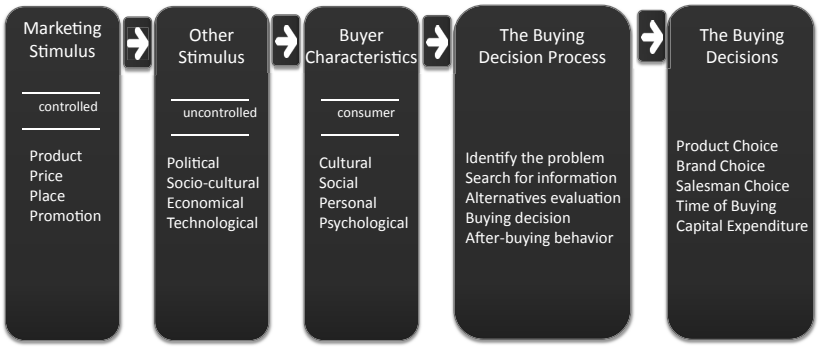


**Figure 8.1** Buying behavior model.

*Source*: Author, based on Philip Kotler.

chapter is to point out a number of changes in the desires of food consumers worldwide, showing companies certain attributes of this trend that may be useful in the process of developing new products and in their communication with consumers, such as messages for advertising, sales promotion, and so on. In a creative way, I will highlight these preferences using the trends A to Z.

**Authenticity and Ageing:** Be authentic, recognize mistakes with honesty and respect the consumer (in recalls). Much additional care should be dedicated to the elderly consumer.

**Beauty:** Companies need to care about the appearance of the food, work hard at the sales place and use attractive packaging, since more than 70% of buying decisions are made at the point of sale.

**Convenience and Citizenship:** Products need easy handling and practical packages. The distribution channels must be chosen for fast and easy purchase. There is also a need for social activities that work toward creating closer contact with the local community.

**Diversity:** Consumers want a range of alternatives within the brand for each market segment. These must be attractive, colored, different, funny (not abusive) and mainly educative products.

**Exotic characteristics and the Environment:** Varied national and regional cuisines with exotic characteristics are linked to the desire for fun during meal times. There is also a valorization of the environment, creating opportunities for actions of sustainability, and products with a stamp of environmental preservation.

**Functional Foods:** Based on research, functional characteristics, such as weight reducers, energizers and medical characteristics, are added to the products. "The food will be the medicine."

**Guarantee:** Companies must honor their commitments to the consumer.

**Table 8.1**

**Consumers Buying Decision Process**

| Stage of the process | How Does it Happen? | How can companies use it? | Questions to ask consumers... |
|---|---|---|---|
| **1 - Buying Needs Identification** | **Personal values and needs associated with the external influences, make the current situation different of the desired situation, thus a need appears.** | **→ Apply the most frequent and efficient stimulus<br>→ The package must communicate these values, acting as a "mini out-door."** | **→ What need is satisfied by consuming this product?<br>→ Are these needs evident?<br>→ In what extent are the target-consumers involved with the product?** |
| **2 - Information Search** | **The search is done through internal sources (memory, knowledge) and external sources (market and personal relations).** | **→ Identify how the consumer searches for information and on which sources.<br>→ The company must work on the sources that mostly influence consumers.** | **→ What product or brand does the consumer have in mind?<br>→ Is the consumer motivated to search for external sources<br>→ What are those sources?<br>→ Which are the most searched attributes?** |
| **3 - Alternatives Evaluation** | The consumer will choose the strongest alternative having the criteria that he or she most values. | → The company must identify, which attributes are most valued<br>→ How to reposition attributes, repositioning competitors, changing also the analysis of the attributes | → Does the consumer evaluate and compare?<br>→ Which alternatives and criteria?<br>→ Can they be changed?<br>→ What is the result of the alternatives' evaluation?<br>→ Are the alternatives really different? |
| **4 - Buying Decision** | Decisions are taken related to the purchase itself, where to buy, when to buy and what to buy and, finally, how to pay. | → Sales place<br>→ Alternative channels | → Will the consumer spend time and energy to find the best alternative?<br>→ Where does the consumer prefer to buy the product (channel) and at what moment? |
| **5 - After-buying behavior** | Comparison between the expectations and the performance of the product. From extreme satisfaction and positive word-of-mouth to legal action against the company. | → Keep open communication<br>→ Research to monitor the consumer satisfaction. | → Is the consumer satisfied?<br>→ What are the reasons of this satisfaction/dissatisfaction?<br>→ Are these discussed with other consumers?<br>→ Is there any intention of repeating the purchase? |

**Harmony and Health:** Consumers want equilibrium in communication, price, quality of products and distribution channels of the company. Think of products that have lower levels of sugar or cholesterol and are healthy. There is an opportunity here for products in the fitness line.

**Innovation and Individualization:** Intensify the launch of innovative products and ideas that represent new solutions. There is also a trend toward individual products, smaller packages, for consumers who live alone.

**Jobs:** Products that can generate jobs, with brands and stamps for small producers, or "job-friendly" products, or even cooperatives.

**Labeling:** There are several opportunities to label products, as the labeling acts as a very important source of information.

**Meal Solutions**: Offer real solutions to the final consumer's desires. The food service is getting bigger. More and more people go out for dinner to restaurants or fast food establishments, and even retailers are offering meal solutions.

**Nostalgia:** There is also a movement toward bringing back special moments from the past. We see an increase in old fashioned, or "retro" designed products and packages.

**Organic:** Products that refer to a clean environment or a controlled growth process have a growing market.

**Practical and Price:** Practical products are for day-to-day use, are quick to prepare and easy to use. Price is fundamental in decision making.

**Quality:** Quality is a basic requisite for operating in any market. Consumers have information and the media is pressurizing companies toward quality controls. Scandals spread very fast in the media and among communities.

**Reliability:** The origins, sources and methods of preparation have to be reliable in the consumer's mind.

**Services:** There are always opportunities to offer services to consumer that really add value to the company and the consumer.

**Tradition and Traceability:** The company has to evaluate carefully the maintenance of its tradition in the product line. Use arguments of age and time in the market. Efforts must be taken to transmit trust. Register history details of all products, from the farm to the final consumer. Thereafter, it is necessary to communicate this action mainly on clear packages for easy reading.

**Uniformity:** The consumer is not willing to accept variations in the product, especially those which a company claims to be standardized.

**Value Proposition:** Add value to the food, at the lowest cost, bringing in the concept of "best value" in the category.

**Xenophobia:** Present in some countries, and linked to the question of the valorization of domestic jobs and domestic production.

**Young:** There is the forever young movement; some consumers want to be and feel young, live longer and live more healthily.

**Worldwide:** Explore the global food consumer, who likes to recognize food wherever he or she is, linked to the open and global communications platform.

**Zzzzz — (Speed):** Companies cannot be slow. Speed is fundamental. Search web pages, be inspired by them if necessary, develop new ideas, be alert to new opportunities, always be ahead of competitors and surprise them and the consumers.

**Table 8.2**

Resume of the "ABC of the Food Consumer."

| Attributes | The opportunities to the companies |
|---|---|
| A – Authenticity and Aging | • Take care in the launch of new products, following the needs of the target market.<br>• Be authentic, recognize mistakes with honesty and respect the consumer (in recalls).<br>• Take additional care when dealing with the aging consumer. |
| B – Beauty | • Care aboutt he appearance of the food. Work hard at the sales place.<br>• Introduce attractive packaging. |
| C – Convenient and Citzenship | • Produce products that involve easy handling and practical packages.<br>• Choose proper distribution channels for fast and easy purchase.<br>• Involve in social actions creating a closer contact with the community. |
| D – Diversity | • Provide diverse options.<br>• Attract with colored, different, funny and mainly educative products.<br>• The consumers want to have fun and knowledge (information). |
| E – Exotic and Environment | • Introduce different national and regional cuisines with exotic characteristics.<br>• This is linked to the desire of fun during meal time.<br>• Gradual valorization of the environment, creating opportunities for actions of sustainability. Products with certificates of environmental preservation (e.g., ISO 14000). |
| F – Functional | • Add to the products' functional characteristics, such as weight reducers and energizers. "The food will be the medicine". |
| G – Guarantee | • Honor the commitments with the consumer, such as recalls, or aspects related to quality or safety. |
| H – Harmony and Healthy | • Equilibrium of the communication, price, products and distribution channels actions.<br>• Products with a lower level of sugar or cholesterol, healthy products, fitness driven products. |
| I – Innovation and individualization | • Intensify the launch of new products; innovative products, that really represent new solutions.<br>• Target individual products, smaller packages to consumers who live alone. |
| J – Jobs | • Products that can generate jobs, with brands and stamps for small producers, or "job-friendly product." |
| L – Labeling | • Label as a very important source ofi nformation. |

**Table 8.2** (*Continued*)

| Resume of the "ABC of the Food Consumer." | |
|---|---|
| Attributes | The opportunities to the companies |
| M – Meal Solutions | • Offer real solutions to final consumer's desires.<br>• Growth off ood outside home. |
| N-Nostalgic | • As opposite, offer products that bring back special moments of a generation that compose the target market. |
| O- Organic | • Growing market segment, people searching for more natural products. |
| P- Practical and Price | • Practical products for day-to-day use, which have quick preparation time and are easy to open. Variable price is fundamental in the decision's moment. |
| Q- Quality | • Basic requisite to operate in any market. |
| R- Reliability | • The food quality, sources and method of preparation have to be reliable in the consumer's mind. |
| S- Services | • Offer services that really add value to consumer. |
| T- Tradition and Traceability | • Maintenance of its traditional product line.<br>• Arguments of age and time in the market transmitting trust.<br>• Register all the product's history, from the farm to the final consumer. |
| U- Uniformity | • Consumer is not willing to accept variations in the product. |
| V- Value | • Add value to the food, at the lowest cost, bringing the concept of "best value" |
| W- World-Wide | • Explore the chances to use new media sources. |
| X- Xenophobia | • Valorization of the domestic jobs and domestic production. Local sourcing |
| Y- Young | • Some consumers want to be and to feel young, live longer and live healthier. |
| Z- Zzzzz (Speed) | • The company cannot be slow. Speed is fundamental. Search on web, have new ideas, be alert to the new opportunities, be ahead of competitors, surprise them and the consumers. |

## Discussion question

How to use the "ABC of food consumer" framework?

Companies could consider issues such as: what opportunities do we see in the future? What arguments, within those listed, do we have? How to use such arguments in a positive way? Does the consumer identify and value this argument in his or her buying decision process? Which of these arguments can be adapted?

Chapter 9

# The World of Retailers Brands*

Private labels (brands developed and managed by distributors, retailers and wholesalers) are currently one of the most discussed issues of strategy and have a major impact on the retailers' activities. They are an important tool for the distributor in a very competitive sector and have played different roles in the food industry, ranging from threats to opportunities. The objective of this chapter is to select some important aspects to be considered in relation to supplying food products to be included in a retail or wholesale distributor's private label.

In some countries, the share of private labels at retail has reached over 50% of total food sales. Some retailers even sell only their brands in the stores. The percentage of private label sales within product categories is higher in food and beverages than in other product categories.

**What are the possible advantages for a food producer when he decides to sell products to private labels?**

I think there are several possible advantages: since communication is carried out by the retailer, lower cost for the company is a first one. There is also a possibility of increasing sales and obtaining scale gains, since the company will have higher occupation of the factory capacity and volume of inputs bought, increasing their power to negotiate with suppliers. The producer can occupy a larger space on the retailers' shelves (this happens when there are two brands from the same factory — the original and the private label).

For a food producer, it could also be easier to obtain credit and funding from banks, since future sales are guaranteed by the supply contract. In product line decisions, it gives the possibility of alternative product lines with different prices and positioning. It is important to note that normally these products do not have

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or have few technological innovations. Very few new products are launched as private labels. There is improvement in the relationship with the retailer. An advantage for the food company is the reputation of the retailer, since consumers recognize that being a supplier to a retailer acts as a quality certification. It may also add a possible lower physical distribution cost, and food producers do not need promoters at the point of sale.

Another point that should be considered is that the company may face a possible lower market share for the main company's brand at the store, but a higher market share for the factory (since now it has two brands coming from the factory to the shelves). The company gains experience, and further can supply other retailers, even other industries and, as the retailing sector becomes more global, there is the opportunity to be the global supplier in the category. A final and practical reason to study this proposal is that if one company does not occupy this space, there is another competitor waiting to claim it.

**For the retailer: What are advantages of having products with their brands?**

First, we need to understand that there are several possible formats: a brand with the name of the retail chain; a retail brand, but with another name and retailer stamp on the product, etc. There is an advantage in vertical chain coordination, having production without production assets and to have possible stock reductions since these products will be managed by the retailer. The retailer also gets higher bargaining power to negotiate with other suppliers, given the flexibility of private labels' price positioning. This strategy adds the possibility of developing store loyalty (identification in the mind of consumers whenever they see the brand at home or in other places). Private labels normally offer higher margins and lead to shelf-space disputes: once one part of the limited space is filled with its own products, it reduces space for other companies to share.

Another possible advantage is that the store's product line gets wider. But the retailer has to coordinate very well and ensure careful quality monitoring because the brand image (the name of the retailer) can be damaged if there are problems.

Since retailers are recognized and in some cases highly admired by consumers, why not extend their brands to the products sold in the stores? Private labels today are of major concern in marketing. How can the food industry fight against these giants? Private labels have increased the competition in the food market and enhanced retailers' bargaining power. Market leaders are threatened by increasing private label sales even within premium segments, and on the other hand, the second or third brands in the market are threatened by cheaper private labels (see Table 9.1).

**Table 9.1**

A Framework of Possible Advantages for Food Producers and Retailers in Relation to Private Labels

| POSSIBLE ADVANTAGES FOR THE FOOD PRODUCER TO ESTABLISH THIS RELATIONSHIP |
|---|
| ➔ Communication is done by the retailer: possibility of lower communication (advertising/product promotion) costs for industry; |
| ➔ Possibility to increase sales and obtain scale gains: higher occupation of factory capacity and improvement at the inputs buying volume, enhancing negotiation power with suppliers; |
| ➔ A larger space occupied on the retailer shelves (this happens when there are two brands from the same factory – the original company brand and the private label); |
| ➔ Possible liberation of products sold on consignment (a request usually made to the food industry by retailers); |
| ➔ Could be easier to obtain credit and funding by banks, since future sales are guaranteed by the private label supply contract; |
| ➔ Product mix: possibilities of alternative product lines with different prices and positioning; |
| ➔ Normally these are products without technological innovation. Hardly any new products are launched as private labels; |
| ➔ Possible improvement in the relationship with the retailer, receiving better shelf-space, without paying slotting allowances and other retailer taxes; |
| ➔ Consumers and distributors recognize the company quality (being that particular retailer's supplier of the private label brand works as a quality certification); |
| ➔ A possible lower physical distribution cost; |
| ➔ Promoters are not needed at the point of sale; |
| ➔ A possible lower market share for the main company's brand at the store, but a higher market share for the factory (since now it has two brands coming from the factory at the shelves). |
| ➔ The industry gets experience and further can supply other retailers, even other industries. |
| ➔ As the retailing sector becomes more global, there is the opportunity to be the global supplier for the category. |
| ➔ A final and practical reason to study this proposal is that if one industry does not occupy this space, a competitor will occupy it; |

**Table 9.1** (*Continued*)

| POSSIBLE ADVANTAGES FOR THE RETAILER TO ESTABLISH THIS RELATIONSHIP |
|---|
| ➔ First we need to understand several current formats: brands with the name of the retail chain; retail brands, but with another name and retailer stamp on the product.<br>➔ Each one will show advantages and disadvantages that will not be discussed here; Vertical chain coordination allows production without production assets;<br>➔ Possible stock reductions since these products will be managed by the industry;<br>➔ Higher bargaining power to negotiate with other suppliers, given by the flexibility of the private label's price positioning;<br>➔ Possibility of developing store loyalty (identification in the mind of consumers once they always see the brand at home or in other places);<br>➔ Possible higher margins;<br>➔ Increase in pressure for shelf-space disputes, once one part of the limited space is filled with its own products it reduces space for other companies to share;<br>➔ Store's product line gets wider;<br>➔ It needs careful quality monitoring because the brand image (the name of the retailer) can be damaged if there are problems; |

*Source: Author*

## Discussion question

Apply "Private Labels Framework — PLF" to a specific offer of your company to exercise possible benefits and risks.

Chapter 10

# Retailers: The Giants of Chains*

Retailers' numbers of 2010 are impressive. Walmart, the leader, had a whopping 337 billion Euro sales in 15 countries and 8400 stores. Carrefour is the second, with 115 billion Euro sales in 35 countries. The next is Tesco, far behind with 78 billion Euros. Although these numbers are absolutely impressive, since they are even bigger than the GDP of some countries, the concentration of retail has decreased. In 2003, the top 20 retailers had 23.4% of market share, and in 2010 they have around 21% of total sales in the world. What is the reason behind these extraordinary sales?

One explanation is that when comparing the size of retail markets in several countries, the changes are huge. In 2006, the sequence of the largest markets, with countries and billion Euro sales (in brackets) was as follows: US (612), China (328), Japan (297), France (206), India (190), UK (188), Germany (150), Italy (127), Russia (116) and Mexico (112) were the 10 biggest. Using recent numbers to project sales for 2014, the 10 largest markets are expected to be China (761), US (745), India (448), Japan (360), Russia (322), Brazil (284), France (228), UK (198), Germany (168) and Indonesia (167). The reader may note that BRIC countries will have four of the six largest markets. In these emerging countries, retail concentration is smaller, which is a possible explanation.

Given below are some points that I consider as part of an agenda for food retailers, the "giants," for our strategic thinking process (see Table 10.1).

1. To kickstart the thinking process, the subject — private or retailers labels will be discussed. This is definitely one of the most important factors. The penetration of private labels in the percentage of food sales is increasing, and in some chains, mostly in Germany, they may have 60% or 70% penetration. In Switzerland, 47% of market is conquered by private labels and in several other European countries they have more than 30% of market share. Brazil, India,

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China and Russia still have less than 10% of private labels share, so we may expect several changes and impacts in the future.

2. Another point, probably linked to the decline in the concentration ratio of retailers is the trend toward the neighborhood concept, with bigger proximity and convenience. Retailers have a multi-format development: hypermarkets, supermarket, membership clubs, convenience and discount stores. But neighborhood stores are increasing toward consumer's trends of buying less and more frequently, closer to home.
3. Information and communications with consumers: Retailers dominate with two valuable assets in their possession: information about consumers (what, who, when, why they buy) and space for interactions and selling. Retailers are selling this information to food companies and will offer more space to food industry to enable such communications inside the stores, representing an increasing source of income. For the industry, since almost 70% of the buying decisions are taken at the point of sales, this strategy represents an opportunity to win the battle over the shopper's preference.
4. Retailers also face new challenges with operations management. These include the permanent reduction of transactions costs, smaller number of suppliers (without increasing dependency) and technology (electronic data interchange systems). This also means better product assortment to maximize shelf space.
5. Services toward convenience are also a trend in the competitive arena for some retailers. Such services include delivery, packaging gifts, offering ready to eat meals (home meal replacement), bakery, butchery, coffee shops and others.
6. There is also a trend toward "green movement" such as saving energy and measuring carbon emissions (these are identified as environment friendly).
7. Some retailers are adopting a strategy of sustainable initiatives of sourcing, using fair trade concepts and others toward an increase in the inclusion of small holders as suppliers, even increasing their transaction costs with this action.
8. Internationalization and global sourcing continues to be a trend and retailers faces the challenges of different cultures. But this also allows retailers to find the best suppliers from all over the globe and bring their products to all stores that source globally.
9. Retailers are also facing stronger competition from different formats like direct sales, online sales, door-to-door distribution systems and an increasing share of consumer expenditure on food service (restaurants, caterers and other formats).
10. Last but not least is a trend toward collective operations withother retailers, sharing and buying structures and centers, stock management, marketing, layout, technology, which maybe a first step toward future mergers of giants in the food industry.

These are the 10 topics of discussions at present, involving the giants of the food chain.

**Table 10.1**

Agenda for Food Retailers - The Giants.

| | Questions | List ideas and opportunities for a company |
|---|---|---|
| Private or retailers labels | What changes and impacts in the future can we expect of private labels and retailers? | |
| Trend toward neighborhood concept | Why is the number of neighborhood stores increasing? What to do to attend to consumer's trends? | |
| Information and communications | What to do to get the information from retailers? What strategies to use to gain the customer's preference? What kind of communication to use in a point of sale? | |
| Challenges toward operations management | What to do to reduce transaction costs? What to do to maximize shelf space? | |
| Services toward convenience | How to offer convenience services? | |
| "Green movement" | How to save energy and measure carbon emissions? | |
| Strategy of sustainable initiatives of sourcing | How to include small holders as suppliers? | |
| Internationalization and global sourcing | How to facing the challenges of cultural differences? How to identify the best from all over the globe? | |
| Competition from very different formats | How to face competition from different formats? | |
| Trend toward collective operations | How do collective operations with other retailers? | |

*Source: Author*

## Discussion question

It may be useful here to discuss these topics more deeply, specifically issues about the opportunities and their impact toward food chain participants and to your specific company.

Chapter 11

# The Evolving Role of Trading Companies in Food Chains*

This chapter aims to discuss the major changes happening in trading companies (here, I will use the acronym TCos) that operate in food and agribusiness chains. The idea here is to raise the facts that are changing, the impacts brought by these facts and leave an open discussion toward which acts should companies that are performing business with TCos adopt. These ideas are based on discussions with leading trading companies and agribusiness specialists. Examples of TCos are Bunge, Cargill, ADM, LDC and others.

A TCo performs several functions in agribusiness markets, but the most important function is performing trade — finding sellers of crops (or what we call sourcing), and sort out the buyers. Different from a broker that operates via a commission, a TCo buys and sells products.

Most of these companies also went backwards (vertical integration) and got involved in processing (industrial phase). They also play an important role in logistics and in financing agribusiness in some markets. Some of the key characteristics of TCos include their access to capital, owning large scale units, fleets of vessels, world-class selling teams etc.

Within the food chain, from agricultural supplies to the final consumer, TCos operate in several ways. Some are more focused at the initial parts of the chain and others move forwards, toward final consumption via branded products.

Several facts are impacting the world of TCos. As new entrants operate in the growing food business, we have a tougher competition in commodities, mostly in grain origination. Thus, some companies are expanding operations through the value chain and others are reinforcing their positions in the trading and/or input business.

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## Globally, Which Facts Are Influencing the Strategies of TCos?

- Due to increase in consumption, the food trading business is growing rapidly in all parts of the world.
- The world is facing a mid-term challenge of insufficient grains and other commodities origination.
- Concentration of TCos via mergers and acquisitions.
- Increase in transport costs and pressure over logistic resources.
- Rapid rate of internationalization of TCos would enable global operations and sourcing mostly would become bigger. Internatinalization would also help reap advantages of different production cycles of the products in different regions of the world, making possible better usage of logistical and management assets.
- There are new entrants in the traditional TCos' market, like buying groups, selling groups, farmers, cooperatives, crop input dealers and other agro-industry dealers.
- Access to information, one of the key competitive advantages of TCos is now available at a global level via web and other sources at a cheaper cost.
- At the same time that TCos face a growing market, it also faces increasing complexity in governmental regulations (import taxes, export taxes).
- Some Governments are transferring logistic infrastructure to private sector thus creating important challenges and opportunities for TCos.
- Consumer demands towards traceability, safety, security and certifications create more difficulties for the TCos traditional business forms.
- NGOs are putting increasing pressure over TCos operations.
- TCos core business remains grain origination, but to increase this capacity, TCos must offer a complete package of products, like seeds, fertilizers, crop protection and other services to farmers.
- Financial services provide important competitive advantage in markets that lack credit.
- Some TCos are diversifying and moving backwards in the chain, increasing their operations as agri-input dealers offering complete solutions to farmers; with this strategy, they will represent a new marketing channel for crop protection companies but may also increase channel conflict.
- TCos are focusing in marketing products to the end consumer.
- TCos are increasing activities and mostly investments over ports and other logistic infrastructure that have being privatized.
- Some TCos are integrating operations with cooperatives, farmers and fertilizer companies trying to build a lock in strategy to secure grain origination.
- As other important food chain participants, TCos are increasing their demand driven behavior and building marketing activities with other partners.

- The integration of TCos and large farmers/cooperatives can stimulate the development of crop input generics and private label strategies.

We tend to, in order to simplify, characterize trading companies in three major segments (see Table 11.1).
Just to have an idea, the following picture shows some movements of TCos operating in the Brazilian market, so you can understand the complexity of it.
Finally, the tool of this chapter is presented. The major events happening in the world of TCos, the major impacts and what could be the acts for a company that deals with TCos are discussed (see Table 11.2).

**Table 11.1**

| Traditional Tradings | Tradings Moving Upstream | Production / Input Distribution Oriented Companies |
|---|---|---|
| ➔ Focus on grain and logistic operations<br>➔ Willing to be collaborative (exchange of information, etc.);<br>➔ Tend to establish partnerships with other companies in the chain (logistics, technical assistance etc);<br>➔ Non-exclusive relationship w/ chemical companies;<br>➔ Opportunities to capture value from dealers;<br>➔ Companies more likely to invest in input distribution;<br>➔ Companies more interested in partnerships; | ➔ Apparently focusing on consumer brands and foods;<br>➔ Important companies with logistics;<br>➔ Need to originate grains for use and global operations;<br>➔ Tend to establish partnerships with other companies in the chain;<br>➔ Non-exclusive relationship with chemical companies; | ➔ Companies from other business integrating or diversifying to trading operations;<br>➔ Do not have complete access to logistics and will need partnerships (inputs and structure);<br>➔ Need to develop new competences;<br>➔ Those that are producers, usually uses leasing and low investments in fixed assets; |

**Table 11.2**

| Facts<br>What is happening | Impacts<br>For Tradings | Acts<br>What Should You Do? |
|---|---|---|
| ➜ Due to increase in consumption, the food trading business is growing fast in all parts of the world;<br>➜ World is facing a mid term challenge of insufficient grain and other commodities origination;<br>➜ Concentration of TCo's via mergers and acquisitions;<br>➜ Increase in transport costs and pressure over logistic resources;<br>➜ Fast rate of internationalization of TCo's, global operations and sourcing mostly to become bigger and also to take advantage of the different production cycles of the products in different regions of the world, making possible better usage of logistical and management assets;<br>➜ New entrants in the traditional TCo's market, like buying groups, selling groups, farmers, Cooperatives, crop input dealers and other agroindustry;<br>➜ Access to information, one of the key competitive advantages of TCo's is now worldwide available via web and other sources;<br>➜ At the same time that TCo's face an increasing market, it also faces increasing complexity in Governmental regulations (import taxes, export taxes);<br>➜ Some Governments are transferring logistic infrastructure to private sector, creating important challenges and opportunities for TCo's;<br>➜ Consumer demands towards traceability, safety, security and certifications create more difficulties for the TCo's traditional business;<br>➜ NGO's increasing pressure over TCo's operation. | ➜ TCo's core business remains grain origination, but to increase this capacity, TCo's offers to farmers a complete package of products, like seeds, fertilizers, crop protection and other services;<br>➜ Some TCo's are diversifying and moving backwards in the chain, increasing their operation as agri-input dealers offering complete solutions to farmers;<br>➜ With this strategy, they will represent a new marketing channel for crop protection companies but also may increase channel conflict;<br>➜ Other put their focus in final consumer marketing products;<br>➜ TCo's increasing activities over Ports and other logistic infrastructure that has being privatized;<br>➜ Some TCo's are integrating operations with coops, farmers and fertilizer companies trying to build a lock in strategy for grain origination;<br>➜ TCo's are trying to capture value from crop input distribution and also creating channel conflicts and price competition;<br>➜ As other important food chain participants, TCo's are increasing their demand driven behavior and building closer relationships also with marketing activities;<br>➜ Also the integration of TCo's and large farmers/coops can stimulate the development of crop input generics and private label strategies; | |

## Discussion question

Based on the changes discussed in this chapter, the question is how should a company dealing with, selling to or buying from TCos operate? Which strategies could be formulated? What are the major acts (projects) to adapt to this changing environment?

Chapter 12

# The New World of Farmers*

This chapter aims to discuss the major changes happening in farming, mostly in the largest farming export countries as the US, Brazil, Argentina among others with relatively different environments like South Africa, India and China. The objective is to raise the facts that are changing, the impacts brought by these facts and leave an open discussion to help develop strategies that companies dealing with farmers should adopt. This chapter is based on discussions with farmers and researchers in four of these countries. Among these countries, probably Brazil is the one that most fits with these trends.

Some of the changing facts and trends are listed here (see also Table 12.1 for the framework).

- There is increasing price volatility in the world of agriculture.
- There are newer risks due to climatic change and governmental regulations.
- Access to technology is becoming critical as technological availability is increasing.
- There are more farms per farmer being managed thus increasing farming concentration.
- Much more information is now available, most of them for free.
- Changes are evident in farming production business models.
- Changes are also evident in farmers behavior, farmers are more professional and informed.
- Farmers are diversifying to other regions and activities, including livestock.
- Farmers are getting more capitalized, but still need credit due to price/cost volatility.
- There is an increase in capital needs and land usage restrictions.
- Urban opportunities for labor are growing.
- Farmers find resources scarce.

* First published in *China Daily* (March 14, 2013).

**These changes in the farmers' environment would impact the food chains:**

- Shift of bargaining power toward farmers.
- Farmers are creating increasingly bigger buying groups.
- There is a growing need to build scale as a basic principle.
- Costs of labor are increasing.
- More and more farmers are well informed and are gaining technical and market expertise.
- Increasing costs of adjustments to a more restrictive environmental institutions.
- The issue of good land management is now considered core to being successful.
- Multiple buying attributes demand different approaches to serve farmers with different profiles.
- Price and technical issues are becoming more important considering farmer's buying behavior.
- Information is readily available about suppliers of products and services and also prices of various offers and solutions.
- There are opportunities to develop new credit alternatives and support farmers' working capital needs;
- There is an increase in risk exposure and demand of capital due to the more sophisticated offers existing in the market.
- Use of technology will lead to incredible changes in the future, mostly linked to digital ("cloud") farming.

Based on research done by our team, at least four segments of farmers can be clearly characterized in emerging farming countries like Brazil.

**Conventional Farmer (COF)**: Such farmers would own a farm of small to medium size, would prefer owner-driven management style to run their farms and usually would also own the machinery. They would prefer low chain integration and focus on agriculture, their major business. They were recognized as entrepreneurs in the past when they built their businesses. They are very traditional in their profile and tend to be older in age. Within the conventional farmer, we may add size of the farm and degree of technology usage.

**Business-Oriented Agriculture (BOA):** These are more medium and large farmers, from familiar to professional management, working mostly on own and leased land and equipment, having some chain integration in trading or acquisition functions, core business is within agriculture and commercialization is more present in nontraditional agricultural areas.

**Network Managing Farmers (NMF):** Normally large-scale operations, with a professional management, such farmers would own equipment and lease to other farmers. They are very integrated in terms of the network perspective, providing services to other farmers. They achieve economies of scale in inputs, bundling seeds, crop protection, fertilizers, logistics, credit and others. Also most of these companies

**Table 12.1**

| Facts<br>What is happening | Impacts<br>For Your Company | Acts<br>What Should You Do? |
|---|---|---|
| ➔ Increasing price volatility in the world of agriculture;<br>➔ New risks due to climatic change and Governmental regulations;<br>➔ Access to technology being more crucial and technological availability is increasing;<br>➔ Increasing farming concentration (more farms per farmer being managed);<br>➔ Much more information available, most of them for free;<br>➔ Changes in farming production business models;<br>➔ Changes on farmer's behavior, more professional and informed;<br>➔ Farmer diversification to other regions and activities, including livestock;<br>➔ Farmers are getting more capitalized, but still need credit due to price/cost volatility;<br>➔ Increase of capital needs and land usage restrictions;<br>➔ Urban opportunities for labor are growing;<br>➔ Scarcity of resources needed by farmers to produce. | ➔ Shift of bargain power towards farmers;<br>Farmers are creating increasingly bigger buying groups;<br>➔ The need to build scale as a basic principle;<br>➔ Increasing costs of labor; Well informed farmers, increasing in a yearly basis, the technical and market expertise;<br>➔ Increasing costs of adjustments to a more restrictive environmental institutions;<br>➔ The issue of good land management;<br>➔ Multiple buying attributes demand different approaches to serve farmers with different profiles;<br>➔ Price and technical issues are becoming more important considering farmer's buying behavior;<br>➔ Information is more available about suppliers of products and services and also prices of the solutions;<br>➔ Opportunities to develop new credit alternatives and support farmers' working capital needs;<br>➔ Increase of risk exposure and demand of capital due to the offers existing. | |

are becoming global farming companies, and they tend to base their expansion in long-term land leasing with lower investment in assets.

**Farm Transformers and Builders (FTB):** These companies or farmers are more common in agricultural frontiers. These companies are opening new areas, transforming land not used or used for pastures toward agriculture, are large-sized, professionally managed and really focusing in real state. So, they will wait for the value increase of the land and then make profits selling the land, probably to the network-managing farmers that go with the profile of land acquisition.

These are four clear segments that can be found in emerging countries' agriculture with focus on expansion of land. To understand these segments and profiles it is

important to build linkages with farmers. One aspect is true: a company, to operate with farmers, must have the mindset of "thinking as a farmer" and behave more "grower-centric."

## Discussion question

Based on the changes and trends discussed in this chapter, the questions are: What strategies or ideas should be evolved by a company dealing, selling to or buying from farmers? Which of these ideas could be useful? What should be the major acts or projects to adapt to this changing farming environment?

Chapter 13

# The World of "Seed, Weed and Bug" Companies within Food Chains*

This chapter aims to discuss the major changes happening in crop input protection and seed companies in food chains, mostly in the largest farming countries (the US, Brazil, Argentina and others). They will be called CPS companies in this chapter.

The objective of this chapter is to raise the facts that are changing, the impacts brought by these facts and leave an open discussion about the acts or strategies that companies operating in the CPS business should perform. We have derived these facts and ideas from our discussions with input suppliers, dealers, cooperatives and researchers in these three cited countries.

A typical description of the network of these companies is shown in Figure 13.1 to understand their business environments.

When looking at the marketing channels of CPS companies, it is important to highlight dealers and cooperatives. Dealers' development, using the example of a large agricultural producing country (Brazil), can be summarized in four different phases.

**Phase 1:** In this phase, the industry began as a small, local and sales/technical support-oriented business;
**Phase 2:** Rapid growth was achieved along with a thrust to good governance practices;
**Phase 3:** This was a process of rapid consolidation, professionalization and expansion;

* First published in *China Daily* (March 21, 2013).

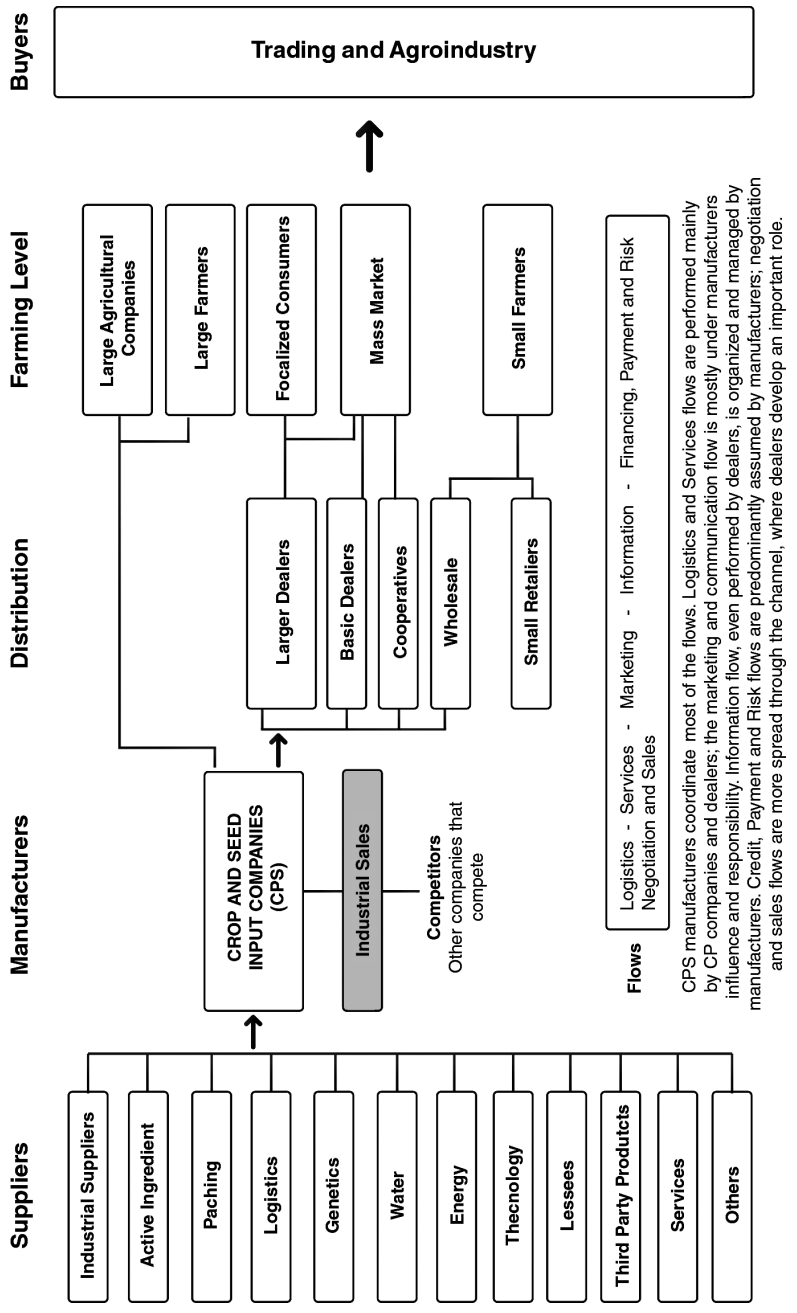


**Figure 13.3** CPS BUSINESS NETWORK

*Source*: Author.

**Phase 4:** In this phase, there was shift toward business diversification with credit leverage, internationalization and promotion of some already existing capital companies. Representatives of these four stages can be found operating in the market, but we clearly see an evolution from 1 to 4.

Regarding cooperatives, we must know that these companies are becoming larger and emerging as key players in most food and feed production chains, investing in business diversification and regional expansion.

Cooperatives are also creating consortiums and publicly traded branded companies alone or via joint-ventures, integrating from inputs to trading in food production/distribution. In terms of strategic fit, we clearly see cooperatives adapting to farmers demands and focusing on cost reduction and extending services to farmers in regions where consolidation is not the path, access to cheaper farm inputs and logistical export capabilities in areas where farm consolidation is present.

Taking the example of a large supplier of food (Brazil), we want to address the major facts and trends witnessed in the booming market for CPS industries. By 2013, Brazil is already the largest world market for some of these companies.

Let us review the facts:

- Agriculture is growing, but would need to grow faster to feed the nine billion population, hence the market of CPS is growing and should grow continuously in the next decade mostly in emerging markets (South America, Africa, Asia and Eastern Europe).
- Demand for biotech seeds and specific traits grows within society, such traits mostly allow usage of lower volumes of herbicides, insecticides and fungicides.
- Several products are losing patents.
- Farm production development has in part been supported by cooperatives, partially substituting the insufficient amount of public credit systems. In markets where credit is abundant (the US, for instance) this doesn't happen.
- Barter (delivering CPS products to farmers and being paid with grains) has become an accepted market activity.
- Previously called only Crop Protection Companies (CPC), now we see the growing importance of seed businesses within these companies, with several acquisitions and developments.
- Farmers costs are increasing due to new diseases and plagues; the process of registering new products in some markets face a lot of restrictions from public agencies and NGOs.
- Increasing risk of regulations towards foliar applications and use of airplanes.
- The emergence of generic substitute crop protection products, coming from China or other countries.

- Fertilizers play an important role, the first time growers have a big demand of fertilizers when planning input purchases, however, this means huge amount of credit to farmers and dealers.
- Farmers concentration allows these to leverage financial resources from different sources.
- Large agricultural countries are internationalizing their CPS markets and welcoming new entrants into the industry.
- Dealers that were previously only in CPCs are now diversifying into seeds, fertilizers, services and trading businesses. Some are also strongly involved in farming.
- There is concentration on distribution with a smaller number of big dealers.
- Dealers are expanding to other regions as part of their growth strategy (regional diversification).
- A new movement of internationalization of distribution is taking place.
- Dealers face increased advantages of local presence and closer business relationships with farmers, even developing personal relationships.
- Dealers have access to better information and technology.
- Dealers are more flexible to adapt business models and processes than agri-input companies.
- Trading companies are entering the CPS distribution business in order to guarantee origination.
- Cooperatives are getting larger, more diversified and more vertically integrated in the food chain.
- Cooperatives are expanding to newer areas, some are doing so to compete with other cooperatives in their regions. Some of them are following their farmers, since they are expanding to other frontiers.
- Creation of a centralized cooperatives body, consortium and other alliances to buy together (fertilizers, services, CP, seeds) and even to import directly and export directly (trading) is being implemented.
- Cooperatives are increasingly much more professionally managed.

So what is the impact of the above changes on CPS companies?

**These consolidated changes are impacting CPS companies within the food chains:**

- Increasing rivalries among CP/Seed companies and generics are leading to disputes among people and related channels thus increasing costs.
- CPS companies tend to focus in traditional strategic pathways:
  (a) low cost (generic, low marketing and relationship, low innovation and copier of value capturing innovations); (b) lock in strategy (offering complete package of solutions and services, innovative, relationship builder, chain manager, and even localized adaptations) or (c) hi tech, focused in generating new technologies.

- Increasing importance of the distribution network to leverage business of agri-input companies and be closer to small and medium size farmers.
  To have a seed portfolio is a fundamental strategy of CPS companies to offer a complete package to farmers, since the seed market — mostly biotech — will have a faster growth rate, demanding innovative solutions. CPS companies are increasing the value of R&D dedicated to seeds and traits.
- Increasing importance of fertilizers and seeds has reduced CP participation on dealers' general business.
- Larger dealers increase difficulties in sustaining exclusive relationships and so may become less dependable than specific CPS companies.
- High control and exclusivity over channels maybe losing effectiveness.
- CPS companies can benefit from fertilizer needs and align with fertilizer companies to provide bundle and barter options, and integrate value chain strategies.
- Dealers expansion in terms of new products and towards new regions are increasing channel conflicts.
- Some of the traditional relationship programs based on rebates for dealers and farmers, built in a different environment, are being challenged.
- Growth of dealers, farmers and cooperatives tend to affect more the pricing policies of CPS companies.
- The entrance of trading companies in the distribution channels of CPS companies can also increase bargaining power and the level of channel conflicts.
- Competition among channels and channel conflicts are increasing.
- There is a shift in the bargaining power with the empowerment of dealers, farmers and coops.
- There is an increasing dependence on major distributors that may offer complete solutions to the farmer.
- There are both challenges and opportunities to leverage business with different relationship approaches.
- Cooperatives are being challenged by informed farmers and their boards to increase purchasing power (buy cheaper).

## Discussion question

Based on these facts and impacts, what are the major acts, or projects, a CPS company should implement?

Chapter 14

# Global Risks, Financial Crisis, BRIC and Food Companies*

The economic crisis of 2008–2009, in a very simplistic view, is the crisis of the three **C**s (see Figures 14.1 and 14.2). The first **C** is that of credit. Credit was given to consumers in the past few years in a very irresponsible way by financial institutions in several countries, creating an artificial buoyant market. It was an era of financial leverage, financial strategy and financial dominance. Several companies participated in this festival, building up very risky positions, paying salaries and dividends that were out of sync with reality and thus neglecting costs. This festival ended in a severe "hangover", and adjustments were needed.

The second **C** is consumption. It could be said that consumption patterns were irresponsible in many societies in several countries. The abundant offer of credit led a large number of consumers to buy they could ill-afford, resulting in loans for houses, cars, equipment, etc. Anyone could see that this consumption would not fit the monthly budget of families. But the festival was in full swing. Now, it is time to reduce leverage, to sell what was bought, with a lot of loss, since the prices of assets (houses, cars, and others) have gone down.

The third **C** is confidence. The first two **C**s made society lose confidence in the system, in companies and even in governments. Economic recovery is related to confidence. This will not be easy and will differ from country to country. Due to the crisis, where the beginning and end couldn't be demarcated, many consumers with purchasing capacity lost confidence and stopped consumption. With lower sales, markets have shrunk, employment is reduced and all these have led to lower consumption rates, lower sales and higher unemployment with a negative cyclic effect, resulting in an even deeper crisis. The rate of "confidence recovery" is what is going to take the economy out of this crisis. The economic situation will get better far

* First published in *China Daily* (August 12, 2009).


**Figure 14.1** The economic crisis 3Cs.

*Source*: Author.


**Figure 14.2** The 3 Cs.

*Source*: Author.

before the financial situation, since it is not known what is yet to come in terms of bad credits. However, risks of a total financial collapse were mitigated.

In 2009, there was also increasing political instability, i.e., governments with wrong political and economic measures, taking countries to bankruptcy, governments that were thrown and an increasing threat of instability relating to nuclear weapons and others, like missile testing and arming nations. The uncertainty thus created was also transmitted to markets and consumer confidence and became part of the environment in which food chains operate.

It is very important to know that the 2009 world crisis cannot be generalized. It had impacted regions, countries and industries differently. As an example, some industries in Brazil experienced sales records in food, car and housing. Some industries, like heavy equipment, suffered the worst crisis in 20 years. Some areas of countries and some cities suffered more, and others less. The US suffered due to the high leverage of its consumers. Predictions for European recovery were worse than for the Americas and Asia.

Another point that contributed to a faster recovery of the global economic situation was the enormous market power shift in the world. The emergent economies have in some way already changed the world. The BRIC (Brazil, Russia, India and China) group is expected by Goldman Sachs to have a higher GDP than the G7 in 2027. Between 2000 and 2005, the BRIC GDP went from US$ 3.6 trillion toward almost US$ 5 trillion. Brazil had an average growth from 2000 to 2009 of 3.1% per year, and an accumulated variation of 36.3% in the period 2000–2009. China had an incredible growth rate of 9.6% on average and 151% accumulated.

India comes second, with 6.9% on average and 94.6% accumulated and finally, Russia had 5.5% average growth (2000–2009) and 71.2% accumulated (FMI).

The GDP of emerging nations was 11% of the world in 1991, 30% in 2008 and is expected to be 50% by 2030. The world population in 2050 is expected to be 9 billion people, and only 10% will be in the developed nations. In 2009, there were around 200 million people in emerging nations having an income of US$ 3000/year, and this will increase to 2 billion people in 15–20 years. So there is no doubt that a huge shift has happened in the last 10 years. New consumers and new markets are diversifying globally. This shift will gain more and more momentum and will be accelerated by the effects of the internet with faster technology and knowledge transfer.

The GDP of large food consuming countries like China and India continues to grow, contributing to maintenance and even increase in consumption. Almost 60% of the world's economic growth in the period 1999–2010 was in the developing nations, of which the BRIC countries contributed 30%.

Brazil is a country well known as a large food and biofuels exporter. Food is more resilient to crisis since it is the last thing to be cut from a family budget, and in the developed world, food demand elasticity is low. The hit was more on markets of higher value sectors.

Due to several factors, Brazil is not facing this crisis in the way it faced other situations in the past. Part of this is due to the Real Economic Plan, launched in 1994, which brought economic stabilization. As an example, supermarket sales in April 2009 were 6.5% higher than April 2008. The economy was growing around 4–5% per year in the last years. The country has a small share of general global trade (it is only important in terms of food and commodity trade) and was less impacted than other exporting driven economies. A large internal consumption market, tough adjustments in the banking and financial systems toward credit exposure, a high level of international reserves, a situation of energy security and other factors contributed to this position.

To finalize, there are several *messages* for companies. Companies will need to focus and return to their core businesses, make very efficient use of capital, resources and work methodologies even more on planning, collective action and cost structures. Companies will also need to take a very close look at risk monitoring. It is an era of establishing global and more competitive supply chains and an area of strong value propositions for human talents in companies. Finally, it is an era of more conservative leveraging and financing, and for taking advantage of opportunities of consolidation, acquisition, mergers, etc., like several opportunities for cheap asset acquisition globally.

## Discussion question

How is your company positioned when compared to the messages raised in the last paragraph of this chapter? How do you see these global risks evolving?

Chapter 15

# The Food Crisis Will Be Back*

This chapter deals with a problem that arose in 2007 and part of 2008 and will come back sooner than expected due to several factors. This problem is food demand and as a consequence, food price increase.

There are nine major factors (see Figure 15.1) that are changing and placing pressure on the capacity to supply food to the world, and these are related to economic and financial crisis.

*Increase in areas dedicated for growing crops for biofuels*: Several countries are starting production of biofuels, in some cases, land allocated for food production is being diverted. Now the tank of the car is a competitor of the stomach. Both want food! Many studies are only linking biofuels to the cause of food inflation, ignoring several other factors, some of which we have known for a long time. Biofuels is not the major problem, since there are very positive results of biofuels being produced in areas together with increases in food production, but this factor should be considered.

*The growth of world population*, expected to reach 9 billion people in 2050, is not a new factor, but it contributes to a higher need of food production. FAO/ONU estimates that the world will need to produce at least 50% more food in the next 15 years. Projections of future demand for grains (2.2 billion in 2009 to 3.3 billion in 2025), milk (3.4 billion tons in 2009 to 5 billion tons in 2017) and meat are impressive. Just as an example, the MENA (Middle East and North African) countries have a population of around 380 million today, and will have 510 million in 2025.

*Economic development and income distribution*: One of the most exciting factors is that populated countries such as India, Brazil, Eastern Europe, China, Indonesia, Thailand, South Africa, Argentina and Arabian and African countries among others are bringing millions of new food consumers to the market. Several African

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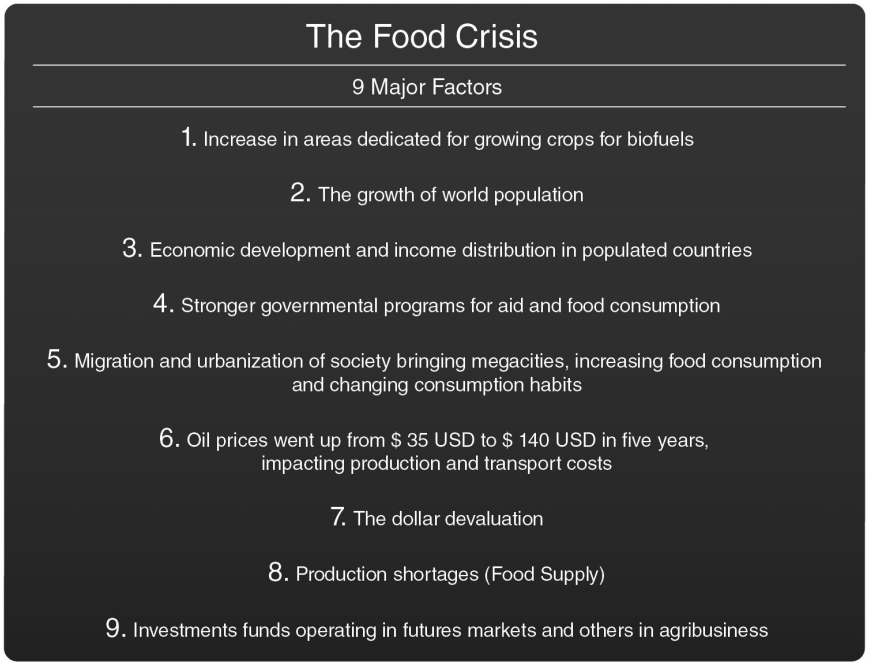


**Figure 15.1** The food crisis and its Causes.

*Source*: Author.

economies have grown by more than 5% per year in the last 5–10 years. Experts in food consumption expect an increase in 50% in food expenditure in China, 78% in India, 40% in developing Asia, Middle East and North Africa, in the next 10 years (Global Demographics Report, 2008). From a proportion of 60%/40% consumption in developed and emerging economies, in 10 years time, food markets will be 50/50%. When one compares China's population with the country's participation in world trade, it is still less than 50%. There is a lot to come.

*Stronger governmental programs*: Programs for aid and food consumption, such as the one done in Brazil reaching 10 million families and 40 million people, can help new consumers coming to the food markets. Just as an example, the market for sausages in Brazil went from US$0.5 billion in 2003 to US$1 billion in 2007. Thailand has 10 million people receiving a check of US$58 per month. These are just some examples, happening all over the world. Several signs are present, and they are not being captured in an adequate way by major economists.

*Migration and urbanization*: These phenomena are creating mega-cities, increasing food consumption and changing consumption habits toward less grains, and more proteins (using more grain as feed in the animal production process); consumption

is getting more customized, more sophisticated and more energy consuming. There is also a huge impact here, when you consider that in several countries, 50% of the population is still in rural areas, and moving to cities. A study estimates that around 350 million people in China will move to cities by 2025. This will require five million buildings, increased demand for computers, televisions, air conditioners and new food consumption habits (demand equivalent to 10 times the city of New York).

*Oil prices*: The prices went up from US$35 to US$140 in five years, impacting production and transport costs. It is rising again, and oil is now not restricted for use only in transportation. It is also used in several other industries, like plastics, whose consumption levels have increased. Oil may be stable around US$70–US$80 a barrel, and with oil prices up again, several possibilities and projects for biofuels gain economic incentives, increasing pressure on land in the case of corn and other grains. China had 65 million cars running in 2008 and is expected to have 150 million by 2020, consuming 250 million tons of gas per year.

*Dollar devaluation*: The devaluation that happened in the last years also had its part in contributing to higher commodity prices, fixed in US dollars.

*Production shortages* (food supply): Farm/production shortages due to lower margins, climate, droughts and diseases are a major concern. Due to the credit crunch (lack of financing) and high price fluctuations, there was a downturn in prices, the criteria of financial institutions became strict and, together with losses of bad hedging by agribusiness companies, resulted in loss of confidence. As a consequence, there were higher risks for planted areas and yields, hedging prices got worsened (less hedging), and consequently, there was more uncertainty and lack of confidence in long-term contracts. This may bring lower productivity, lower inventories, lower margins and farmers switching to cheaper crops to produce. Some exporting countries will become importers. Within the ambit of the aforementioned, there is always the concern of availability of water and costs of water and also the unknown impact of global climate change in crop productivity in the future, which is of major concern.

*Investment funds*: These operate in futures markets and in agri-business. This increased with lower interest rates in several countries. It is known that some of these funds have been replaced by strategic investors with conservative financing mechanisms, but there is still a movement of funds toward food commodities. This is also increasing consolidation.

Chapter 16

# Strategies for Solving the Food Inflation Problem

There are two ways to solve the challenges associated with expected food demand/inflation. One is going back to an increase in protectionism, stimulating noncompetitive areas to produce in an "economically artificial environment" and returning to the policies of "self-sufficiency" of war times. The other is moving toward growth, global trade and inclusion. Here, a 10-point agenda (see Table 16.1) is offered to governments and international organizations as a solution to solve the upcoming food demand and inflation problem, which could be the right avenue to follow in providing long-term results, peace, fair income distribution and inclusion. They will be addressed in sequence.

*Promote horizontal expansion in production into new areas, with environmental sustainability.* This expansion can be done in several countries (South America uses only 25% of its capacity), in all continents, in millions of hectares that today are poorly used. In Brazil, several studies by recognized institutions confirm the existence of more than 100 million hectares that can be utilized for food and biofuels production, without touching fragile systems and mostly growing over degraded pastures. These production and land expansions, if stimulated with sustainable contracts, will bring inclusion in farming, new entrepreneurs, job creations in less developed nations, fair income distribution and economic development, even having a positive impact in democracy. Land costs are getting higher since several pension funds are looking for security and thus buying land. Recently, a fund of US$ 800 million in Arabian countries was dedicated to land buying and food security, having South American and African countries as targets (*Financial Times*). There have been several efforts by China and other countries in building such supply chains abroad. This is a perfect match of investments to achieve development.

*Increase productivity or create vertical expansions (more production in areas that are already being utilized).* Several hectares in South America, in Africa, in Asia, and even in developed nations could produce more yields if more and better technologies were

**Table 16.1**

**The Food Demand Model**

| Nine Causes of Food Prices Increase | Ten Proposed Solutions |
|---|---|
| → Biofuels | → Sustainable horizontal expansion toward new areas |
| → Population growth | → Vertical expansion with more technology (high tech) |
| → Income distribution and wealth in populated countries | → Reduction in food taxes and other protections |
| → Governmental programs for food distribution | → Investments in international logistics platform |
| → Urbanization of population and mega-cities | → Use the best sources for biofuels production |
| → Oil prices impact on production and transportation costs | → Reduction in transaction costs in food chains |
| → Production shortages due to adverse climate and financial conditions, water and climate change impacts | → New-generation fertilizers |
| | → Sustainable supply contracts to farmers |
| | → Innovations (genetics and others) |
| → Dollar devaluation | → Consumption behavior for less energy consumption |
| → Investment funds operating in commodities | |

*Source: Author*

used and associated investments were made. If one compares the amount of corn a US farmer can generate in tons per acre, it is two or even three times higher than the average production of Brazil and other countries. With irrigation, some farms on the tropics can generate three crops per year. Major research and investments should be dedicated to these improvements.

*Reduce food import taxes and other import barriers and protections.* Food prices in some countries are artificially inflated due to import taxes and other kinds of protection that damage international trade, markets and growth. As an example, beef in the European Union costs four or five times higher than the same quality beef in an Argentinean or Brazilian store of the same European retailer. The argument mostly used is that lowering protection will damage local agriculture of less developed countries. It must be assumed now that the new level of commodity prices may allow local agriculture to be competitive. Several other internal taxes on food can also be reduced by local governments, reducing consumer prices. Additionally, the more than US$330 billion spent annually by OECD members in agricultural subsidies is putting more pressure on prices while undermining more cost-efficient food production in naturally competitive countries.

*Invest in international logistics in order to reduce food costs.* Some grain-producing countries suffer from extremely poor logistics. Governments should invest and society should work harder to reform institutions in order to facilitate public–private partnerships to privatize ports, roads and other food distribution and logistics equipment to increase the flow volumes and reduce energy consumption.

*Reduce transaction costs.* Major international food chains are poorly coordinated and have several redundancies, poor use of assets, corruption, opportunism and other inefficiencies, which are largely responsible for losses. This increases the costs and maintenance of nonvalue-adding companies, agents, etc., thereby impacting food prices. Institutional reforms, as proposed by Douglass North, are the solution here. Also, more efficient cooperatives, producer pools, and other collective actions should gain strength to reduce redundancies and increase producer organization and bargaining power.

*Use the best sources for biofuels, in a totally sustainable way.* The example of Brazil could be better analyzed, where ethanol has been produced for more than 35 years, on 3.5 million hectares of cane, using only 1% of the country's arable land and supplying 52% of fuel transport consumption, with no impact on food production. The growth of food production and biofuels together in the state of São Paulo (the major area of sugarcane growth) in the last 10 years shows that it is possible to combine both food and biofuel crops production. Crops for biofuels that have better yields and do not compete with food chains should be prioritized in the global development of biofuels. The energy balance of sugar cane ethanol is 4.5 times better than that of ethanol produced from sugar beet or wheat, and almost seven times better than ethanol produced from corn.

*Invest in a new generation of fertilizers.* It is important to produce fertilizers from alternative sources, plants that can absorb more energy of the sun, more recycling of by-products as sources of fertilizers would mitigate the huge risk and cost of fertilizers in the future. Fertilizers are among the most important and expensive inputs for agriculture, and in the present times when the yield must be improved, its importance grows even bigger.

*Work more toward sustainable supply contracts for farmers, with integrated sustainable investments and projects*. It is of fundamental importance that margins and incomes should be better distributed in food chains, reaching farmers all over the world. Price stimulus is the best economic incentive for growth in production with technology. It is well known and studied how concentration in several food industries and retailing retains margins that could be better distributed to farmers thus increasing economic development and bringing a very positive externality to several regions.

*Stimulate research and investments in innovation from all possible sources*. This should be pursued mostly in genetics, in order to find new solutions for food and biofuels production and consumption. In trying to solve the sustainability equation, seeds are a problem today, due to shortages. Public investments in agricultural research and development have decreased considerably in the past couple of decades, resulting in a yield-growth slowdown, disabling production and the ability to keep up with rising consumption. Since trust in biotechnology is increasing in society, bringing a new era of acceptance, research should receive more attention.

*Slowly work to change consumption habits in both food and fuel.* We must realize that supporting nine billion people in the planet in a sustainable manner will present several challenges. Hence, behavior of people should gradually be changed toward

sustainability. Food is overconsumed in several parts of the world, bringing with it obesity — a major health concern. Another area of inefficient consumption is fuel. Investments need to be made in resourceful public transportation. This is a major challenge in many countries. For example, Barcelona has implemented a well-planned public biking system, which is an excellent example of a working solution. Table 16.1 summarizes the causes and the proposed solutions.

**Discussion question** (Chapters 15 and 16)

Do you know of any other additional points that could be termed as causes and solutions to the food demand model? How would you rank these causes and solutions according to their importance?

Chapter 17

# Bridging the Food Dilemma: The Case of China and Brazil*

Trade flows between China and Latin American countries increased from US$10 billion in 2000 to US$140 billion in 2008. China and Brazil have strong complementarities and a long history of peace and acceptance. There is a huge Chinese community living in Brazil, which is well integrated with Brazil's multiracial and multicultural society. The Chinese are recognized as hard workers, setting up businesses in Brazil and contributing to the economy in the last 50 years.

China is world's largest developing nation, with the highest improvement in living standards in the world. In this very positive scenario of development, China will face problems in securing food supply for its own growing, richer urban society. These problems could be related to costs, clean water, water availability, soil conditions, land, environment and others. Brazil, on the other hand, has 850 million hectares of land. There are 350 million hectares of arable land, and of these, only 70 million are being used for crops; 200 million are used for pastures, and another 80 million is new land to be conquered. In sum, there are 100 million hectares that could be converted to agriculture, in a sustainable way.

In the coming years, Brazil has an opportunity to be the most important partner to supply food and biofuels to China, in the food security aspect. Just as an example, soybean exports from Brazil to China grew by 27% from 2008 to 2009. Brazil's participation in total China's imports increased from 0.7% in 2003 to almost 3% in 2009, and it is expected to grow faster due to imports of poultry, beef and other protein sources and food, which are in the nascent stages. The risks of producing food in Brazil are very low, almost zero, since the country is a large food producer and exporter, with plenty of land and food in the internal market, reducing risks of political or institutional changes, like banning exports or expropriating assets as seen

* First published in *China Daily* (August 31, 2009).

in several other countries. It is an open market for Chinese companies to produce food in Brazil for export to China, in a safe way.

Another great opportunity is to have common investments to enable Brazil to help China to address environmental concerns. Brazil has one of the cleanest energy matrices in the world. China has problems in water supply, and of its 600 million urban inhabitants, less than 5% have access to clean air that is in accordance with European safety standards. Again it is important to see the ethanol program, which is a positive example. About 90% of all new Brazilian cars are flexi-fuel, and of the fuel consumed in the country, ethanol has 52% against 48% of gasoline. By 2015, 80% of the internal market for fuels will be ethanol, produced in a sustainable way, from sugarcane. The area used to supply 52% of the fuel today corresponds to only 1% of the arable land. There are opportunities to produce ethanol to add to Chinese gasoline (E5% to E15%), contributing to a strong reduction in pollution in China (65% of total pollutants in the country come from auto emissions). China is also a producer of several products needed for Brazilian development as China has technology, scale and expertise.

As Brazil lacks resources for investment, this is where China may come in and participate. Logistics in Brazil are still a huge concern, mostly in grain production areas, increasing the cost of commodities and food. There are opportunities in roads, ports, airports, storage capacity, pipelines for ethanol, and several other investments. Another challenge, where Brazil is moving very rapidly, is to adapt food production toward international standards of sustainability.

China and Brazil have a role together in the future, and this is very clear. China will be the world leader and the most important economy in a few years. It has a history with Brazil, of common respect and admiration. It is a perfect match. The countries should immediately work on topics related to one major question "how to enhance future food trade with a win-win relationship?" The cooperation must include linking institutions toward a better future, doing research together, linking the business communities in order to start and improve businesses, common investments and linking universities in interchange programs. Basically, place people of both countries in contact toward the development of a new world, with economic, environmental, human sustainability and with tolerance toward differences. Table 17.1 summarizes the Food Bridge Concept.

**Table 17.1**

"The Food Bridge Concept."

| Brazil | China |
|---|---|
| ➜ Lacks investment capacity and logistics. | ➜ Has the largest capacity for international investments and logistics. |
| ➜ Can rapidly expand food production. | ➜ Faces an incredible growth of income and urbanization and will need more food. |
| ➜ Has several possibilities for international investments. | ➜ Has a large number of investors to invest and take advantage of opportunities in Brazil. |
| ➜ Has low population/land availability ratio, and around 100 million hectares available for development. It's the world's largest exporter of beef, poultry, soybeans, juices, sugar, biofuels, coffee and in 5 - 10 years will be the major food exporter of the most important food chains. | ➜ Low levels of new land available for food production and is thinking of investing abroad to guarantee food security. Scarcity of water for agriculture in some areas, and environmental pressures. |
| ➜ Sufficient supply of water for agriculture. | ➜ In 5 - 10 years will need quantities of food from abroad and most of this food will come from Brazil. |
| ➜ Is a net producer and exporter of the most efficient biofuel, the sugarcane-based ethanol, used as E100 and E25 (100% ethanol cars and 25% ethanol in gasoline). | ➜ Will need to expand biofuels production and usage toward a cleaner environment, adding biofuels to gasoline (E5 or E10%) and other. These biofuels can be produced by Chinese investments in Brazil and Africa. |
| ➜ Has one of the highest mixed-raced populations in the world and a long-term acceptance of the Chinese community living in Brazil. | ➜ Has a large Chinese community living in Brazil for several years. |
| ➜ The federal government has given great importance to relations with China. | ➜ Very good relationship on a federal level with Brazil. |

*Source: Author*

## Discussion question

How do you evaluate the "Food Bridge Concept"? Would you add or remove points to consider?

Chapter 18

# Interesting Differences of Developed and Emerging Economies*

This chapter has the objective of classifying some differences seen in emerging and developed economies. How can these countries be generally characterized, what are the major concerns and specificities and the huge differences that exist, probably the speed of growth and development being the most important.

The world economy can be understood as several markets, inter-communicated and linked in different blocks, with totally different dynamics. The world markets are a much more complex environment. In this context, it is necessary to evaluate and differentiate the present economic profiles of these markets. These profiles are dynamic and change with the fast changing political, economic, social and technological environments.

Nowadays, markets can be divided into two major groups: Developed and mature markets represented by countries belonging to the European Union, Canada, US, Japan, South Korea, and those under development, called emerging economies or countries, such as Brazil, India, China, Russia, South Africa (the so-called BRICS) and several other Asian, African, Eastern European and Latin American economies.

It is quite a challenge, but I try here to establish some points of comparison and to classify what is going on in these two categories. Several problems arise from this comparison, since inside each block there are several differences and even levels of development that cannot be compared, but to generalize, these characteristics might be useful to settle a "go to market strategy."

The analyzed aspects are listed below, and after that, Table 18.1 with the analysis summarizes the differences between the various aspects in developed and emerging economies: gross domestic product (GDP); size of population; degree of

* First published in *China Daily* (December 19, 2012).

**Table 18.1**

"Major Differences Among Developed and Emerging Economies"

| Developed Countries | Parameter of Analysis | Emerging Countries |
|---|---|---|
| → Stable | GDP | → Growing |
| → Relatively stable | Population | → Growing |
| → Relatively stable | Urbanization of population | → Urbanization growing fast and emerging of mega-cities |
| → Mature or declining | Food markets | → Sales are booming |
| → Small effect on consumption | Income growth and income distribution | → Huge impact on consumption (still a high percentage of income spent on food) |
| → Well educated | Consumer profile | → Being educated |
| → More homogenous group | Countries characteristics | → Different segments of emerging economies, difficult to agregate |
| → High quality and sophisticated markets | Quality (food safety) in markets | → High level of informal markets and food safety under construction |
| → High percentage of consumption (expenditure) in foodservice | Food service share in food consumption | → Smaller participation of expenditure in food service |
| → Quite stable | Retail systems | → In huge transformation |
| → Limited possibility | Expansion of commodity production | → High possibility |
| → High sensitivity of population and severe laws, recycling and consciousness | Environment and preservation issues | → Low sensitivity of population and regulation being built |
| → Growing faster | Adoption of biofuels | → Low |
| → Healthy, veggies, fruits, organics, among others | Consumption directed to: | → Quantity (protein) |
| → Developed and mature | Logistics and transport systems | → Early stage of development, immature |
| → Consolidated, respected and well known | Institutional environment | → Being built, with high transaction costs |

*Source: Author*

urbanization; maturity of food markets; impact of income growth and distribution; consumer profile; groups of countries profiles; quality (food safety) in markets; participation (share) of food service; status of retail systems; expansion of commodity production possibilities; environment and preservation issues; adoption of biofuels; profile of consumption; maturity of logistics and infrastructure; institutional environment.

An analysis of this table shows that developed markets are more mature and stable, have predictable characteristics with very well established aspects, for example, logistics, retail and institutional environment. This maturity is reflected in the population that tends to search for differentiated products and services, featuring various niches as those seeking healthy products, environmental and social trends, among others.

## Discussion question

Evaluate the major differences and list new parameters that could be added? How should developed and emerging countries be characterized?

Chapter 19

# How Can Chinese Companies Feed the World?*

At a recent international food and agribusiness congress in Shanghai, there was a debate about the ability of local Chinese food companies to become international companies in the coming years. That means departing from their activities in China toward a more global presence, like the major food multinational corporations.

At the root of the issue are three key matters: why Chinese food companies are not yet internationalized to supply food from China to the world; the major difficulties that Chinese investment faces abroad; and the internationalization opportunities for Chinese companies in this new era where food and biofuels will be important trade topics in the coming years.

First, it must be recognized that China has several brands that could become international and as that happens the complexity of international operations would need to be learned. There has been a concerted push to innovate, and in several areas Chinese products are regarded as being of very high quality.

These are companies that take advantage of a strong Chinese domestic market and are mostly engineering-led companies with the ability to invest in key assets, maintaining their core business with a global leadership team, structures and strategies. It's a beautiful story: taking advantage of economies of scale and scope, these Chinese companies have gone outside China and are having some success.

But an intriguing question arises after studying the success of engineering companies and others that have gone global: Why this internationalization does not happen with Chinese food companies? That this is so becomes clear when you consider that none of the world's 25 largest food transnational companies is Chinese.

It is argued that the Chinese food industry is handicapped by low investment in research and development, by issues of food safety and quality in the production

* First published in *China Daily* (August 10, 2012).

process, by the fact that there are no recognized large brands outside China, and by difficulties in marketing due to a general perception that its brands are of poor quality.

Although the Chinese government can subsidize this internationalization strategy, other difficulties stand in the way of Chinese food companies wanting to go global: the lack of water, soil, uneven development of infrastructure, production yields, the structure of rural society, lack of agribusiness talent for large-scale operations and the huge internal market that would consume what these companies produce.

The list of difficulties is long, but this does not mean Chinese food companies cannot go global. It is only a matter of time, and I see two major groups with the best chances of achieving this.

The first group consists of food companies that produce specialties or other products where the internal market can be easily supplied and there is surplus to export. These are mostly companies whose products do not demand large amounts of soil, water and other resources. They may be among the first to go global. The second group consists of Chinese companies that produce and mostly source food in other parts of the world, and who market their products worldwide, first bringing them to the large Chinese internal market.

For the moment, it is clear that Chinese agricultural and food business investment overseas faces many hurdles. First, management styles and the global mindset, particularly considering language and culture, present difficulties for Chinese.

Next, there may be a perception by local communities that Chinese investment represents a "new colonialism," that it results in the extraction of local resources with no discernible benefit to the local community.

Chinese food companies may also find it difficult to understand the local institutional environment and the complexity of laws and regulations, resulting in higher costs.

Another issue is protectionism in some markets, which will close the door to Chinese investment.

There are at least four more problems: China's insurance system does not offer enough protection against the risks of international investment by Chinese food companies or Chinese entrepreneurs; China's tax policies do not encourage such investments; some countries see it as a labor export strategy for China and reject it, arguing that all the labor force will be Chinese; and finally Chinese companies fail to work together which prevents them from learning each other's failures and avoid pitfalls.

Although these hurdles need to be negotiated, there is every opportunity for Chinese food companies to become global, particularly because in several parts of the world there is an abundance of natural resources to expand food production but the capital to do so is lacking. In this regard, Brazil, Argentina and African countries come to mind. Brazil, for example, is highly receptive to Chinese investment and the institutional framework for this, to some extent, is already in place.

With China's large and growing internal food market, we cannot expect that, in general, it would be a large supplier of food to the world; it will, however, continue to be a large food importer. But in some specific markets, food produced in China could reach the world, and Chinese food companies have a good chance of becoming international food exporters.

There is a large opportunity for Chinese companies to source food in several parts of the world, mostly in the countries that have natural resources, thus making the companies real food multinationals. This could be done by acquisitions or by building from the ground up.

So confident am I that this will happen that I am ready to bet that by 2020 at least three Chinese companies will figure among the world's 25 largest multinational food corporations.

**Discussion question:**

What are your perceptions about internationalization of Chinese food companies? List the opportunities that would arise for your organization from this internationalization?

Chapter 20

# Structural Challenges in Chinese Food and Meat Chains*

The objective of this analysis is to share with *China Daily* readers a recent workshop that I had the opportunity to coordinate in Shanghai, on June 12, during the events to launch my new Chinese book "*The World on the Tongue*," by Central Compilation and Translation Press.

In this event, around 15 of the largest pork and poultry producers and processors operating in China stood for around five hours debating the future of the industry. It was a very interesting debate with enthusiastic people deliberating about a brilliant future.

This article summarizes the good news and opportunities, mostly related to the worldwide growth of food markets and also raises the major challenges for industries operating in the meat markets in China.

First, there are several opportunities open for growth in the Chinese meat markets. Projections show that internal markets in 2030 will comprise around 1.5 billion consumers and urbanization will be around 70%, bringing incredible changes in consumption patterns.

In the next 20 years, income is expected to grow at an average of 5% to 8% per year, so with this, GDP per capita in China would rise from US$5,500 to US$15,000 in 2030. The major impact of this fact is that there would be an increase of almost 15 kg in the per-capita consumption of meat by 2030, lifting from 57.3 kg to almost 70 kg per person. It is an incredible development of markets, bringing a lot of opportunities and also challenges.

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* First published in *China Daily* (June 29, 2012).

In order to face this growth and accomplish new macro-environmental changes, several challenges were raised by these executives and will be summarized below.

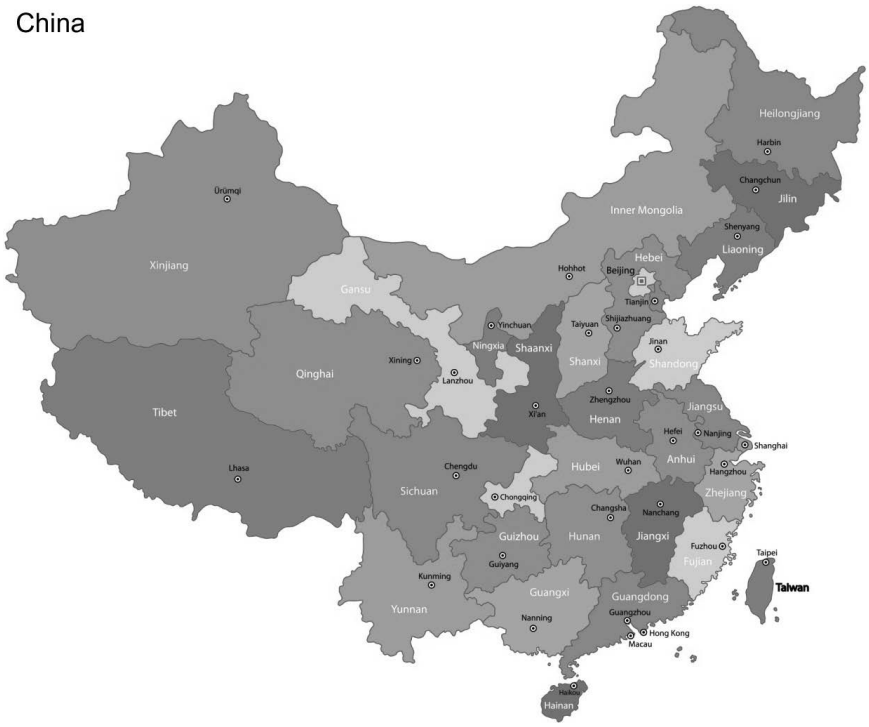
(a) Human resources management, both in availability of trained employees and to face the cost increase of labor, due to higher salaries and benefits, estimated in more than 30%.
(b) Adaptation to new governmental regulations towards food security in China will increase production costs and regulations regarding feeding the animals may reduce the amount of products used as feed.
(c) Government policies towards improvement of small and medium size companies will also change the industry in the near future, since some of these are low scale and have low productivity;
(d) Government policies towards usage of land in China will challenge the growth of this industry mostly because of the growth of municipalities and Chinese companies will need to expand internationally to secure supply chains.
(e) Diseases would spread due to the density of production bringing risks of severe epidemics and frequent outbreaks.
(f) Cross regional development of logistics toward inlands of China, where there is a growing market and production.
(g) How to adjust the strategy to this fast growth needed together with promoting sustainability, due to an increase in environmental concerns and media coverage, will be a challenge.
(h) The need to innovate is also a challenge. Innovations that increase profitability in the production systems via promoting vigorous scientific and technological projects are required.
(i) Information management, mostly in how to follow the market information and select the most relevant for decision-making.
(j) The need to face global competition and opening of markets.
(k) Price volatility of grains may increase the need to develop long-term procurement strategies.
(l) Gradual improvement of institutional environment in China.
(m) The need to improve financial support for new investments.
(n) Improvements in collective actions, with better chain organization and coordination.
(o) Improvements in management capacity to understand and adapt to the new environment.

As seen, the major challenges raised by these executives are tough but they appear in a market that is growing, so it is a question of adjustments. The major dilemmas will be to localize or globalize production, to focus or to diversify towards different food business, to promote growth via public or private companies and the capacity to understand and adapt.

As moderator, I received a last question about globalization and the future positioning of Brazil in the grain and meat industries. The question if Chinese investments in Brazil to complement the production needed to face the demand would be welcome, and, finally, if it would require buying land abroad. My opinion, shared more than two years ago with *China Daily* readers is that this is what I called "the food bridge," meaning food being produced in Brazil and supplied to China, as the major trade in 2020.

There are plenty of investment opportunities for Chinese grain and meat companies in Brazil and I think the most interesting investments would be in origination (industries for processing with networks of contracted suppliers) and not in land, which requires higher volume of resources and faces restrictions.

There is a lot to come in the near future for Chinese pork and poultry companies and this article summarized the discussions of this workshop.




## Discussion question

How would these challenges evolve in the future? How will these challenges affect your organization bringing opportunities and threats?

Chapter 21

# An Incredible Journey through India*

Almost two weeks of traveling in four big cities (Mumbai, Hyderabad, Chennai and Delhi) and several rural villages of India is an incredible and unforgettable experience. My learning was present in every street, road, building, sightseeing, travelling in taxis, or whatever interactions with its people and geography.

The consumption details of this very diverse society were perceived at every meal, either taken in the luxury Taj Hotel's restaurants, in booming fast foods or in small villages, with farmers. After this visit, I came back convinced that in several places of the world we will see changes in the next 10–20 years, but seems to me that India will have the leading speed of changes. In India, definitely things will happen.

This article has three parts, first to address some socio-economic numbers and impressions, second to talk about agricultural development and challenges, and third to share the development agenda learned and discussed.

Walking on the streets feeling that you are in a country of more than 1.2 billion inhabitants place, that grows almost two million people per month, or 20 million in a year, or one South Africa each two and a half years, or one Brazil each 10 years or even… one USA in 15 years is… unique.

Being the world's fourth largest economy based on purchasing power parity and growing from 6% to 10% per year in terms of GDP, we may imagine that in 10 years from now we will have one more India in place.

It is a large economy of still poor people, having very unusual consumption patterns. This characteristic takes us to lot of people consuming products occasionally or in small portions. It is, for most of its population, a business with low margins but large volumes. India means a large aggregation of small parts.

*First published in *China Daily* (April 10, 2013).

It is quite a heterogeneous society, a unique cocktail, difficult to be found elsewhere. And this heterogeneity seems to be increasing due to the internationalization of Indian society. We see the mix of local diverse culture with occidental culture coming in with Indian students returning back from experiences abroad, fast food chains moving in, web access and other facts.

India has gone through an impressive process of information and technology, so people are connected, mostly the younger generations from all social classes. An Indian economist told that 40% of the population has access to toilets but 50% to mobile phones. They are typing all the time and talking.

It is a well-known country for its business process outsourcing, for building up smart solutions, a service driven society, which definitely changes the way companies do business, offer services or charge for guarantees. India has interesting small business models, from people dedicated to cook, going to houses, dedicated to laundry, clothing, whatever.

India is also famous for its micro-credit initiatives and huge programs of financial inclusion using the bank system, based on technology platforms.

My taxi drivers during these days showed incredible performance in this unique experience of driving through the streets and roads in India. I can't understand why India doesn't have Formula 1 champions. The culture of the "horn" is a nice way to manage a mess that is in some way organized. They were always nice people (of course, sometimes with poor English) and offered creative free service. Whenever I needed them, they told me that I should phone, they wouldn't take the call and would come to the place to pick me up. This is the "missed call" movement. All for free!

I could see some efforts of the government in reducing taxes, still very high, and also I listened to several critics coming from farmers and business people due to the large size of governments and difficulties to cut costs and also a propensity to corruption. I perceived in youth a large disappointment with the government, they are frustrated with the growing cost of living, levels of corruption, delay in judicial decisions, less infrastructure investments among others. There is a common perception that the government doesn't follow the needs of the youth, and this is not a good indicator. Being from Brazil, this is nothing new for me!

The growth and development challenge can be smelt in every breath. Almost 400 million people in India survive with a daily income of US$1.25. It is a country with still more than 60% of the population in rural areas, which is a huge challenge. The incredible information that Mumbai grows by 400,000 people per year was given to me.

But it was also said that the major urbanization changes are happening in the enormous amount of 50–100 thousand people cities, much more manageable. The major impact of urbanization is the change in consumption habits. While in the US fast food sector grows 4% per year, in India it is growing 35% per year. Specialists say that fast food market was of US$1 billion in 2010, and may approach US$3 billion in 2015, when McDonalds plans to have 500 outlets, Yum! plans to

expand 500 new units of Pizza Hut, Taco Bell and KFC and Domino's Pizza also expanding its 500 units.

Another topic that deserves our attention is that India is a very young country. While in China we have the policy of one child per couple, India grows fast and has today almost 600 million people with ages below 25 and 225 million among 10 to 20 years. India will have in the future a huge amount of people at working ages, and this is a very competitive factor. The decision here is crucial, not only for India, but for several countries like Brazil.

To transform this immense youth in what I call a cargo truck, to help carry the society forward, than to leave them without support and transform them in cargo to be transported by others, is probably the major challenge of these countries.

In 2013, with several improvement suggestions, India is launching the "food security bill," to create obligations for the State to guarantee food to every person that lacks resources to purchase the minimum amount of food for a healthy life. This fact will bring huge impact in food chains and food imports, since it means investments of federal budget in the food markets. India is still far behind the development China had in reducing poverty and this government regulation can really alter the future of India, solving problems of poverty and giving conditions to a much more competitive society in the future.

This is India, a country that gives several important signals to international society.

In this second part about India, I give some information about agriculture, collected in two weeks of visits and interviews and raise some of the topics that make part of the strategic agribusiness agenda. As a first impression, Indians have a passion to own land and this land is what will be passed to their children. Indians love children too!

India has a large proportion of arable land, 180 million hectares, almost 60% of the land existing (330 million hectares of surface) and produces the second largest crop in the world. It is a very challenging land structure, since almost 75% of the land is in properties of less than 5 ha, and as average, one to two hectares per farming family. Imagine land ownership in the future, dividing this area among children.

Agriculture is strongly dependent on the monsoon and the amount of rain that it will bring. The monsoon is directly responsible for the amount of income available in a particular year.

We can find a great diversity of climates, allowing several products to be produced. India, after China, is the second largest producer of rice and wheat, fruits and vegetables. Rice is a major crop, occupying 44 million hectares and producing more than 90 million tons. Wheat also is an important product, with more than 80 million tons per year. Corn occupies 8 million hectares. India is among the world's five largest producers of 80% of the crops (agriculture produce items).

Agriculture has seen a huge development due to adoption of technology. Grain production jumped from 50 million tons in 1950 to more than 250 million tons in 2012. Irrigated area in India increased from around 20 million ha in 1950 to

65 million in 2010. By 2012, around 17% of India's agricultural output is exported and it still is the primary occupation of 52% of local population. But due to this population growth, per capita availability of grains fell 10 kg in ten years.

Several other changes can be seen. Farmland management is also concentrating, with the growth of land lease and more efforts to build scale, probably the biggest challenge in India's agriculture.

Due to the industrial and services business growth, as in most countries facing urban development, it is only natural that agricultural share in GDP has declined, from 56% in 1950 to 14% in 2012. There is a movement of a more feminization of agriculture and Brazil is also an example of this issue.

Several challenges face the fast development of agriculture in India. In the innovation process, according to companies interviewed, the regulatory systems are an issue, long time is taken to register products. The challenge of urban areas advancing over farming areas and labor costs increased 50% in the last two years since the service sector is attracting people previously available for agriculture. Although India has a lot of water, it is also becoming an issue, due to pollution, usage by its growing population and other challenges.

India will also have to develop food safety (quality) and traceability, environmental protection laws, improve labor laws that definitely will increase its production cost in the future, like what I have seen in Brazil in the last 10 years.

Productivity of Indian agriculture is still very low and this means that several growth possibilities are possible. In China, the average size of properties is half the size of India, but productivity is the double in most crops. India produces as average, 50% to 60% of the world's benchmark in each crop, meaning that it is possible to improve production in India, using the same land.

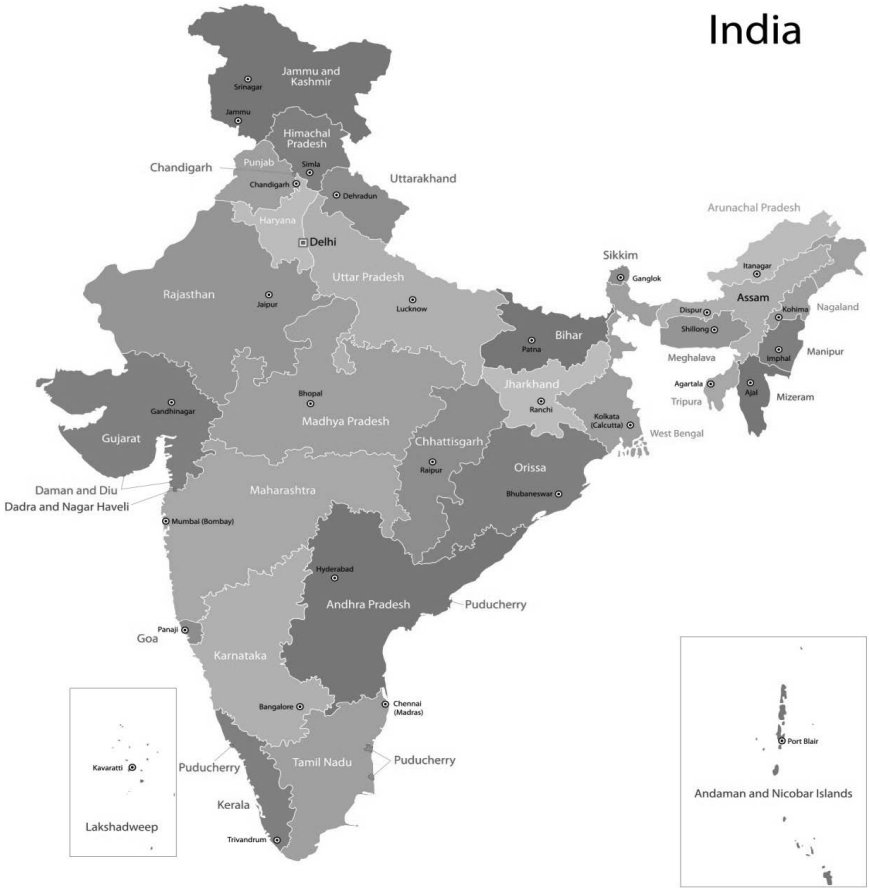
Finally, the third and last part of the article is the strategic agenda for Indian's agricultural competitiveness. It is not different from most of the countries. It involves:

**(a)** Increase in social improvement programs: It is believed that a desire to increase social security programs with a focus more on investments and less on subsidies would these programs more sustainable.
**(b)** Research and development: This refers to attracting more private investments in research, considering local specificities and farmers needs and encouraging more private and public partnerships. Research should be driven to reduce country's disparities, promoting more extension to reach farmers with innovation outputs and toward water uncertainty.
**(c)** Human capital: Increase youth health, nutrition and education, implement capacity building policies in agriculture and also initiate vocational training.
**(d)** More value capture and diversification: Efforts should be taken toward intensification of crops (from grains to poultry), diversification to crops where lands could be better used and supply more value (from sugarcane to horticulture and fruit production) and collective actions of farmers.

**(e)** Infrastructure: Improve investments in rural infrastructure, build more storage capacity, water storage capacity, stock operation and policies, improve cold chains, among others.

**(f)** Increase in agricultural production: Efforts should be taken to increase the yields and adopt modern farm technology, build storage and reduce waste, improve irrigation, provide access to credit, improvise land lease and land management and finally invest in mechanization (improving number of tractors, harvesters, and other equipment).

**(g)** Institutional environment: This involves gradually moving to a less regulated and more market driven agricultural chains, with clear, efficient and better managed organizations promoting institutional development.



India is a fascinating country. I really think it is in India that we will see real and rapid changes. In the next 10–15 years, India is poised for greater increase in its incomes and population leading to huge urbanization. Such growth would increase its opportunities to improve agricultural output, productivity along with improvements in its minimum wage and other social support programs. I believe India would strongly increase its participation in world food imports and definitely would be one of the superpowers in world economy, GDP, products and services trade.

## Discussion question

What are your views and perceptions about India's role in future agricultural trade? How would this create opportunities and challenges for your company?

Chapter 22

# What to Expect from Africa?*

Since 2006, when I first landed at O.R. Tambo International Airport and after South Africa World Cup 2010 turned it into a wonderful airport, I had the chance to visit several places in South Africa and delivered more than ten lectures in conferences, universities, public and private organizations.

I have traveled from the busy Johannesburg to the world class and marvelous Cape Town. I also visited cooperatives in Malmesberry and the legalist Bloemfontein to Bothaville, home of Nampo Park, the largest exhibition facility in South Africa. I also had a chance to visit the wonderful mountains of Clarens and Drakensberg, the cosmopolitan Pretoria and also other places of this lovely country.

In all these visits, I had opportunities to engage in deep discussions with producers, industry organizations and with government officials about Africa as a whole, to collect a lot of materials and learn about this unique continent by indulging in my favorite activity: asking questions and listening to people. I should not forget to tell the reader about the chance of tasting wonderful Pinotage red wines in Stellenbosch, in a scenario of dreams.

Although I have not had the chance to personally visit other African countries yet, I will try to generalize these ideas here for the benefit of the whole continent, well knowing that in Africa we have 55 countries and thousands of languages.

Africa had a continuous, but not homogeneous development in the last years, and it is well recognized that the countries that retreated from socialist economic models are performing better. Most African countries are now democracies. We have seen also empowerment of private businesses by governments and in several countries violence is declining, due to the end of "cold war," more media attention, awakening of the society realized by internet information and also the development of institutions. Some countries went through disarmament policies and policies to increase education, improving living patterns.

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*First published in *China Daily* (May 1, 2013).

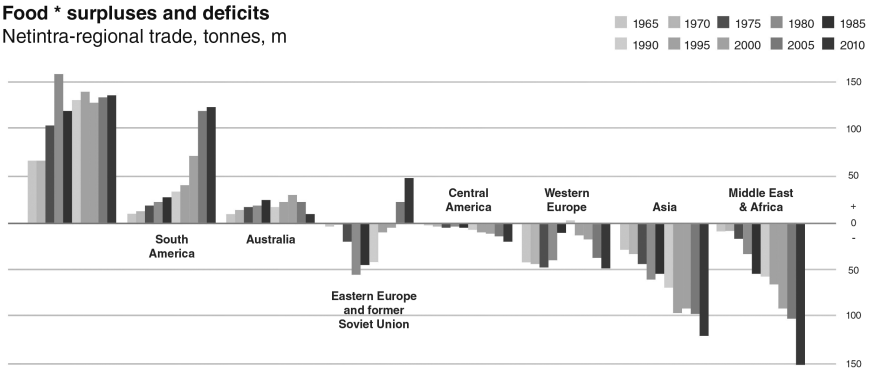



**Figure 22.1:** Food surpluses and deficits

*Source*: Mckinsey using data from FAO and USDA.

Africa normally isn't the major focus of attention of most food and agribusiness strategists, and this is a huge mistake under two lens or better saying, points of view: consumption and production.

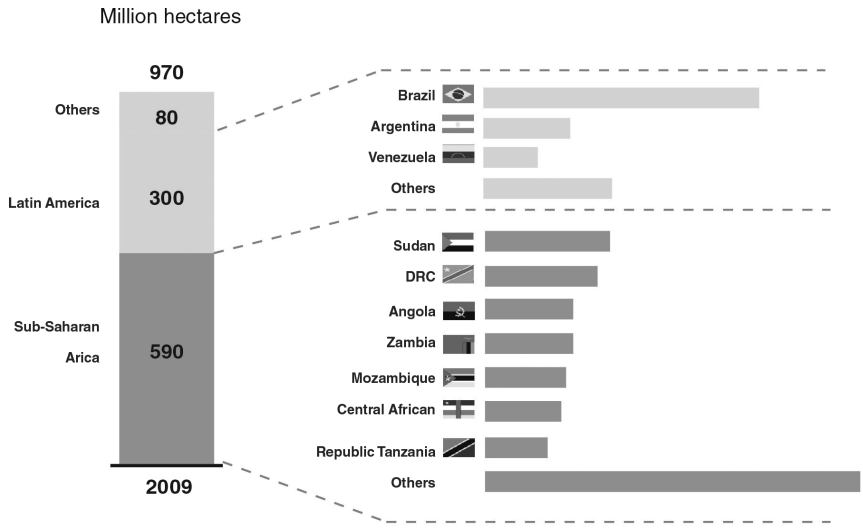
In the lens of consumption, it is important to say that Africa, together with the Middle East, is the largest food importer of the world, as you can see in Figure 22.1.

The growth of Africa as a food importer is justified by the large economic growth of several countries (continuous growth of 6–10% in GDP per year) followed by some income distribution and growth of middle class. African countries are also facing the growth in urbanization and we may remember that some countries have very large populations, like Nigeria (165 million inhabitants), Ethiopia, Egypt and Congo (from 75 to 90 million), South Africa, Uganda, Kenya and Sudan from 35 to 50 million and with around 20–30 million inhabitants we have Mozambique, Cameroon, Ghana, Cote D'Ivoire, Morocco, Algeria, Madagascar and Angola. Africa has 55 cities with more than 1 million inhabitants and still 40% of urban population.

It is expected that Africa and Middle East will respond for 50% of world's meat import growth till 2022, 53% of wheat, 50% of rice and 25% of soybean oil. With the food consumption in Africa continuing to rise, some countries are developing policies towards food security.

In the lens of food production, it is also a mistake not to pay great attention to Africa. It is recognized that South America is growing fast and will be the future world food supplier, but I'd say that South Ame- rica would not be enough. We will need Africa to play an important role, since several African countries are full of production resources. The majority of land available to be brought to production is based in Africa (see Figure 22.2).

To feed the world within this consumption growth will put much more pressure over the resources a country or a region has to produce food. As resources, I consider




1 Cropland defined as land producing output greater than 40% of maximum yield under rain-fed conditions, excluding forest areas.

**Figure 22.2:** Additional available cropland, 2009

*Source*: McKinsey Global Institute.

land (soil), water, people, technology, information, connectivity, credit, energy (sun and power), institutions and government, storage capacity, agricultural inputs, transport and logistics and, finally, management capabilities. My general perception is that societies that own these resources and better manages them will be the ones to capture most of this food and agro related markets growth, promoting the development. And here is where Africa is still struggling.

**Several issues regarding resources are perceived in Africa:**

- Some countries lack institutions, political stability, high mortality rates, corruption, lack quality people in governments.
- Unsustainable agricultural practices are leading to soil and resources degradation.
- Logistics is also a huge issue and some countries that have oil are not investing these resources toward more competitiveness. Countries like South Africa face mining activities removing land from Agriculture.
- Fragmented food production systems and producers
- Difficult market access and week linkages
- Small holders isolated from commercial markets
- Productivity far below world averages
- Low credit availability

- Infrastructure not present in the way food and agriculture needs
- Lack of insurance

**From these issues, an action plan with several topics emerge:**

- There is an optimism toward biofuels, since they will empower African farmers and society. Some countries are already adopting these policies.
- Inclusion of black commercial producers
- Engagement of small holders
- Empower younger generations and women
- Initiate strategies to tackle the issue of food safety and security and the creation of jobs via agri-food business development
- Africa is pursuing investments that would result in sustainable job creation, inclusion of people and economic development
- Improve cross-border conditions and trade, reducing transaction costs
- Adopt standards
- Yield management and technology transfer
- Access to information and knowledge building
- Investments in building research capabilities
- Improve trade environment, laws and regulations and build committed organizations
- Improving data and information access via web and other sources
- Programs for better usage of the resources listed above

So there is a lot to be done in African agriculture and this brings several opportunities.

In this last part of this chapter, I would like to address common ideas from a research done with my friend Fabio Ribas Chaddad (Professor at Columbia University, Missouri), about the potential benefits for Africa from the ethanol industry development, since Africa has sun, land and water.

The Brazilian experience with the sugarcane industry — and, in particular, the recent growth fostered by ethanol mandates in Brazil and other countries — suggests that ethanol may generate the following benefits for the African people and society at large.

- A first potential benefit is that ethanol reduces dependency on foreign oil particularly as the oil industry generates increasing negative externalities and is fraught with geopolitical risks.
- A second benefit is the amount of jobs generated in all stages of the ethanol chain, from equipment suppliers to ethanol distribution systems, but also including allied industries such as research, trade and services.

- One of the most important potential benefits for the African people is the immediate reduction in pollution in large cities. As compared to gasoline and diesel, emissions from engines run on ethanol are increasingly smaller with considerable improvements in air quality and thus quality of life.
- Another benefit for African society is to, via an ethanol strategy, increase economic relationships and trade with important emerging partners among African nations and also with other emerging economies such as Brazil, China and India.
- From a business perspective, ethanol can generate opportunities for foreign direct investment for African people and companies, selling products and making profits outside Africa and repatriating these resources to help the development and income distribution in the continent.
- These investments will also allow Africa to have access to worldclass technology that is currently dominated by ethanol producing countries.
- Finally, Africa can provide a strong contribution towards mitigation of climate change in the 21st century.

Africa can follow several strategies to foster the development of the sugarcane chain, including emulating the Brazilian experience. In what follows, we offer some possible contributions to this debate.

- A strategic plan should be developed.
- A suggestion for Africa to get started in building up supply chains is to adopt an ethanol or renewable fuel mandate (such as in Brazil, the US and the European Union, to name a few). The initial mandate could start as an E10 policy (10% of anhydrous ethanol blended to gasoline), with a perspective of moving to an E25 policy when production capabilities are in place.
- In order to be able to increase ethanol production, Africa may initially invest in agricultural research and technical assistance to produce sugarcane, sugar and ethanol in some regions with existing technologies, and subsequently develop second-generation biofuels from cellulosic sources, perhaps adapting Brazilian technologies that have been developed since the 1970s.
- An integrated model based on a network of small farmers may be a useful approach to foster sugarcane production and rural development.
- Another important possibility for Africa is to invest in ethanol production in some selected African countries with favorable conditions, which could supply other African nations. This would serve as the basis for an oil import substitution policy aimed at substituting oil imports with ethanol produced in the continent. This strategy will reduce dependency from oil producing countries and enhance economic ties among African nations.

In conclusion, I am very positive about Africa. My view is that in the next 10 years we will talk a lot about Africa as a leading world food consumer, several investments

will be done, a real laboratory of agribusiness experiences. After the next 10 years, we will talk about Africa reaching food security and even becoming a food exporter. In Africa, there are several opportunities and the real agribusiness entrepreneurs, the ones that view ahead have scheduled their flights, are landing, or already landed in O.R. Tambo International searching for opportunities, building relationships and doing investments.


## Discussion question

What is your view towards Africa? Raise a list of possible opportunities for your organization in the African context.

Chapter 23

# There Are Alternative Solutions for the Food Crisis*

In the chapter *The Food Crisis Will Be Back*, I addressed the food crisis debate; the ideas came from previous research which were further developed and published in two important academic journals.

At the time of writing the chapter, we had comfortable food commodity prices and I explained that the 2007–2008 crisis was serious and structural, caused by nine factors, with different levels of responsibility (effect). Let's get back to them: use of grains and agricultural land for biofuels; population growth effects (220,000 new stomachs to feed every day); strong income increase and distribution in emerging economies (with inaccurate consumption data); urbanization of population (megacities); local governments' income support programs; high oil prices; production shortages (due to climate, unsustainable water usage, plagues and diseases, low prices and other factors); dollar devaluation and investment funds speculation.

It is not difficult to anticipate another food crisis, since we are facing a new era in consumption. Just to illustrate, global consumption of wheat is growing (three years average) by 10 million tons per year, corn almost 30 million tons per year and soya by 20 million tons per year. Meat consumption increased by almost 20% in nine years. In essence, people are having access to food.

Food commodities prices rose by 40% in one year, and nonfood commodities by almost 94%. This price increase is bringing back inflation, hunger and political disturbances in some developing countries where the population spends 30–50% of their incomes with food and are net importers of oil.

And where does President Sarkozy come into this story? As the G20 leader, he is worried about the rising food prices and proposed a strategy for the G20 to intervene in some way, trying to lower the prices, with more regulation for financial markets

* First published in *China Daily* (February 9, 2011).

of commodities and even building global stocks. We must remember that food commodities chains face all types of interventions and distortions, from billions of dollars spent in subsidies, high import taxes with a historical damage to several agricultural export-based economies of developing nations. His preoccupation is very relevant, but I think we could move in another and more positive long-term direction, acting with the causes of the problem.

In the same chapter, I pointed 10 solutions to deal with the food crisis, trying to bring more equilibrium basically promoting a shock in the offer (production) and efficiency, which is a "win-win" strategy. These solutions are: sustainable horizontal expansion in food production using new available areas in South America and Africa where water is not scarce; vertical expansion to increase productivity; reduction in food taxes, other market protections and barriers that increases costs and inflate food prices for the final consumers; investment in global logistics to reduce waste and costs for food transport; usage of the best sources for biofuels production that don't compete with food chains (ethanol from sugarcane is the best example here when compared to corn for feed); investments toward a reduction in transaction costs that occur in all food chains; manufacture of cheaper and innovative sources of fertilizers (which, at present, are a high cost to farmers); sustainable supply contracts to farmers for more balanced margins allocation; spreading innovations (GMO's, nanotechnology and others) and, finally, consumer behavior changes to avoid losses and even overconsumption of food (obesity). Global politicians and strategists could expand their ideas and policies with this 10-point list.

To stimulate a policy of global stocks and controls in prices as they are proposing will make food commodities markets even more artificial. These policies were already studied by important economists of OECD, showing that the intervention did not work. Other interventions like contingencies of exports and high export taxes may have an immediate positive result to control inflation in local markets, but they produce damage in the middle term, since they all reduce farmers' incentives to increase production and productivity.

Famers for a long time suffered due to subsidies for production in some specific countries, that led to lower commodity prices and lesser incentives to grow production and promote income distribution in the world. It is now time to change. Farmers worldwide, but mostly in emerging nations and Africa, need price incentives, technology, credit and buying contracts (market access) in order to invest and increase production to a level that will be in tandem with the increasing food demand in the next 10–20 years, and help solve the food crisis.

If United Nations, FAO and the G20 are worried in the coming months with regard to food prices, let us immediately reduce taxes over food and even supplement lower-income people with a temporary governmental support and move toward these proposed 10 points of development.

We will need to double food production in 10 years, and the world has land, technology, water and farmers to do it. Let us move toward the right direction: incentives for the sustainable growth in global farm production and trade, generating welfare, inclusion and peace.

## Discussion question

What is your view of this picture of the food crisis today? What is your view of the future of food business in 10-year time?

Chapter 24

# Food Chains and Networks Development: A 14-Point List*

Every two years, the University of Wageningen, Netherlands hosts the International Conference on Chain and Network Management.

For me to return to Wageningen is always filled with emotions since I had a chance to live in this wonderful part of the world in 1998 and 1999 during my Ph.D. studies.

In May 2010, we had the 8th Conference, the first having been held in 1996. Around 200 researchers from 40 different countries participated in three days of discussions on developments in science and the practice of integrated vertical production chains and companies networks.

This chapter presents some of the important topics discussed and major developments needed for the future. The summary is a 14-point list that may be useful for companies, governments and academics in terms of future development and emerging topics, suggestions for policies and regulations. They can contribute to a more efficient and sustainable production system, aimed at a new era of scarce resources.

*Chain design, governance and performance.* Since chains compete in a global arena against each other, they should have adequate governance. Thus, contracts can lead to better performances in adding value, profit generation and distribution, costs, processes and other measures.

*Chain waste.* An integrated food chain generates waste in almost all its agents and phases. We also have wastage of the final products, estimated at almost 40%. Thus, waste management and reduction/re-usage is of fundamental importance in an environment pressurized by a society demanding sustainability. Integrated inventory management and collaborative logistics are among the most important developments for reducing redundancies, waste and depletion of fossil resources.

*First published in *China Daily* (May 31, 2010).

*Food risks and chain integrated risk management.* There is a need to take an integrated approach to all the increasing risks in food chains, such as contamination and financial risks. Food security should be improved and the costs of this improvement shared with all agents.

*Sustainable chains and certification.* Consideration must be given to land use, resources conservation, nature and biodiversity. Certification processes, value and costs are part of a larger debate.

*Chain and networks impact and adaptation.* We must consider how the growth impacts from an unstable environment are affecting food chains and networks.

*Chain and networks legislation and regulation.* Chains are transnational and deal with different governments and laws, different institutional environments, bringing complexity to their management due to permanent interventions.

*Food and health communication.* This point is linked with the previous topic but gains importance due to several restrictions that chains are starting to face in terms of marketing communications, due to overconsumption, obesity and marketing targeted at kids.

*Climate change and chains adaptation.* With higher incidences of droughts, climate unpredictability is taking us to a situation of lower production and harvests and loss of land and water, and the possibility of future migration processes.

*Chain information management.* Information transparency and sharing has a positive impact over chains' activities, bringing better management and performance. This also involves the design of information management systems and decision support models.

*Biomass-based chains.* With the growth in the use of biomass and grains to produce energy and fuel, there is a pressure over existing resources in some countries, bringing a mixture of chains and competition for resources.

*Metropolitan agriculture chains.* This refers to the growth of food production in metropolitan spaces and areas and its integration with modern supply chains.

*Chain and network intermediaries.* In a process of mapping and redesigning chains, there is no more space, in a world of giants and lower margins, for intermediaries that do not add value. These agents and companies are facing a fast exclusion movement.

*Chain and network entrepreneurship and innovation*. This aspect has been discussed in earlier chapters, with an extensive agenda for future work.

*Chain inclusion and social innovation.* An important topic that we also discussed is the capacity of chains to promote the inclusion of small holders. Table 24.1 presents a summary of the 14-Point List and some major developments needed for the future.

**Table 24.1**

The "Food Chain´s 14 Trends"

| The 14 Point List | Major developments needed for the future |
|---|---|
| 1. Chain design, governance and performance | Have an adequate governance<br>contracts can adding value<br>profit generation and distribution<br>reduce costs |
| 2. Chain waste | Management and reduction/re-usage<br>Integrated inventory management and collaborative logistics |
| 3. Food risks and chain integrated | Integrated approach to all the increasing risks in food chains (like contamination, financial risks, and others)<br><br>Food security should be improved and the costs of this improvement shared with all agents |
| 4. Sustainable chains and certification | Land use, resources conservation, nature and biodiversity<br>Certification processes, value and costs |
| 5. Chain and networks impacts and adaptation | Know how the growing impacts coming from an unstable environment are affecting food chains and networks |
| 6. Chain and networks legislation and regulation | Deal with different governments and laws<br>Deal with different institutional environments |
| 7. Food and health communication | Know what restrictions that chains are starting to face in terms of marketing communications, due to over-consumption, obesity and marketing for kids |
| 8. Climate change and chains adaptation | What to for reduce the lower production and harvests and loss of land and water |
| 9. Chain information management | To develop information management systems and decision support models |
| 10. Biomass based chains | Competition for resources<br>Growth in the use of biomass and grains to produce energy and fuel |
| 11. Metropolitan agriculture chains | Growth of food production in metropolitan spaces |
| 12. Chain and network intermediaries | Make a process of mapping and redesigning chains and add value. |
| 13. Chain and network entrepreneurship and innovation | Agenda for future work |
| 14. Chain inclusion and social innovation | Promotes the inclusion of smallholders |

*Source: Author*

## Discussion question

What are the other trends you see? How would these trends affect your business?

Chapter 25

# Scenario Planning for Food Chains*

This chapter shares a method for scenario planning of food and agribusiness chains. It may be useful to envision how, for instance, the coffee chain, sugar chain, poultry chain would look like in 2023 and how a company operating in this particular food chain could better position itself.

A food chain is an integrated network of companies operating in the flow of products, services, communications, payments and information required for a specific product to be built (transformed) and to reach the final consumer. An example will help to clarify: when talking about the coffee chain, we consider the agents coming from the input suppliers (fertilizers, farm machinery and others) toward the final consumer of coffee. In the middle of the chain, we have coffee farmers, coffee roasting and processing industry, distributors, supermarkets, coffee shops and other agents.

The same applies to other food or agribusiness chains like poultry, beef, soybean, sugarcane, orange juice, paper and pulp, leather, ethanol, tobacco, etc. This method based on three phases is designed to predict how the chain will look like in a certain amount of time.

Phase 1 requires a design/description of the chain to understand how it looks like and who are the participants in each of its levels.

Phase 2 would involve the vision of the future. Here we should come backwards, starting the analysis from (1) the final consumer, (2) distribution (considering retailing, wholesaling, foodservice and other channels), (3) food industry (this carries out secondary processing and more marketing activities), (4) agro-industry (primary processing level), (5) farming, and finally (6) the input suppliers. Some chains have different organizational schemes, and even may have other level of participants. However, the thinking process remains the same.

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*First published in *China Daily* (March 1, 2012).

Some questions dealing with consumers are:

- How will the consumers look like? What will be value for them?
- How would new products affect their behavior?
- What are the trends in income (effects in developing and emerging countries)?
- Which changes will occur within the buying behavior (conscious, environment, sustainable)?
- How demographic (urban, older, lonely) trends will affect consumption? How preferences (flavors) will change?
- Will genetically modified organisms (GMOs) and other technologies be accepted by the consumers and if yes, what will be the reactions?

Some questions dealing with distribution are:

- What are the trends in retailing?
- Will retail concentration and global operation movement continue?
- What to expect from private labels?
- What will be the effects of technology and price transparency?
- What will be the policies toward supply chain (purchasing)?
- How will competition among retailers affect the chain?
- What will be the role of food service industry?

Some questions dealing with food industry are:

- What will be the speed of new product development (NPD)?
- How will consolidation look like?
- How will cost margins and profitability of product-lines look like? What will be the relationship with retailers and agro-industry?
- What are the roles of regional companies?
- Who are the new players diversifying into this market?
- What is the growth expectation for this industry?
- How to solve the logistics problems to supply the emerging markets?

Some questions dealing with agro-industry are:

- How will the industry be structured?
- Will the agroindustry be concentrated? Would the agro-industry operate in a global scale?
- What would be the client logistics and purchasing behavior?

- Who will be the new players? Where would they come from?
- What will be the degree of own production of inputs? How will operating costs and margins look like?

Some questions for future farming activities are:

- How will production be structured?
- How will concentration happen? Will it be more professional?
- Which will be the most competitive areas in the world? Which are the growing areas and declining areas?
- What will be the role of cooperatives and associations?
- Will crops be substituted in some areas?
- How will plagues and diseases will affect the chain?
- What to expect from regulation changes? How production costs will look like?

Finally, questions dealing with input industries are:

- What innovations will come to market?
- What would be movements upward the supply chain and how would they be implemented?
- How will the selling and distribution channel structure look like?
- Will the concept of offering integrated solutions for farmers be the most suitable strategy?
- What will be the stand regarding GMO?

Table 25.1 resumes the major questions to be done at each level of a particular food chain.

Phase 3 would be suggested if a *particular company* wants to use this food chain scenario built in steps 1 and 2 to have their vision of opportunities, confront challenges and learn to position itself towards this future scenario. I hope this method can contribute to chain participants and to individual companies and strategists in their planning activities.

**Table 25.1**

| INPUTS SUPPLIERS | FARMERS | PROCESSING INDUSTRY Agro - industry | MARKETING INDUSTRY Food industry | DISTRIBUTION | FINAL CONSUMERS |
|---|---|---|---|---|---|
| What innovations will come to market? | How production will be structured? | How industry will be the structured? | Which will be the speed of New Product Development (NPD)? | What are the trends in retailing? | How will the consumer look like? |
| What movements upward the supply chain will be done? | How will concentration happen? | Will the agro-industry be concentrated? | How will consolidation look like? | Will retail concentration and global operation movement continue? | What will be value for them? |
| How will the selling and distribution channel structure look like? | Will it be more professional? | The agroindustry would operate in global scale? | How will costs margins and profitability of product-lines look like? | What to expect from private labels? | How new products can affect the market? |
| The concept of offering integrated solutions for farmers will be the most suitable one? | What will be the most competitive areas in the world? | How would be the logistics to the clients and purchasing behavior? | How will be the relationship with retailers and agro-industry? | Which will be the effects of technology and price transparency? | What are the trends in income? |
| How will the situation of genetic modified organism (GMO) be? | Which are the growing areas and declining areas? | Who will be new players? | What are the roles of regional companies? | Which will be the policies toward supply chain (purchasing)? | What will be the effect in developing and emerging countries? |
| | What will be the role of cooperatives and associations? | Where they may come from? | Who are the new players diversifying to this market? | How competition among retailers will affect the chain? | What changes will occur in buying behavior (conscious, environment, sustainable)? |
| | Crops will be substituted in some areas? | What will be the degree of own production of inputs? | Which is the growth expectation for this industry? | What will be the role of foodservice? | How demographic (urban, older, lonely) trends affect consumption? |
| | How plagues and diseases will affect the chain? | How will operating costs and margins look like? | How to solve the logistics problems to supply the emerging markets? | | How preferences (flavors) will change? |
| | How to expect from regulation changes? | | | | How is and how will be the acceptance to GMO's and other technologies? |
| | How production costs will look like? | | | | |

## Discussion question

Produce a scenario planning for the chain where your company is integrated.

Chapter 26

# How to Build a Strategic Plan for a Food Chain: The ChainPlan Method*

It is estimated that by 2020, food supply in the world will have to be increased by at least 50%, although the areas available for agriculture and sources of water are restricted. An efficient logistics system is still a challenge in many countries. It is difficult to predict how much biofuel will be needed since it depends on car fleets and their evolution, industrial demand, human demand, institutional environments (percentage set by governments for biofuel additions to oil) and consumer behavior. So, to deal with all the environmental changes in the national and international business arena, and growth opportunities in the food, fiber and bioenergy production chains, strategic planning should be focused on understanding these production chains.

Increasingly, it will be necessary to instill a strategic planning and management process in various agribusiness systems. In 2007, I developed the ChainPlan method for "Strategic Planning and Management of Agribusiness Systems" which has been applied to agribusiness systems in Brazil, Argentina, Uruguay and South Africa, among other countries. It consists of five stages: the initiative of systems' leaders, the mapping and quantification of the agribusiness system, the formation of a vertical organization, the plan with strategic projects, and the implementation of the plan.

The ChainPlan method is summarized in Figure 26.1, which shows a five-step process aiming at the implementation of strategic planning and management in production chains.

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* First published in *China Daily* (August 10, 2012).

Figure 26.2 presents the details of step 4 of the ChainPlan Method. This step is divided into 12 stages, with an attempt to design an integrated strategic plan for the agribusiness system in the following 5 or 10 years.

Each stage is elaborated on in the guidelines presented in Table 26.1.

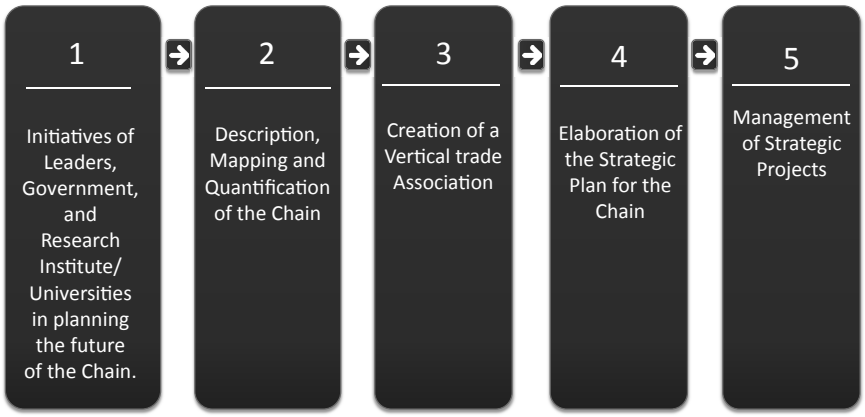


**Figure 26.1.** The ChainPlan method for strategic planning and management of chains

*Source*: Neves (2007).

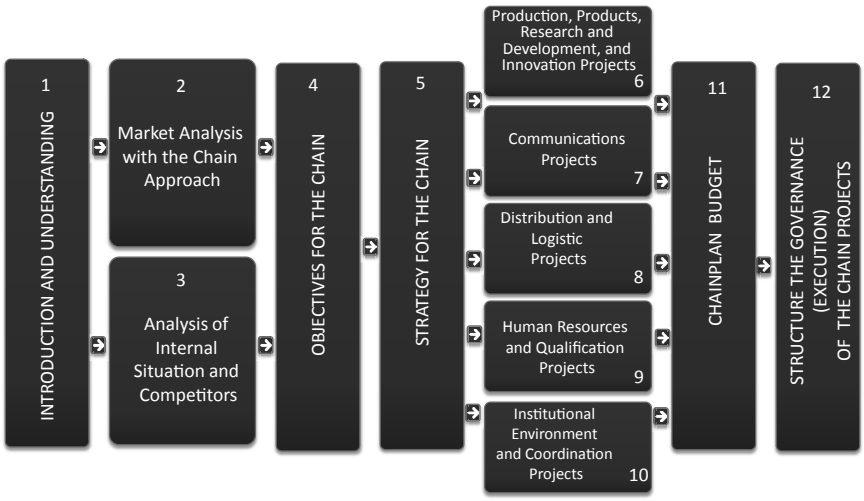


**Figure 26.2.** Sumary of ChainPlan Plan (step 4).

*Source*: Neves (2007).

**Table 26.1**

## Guidelines for demand-driven strategic planning and management of the chain

**Phase 01 - Introductory**

| Stage | What has to be done |
|---|---|
| 1. Introduction And Understanding | ✓ Verify if the chain has other plans made and to study them;<br>✓ Verify which teams will take part in the process;<br>✓ Study plans made for production chains in other countries, for benchmarking;<br>✓ To identify a member of the team who could promote relationships with other chains;<br>✓ Finally, in the case of chains with sophisticated planning processes it must be verified how this model can help the existing model, and how to adapt, gradually, the chain to this one. |
| 2. Market Analysis with a Chain Approach | ✓ Understand the chain participants and industries involved;<br>✓ Analyse the major numbers;<br>✓ Address threats and opportunities coming from the legal/political, economic/natural, socio-cultural and technological environments;<br>✓ Understand trading barriers (tariff and non-tariff);<br>✓ Map chain uncertainties;<br>✓ Value creation and capture possibilities;<br>✓ Produce a scenario analysis for each chain participant;<br>✓ Analyze consumer trends and behavior;<br>✓ Map the buying decision process;<br>✓ List worldwide sources of useful information;<br>✓ Map most important events and other meetings where the future trends are discussed |
| 3. Analysis of Internal Situation and Competitors | ✓ Identify all the strong and weak points of the chain;<br>✓ Map chain contracts and other existing forms of coordination;<br>✓ Describe the existing structures of associations (collective actions)<br>✓ Analysis of major competitors: structure, numbers, growth, and other information from competing countries;<br>✓ To analyze the critical success factors of the chain;<br>✓ Select national and international benchmarks |
| 4. Objectives for the Chain | ✓ To define and quantify the major chain objectives in terms of production, exports, imports, and other financial indicators |
| 5. Strategies for the Chain | ✓ List the major strategies (action) that will be used to reach the considered objectives in item 4 in terms of positioning, exports, value capture, and market segmentation. |

(*Continued*)

**Table 26.1** (*Continued*)

| Phase 2 - Plans of Strategic Vectors: Production, Communication, Distribution Channels, Qualification and Coordinator (Institutional Adequacy) | |
|---|---|
| Stage | What has to be done |
| 6. Production, Products, R&D, and Innovations Projects | ✓ Analyze productive potentials and production capacities;<br>✓ Map and plan for production risks (sanitary and others);<br>✓ Products and product lines, as well as complementary product lines<br>✓ for expansion decisions;<br>✓ Innovation opportunities and in the launch of new products;<br>✓ Settle national and international innovation networks;<br>✓ University partnerships and with medical (health, nutrition) and cosmetics areas;<br>✓ Understand current and potential services to be offered;<br>✓ Joint construction of brands and other brand strategies;<br>✓ Labeling opportunities;<br>✓ Certification processes for the chain;<br>✓ Environmental sustainability;<br>✓ To make packaging-related decisions (labels, materials, design); |
| 7. Communication Projects | ✓ Identify the target audience for the communication (messages from the<br>✓ production chain);<br>✓ Develop goals for this communication (product knowledge, product reminders,<br>✓ persuasion, among others);<br>✓ Search for an unique positioning and message;<br>✓ Define the communication tools as advertising or public relations, amongst others that can be used.<br>✓ Develop a strong platform for new media communications;<br>✓ Review communication actions and determine the annual budget involving all the network agents;<br>✓ Indicate how communications results will be measured so that the chain learns<br>✓ more and more about the best tools to achieve revenue on investments. |
| 8. Logistic and Distribution Projects (Including Exports) | ✓ Analyze the product distribution channels and to search for new ones;<br>✓ Analyze the possibilities of value capture in the distribution channels;<br>✓ Identify possible demands of international traders and consumers<br>✓ to suit the existing services;<br>✓ Define new ways to enter the markets (through franchising, joint ventures<br>✓ and other contractual forms, or through vertical integration);<br>✓ Determine annual budget for distribution;<br>✓ Verify how distribution actions can be done together with other chains. |
| 9. Human Resources Projects | ✓ Training in management for the chain participants;<br>✓ Training in cost controls and use of technologies;<br>✓ Training in national and international sales;<br>✓ Extension and knowledge dissemination;<br>✓ Network of technical assistance to improve yields;<br>✓ Others. |
| 10. Institutional Environment and Coordination Projects | ✓ Projects to finance the chain;<br>✓ Basic infrastructure improvement projects;<br>✓ Increase consumption in government (food aid and others) programs;<br>✓ Special development programs for sensitive areas and chain participants;<br>✓ Tax reductions in the production chain project;<br>✓ To strengthen export activity through export promotion agencies;<br>✓ Special programs for the use of technologies (fiscal incentives, lower rates and others);<br>✓ Facilitate standardization projects;<br>✓ Promote transparency;<br>✓ To develop proposals for chain conflict solutions. |
| 11. ChainPlan Budget | ✓ Budget for every project and total plan budget. |
| 12. Strategic Projects Consolidation | ✓ All projects generated in steps 6 to 10 will be consolidated and priorities will be settled based on budget constraints and others |

## Discussion question

What would be the strategic plan for the chain that your business is integrated with? In your view which would be the most important projects?

Chapter 27

# The Four P's of Sustainability Planning*

Sustainability in food chains is becoming increasingly important, and hence, I want to propose a framework to help companies and governments come to grips with discussions on sustainability and its implications, and finally to emphasize the importance of implementing what is discussed. Unfortunately, in this area there is too much talk and not much action, both from governments and companies.

Sustainability, previously defined as "responsible use of exhaustible energy resources and raw materials" has gained a huge increase in awareness over the world. This can be seen in the rise in expectation of consumers who are more aware of the problems associated with sustainability, the emergence of new generations increasingly concerned about environmental issues and having the common sense to conserve the earth, the scarcity of the planet's natural resources for all its population, risks of global warming, causing floods and hunger due to lost agricultural land, and the impact of communications via the internet, which allows immediate knowledge of disasters, bad behavior of companies, excess pollution and other issues.

At a corporate level, there is a growing concern that efforts should be undertaken to reduce the impact of the firm's activities on the environment, increase transparency (corporate social responsibility) to promote a better flow of information, promote more inclusion and less social imbalance and finally, increase the company's usage of natural and renewable resources/energy.

Sustainability has three traditional major pillars that are needed to promote development. The economic dimension (profit), the environmental dimension (planet) and the social dimension (people). I am adding a fourth "P": proactiveness (see Figure 27.1).

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*First published in *China Daily* (November 27, 2009).

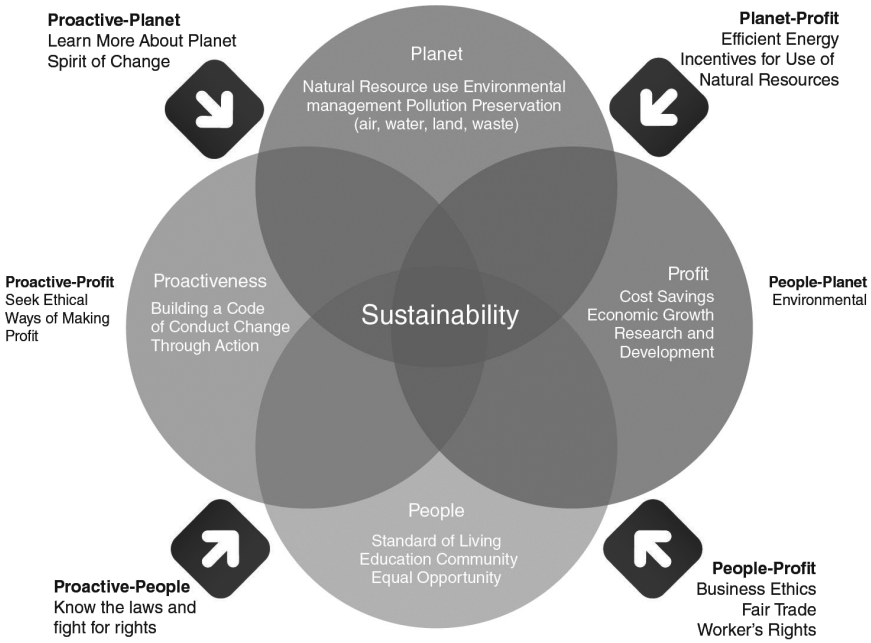


**Figure 27.1.** The Four P's of Sustainability.

*Source*: Author.

On the **economic (profit)** side, the major factors to be considered are how companies, networks and production chains deal with margins, profit, compensation, losses in the chain, communication issues for end consumers, improving credit conditions with benefits for sustainable projects, risk management (knowledge of financial markets and financial instruments), information technology (information access and reduced transaction costs) and overall strategies to reduce costs and achieve economic sustainability of the business. Without economic sustainability, any other request is impossible, since companies cannot pay for it if they don't have margins. This is a first and important step. A company must be economically sustainable.

On the **environment side (planet)**, the major factors to be considered are the impact of the company on the environment, the impact of the company's integrated suppliers, the impact of transport (food miles), packaging (trying always to recycle/reuse/rebuild using new materials and less materials), waste management (generating less waste; separating and recycling; generating energy/fertilizers from waste), use of energy, emissions, water management (company view of usage; protecting water; management; and spreading best practices), more digital and less paper, reuse of materials, green and environmentally-oriented buildings and facilities, carbon

emissions/neutralization (carbon footprint), among others. Consumers also have an incredible task here, changing their own habits and having a more responsible consumption behavior.

On the **social (people)** side, the major factors to be considered are working conditions of employees; conditions among the company's suppliers and distributors; health and safety; usage of child labor; working climate; safety equipment; promoting actions for local community; incentivizing cooperation; installing small holder-friendly initiatives and performing technology transfer for small holders; improving the local companies' capacity and always promoting the product line benefits to the consumers, for instance, having more nutrition, being more worried about health concerns, etc.

Finally, a company must be **proactive**. Do not only talk about sustainability, but act. This involves building a code of conduct for implementation within the company and also following the code of conduct as prescribed by the industry associations. The government on its side should inculcate awareness, have a budget for sustainability, initiate immediate steps to reduce environmental impacts, constantly monitor activities, document, have committees and boards and facilitate exchange of information and knowledge.

A planet that is imbalanced will not be sustainable in the long term. It is our responsibility to promote better conditions for the future generations to live on the earth with greater equilibrium. The agenda is here. History books will either remember our generation as the one that took the actions, that made the difference, and helped the planet to survive and to get better, or the opposite may become true. We will be remembered as the generation that did not implement the changes that were needed. Or even worse, in a catastrophic scenario, we will no more have history books or people to read them.

## Discussion question

Which opportunities in the sustainability arena are most appropriate for your company?

Chapter 28

# Producing More Food with Less Resources*

This chapter will touch a sensitive topic for organizations working in food and agribusiness integrated production chains. I will present the "Efficiency-Driven Agribusiness (EDA) Model," built upon in-depth discussions (two workshops) with global agribusiness leaders and CEOs of companies operating in several world food markets. It is conceptualized to address the need of producing more food and bioenergy to a growing world facing scarce basic resources, as water, land and fertilizers needed for food production. It is designed for the era of "doing more with less."

The EDA model considers eight major areas where efficiency should be pursued. After each area, several topics will appear as a working list or targets to be achieved by business people, public policies maker and mostly, by scientists.

1. **Land use and management:** We need to increase land productivity; shorten plant production cycles; increase efficiency in land operation and management; search for lower environmental impact technologies (recycle, synergies among food chains, energy savings technology); have more efficient and conservative soil operations; have localized and adapted solutions and use renewable energy sources (produced locally) for fueling agricultural activities.
2. **Plant production:** Develop technologies to increase the potential of the grains' contents (energy, protein); to accurately predict nutrition requirements of plants thereby avoiding losses in the process; create plants that use resources (water, sun, nutrients) efficiently and plants that are much more resistant to adverse conditions (diseases, droughts and other damages).
3. **Animal Production:** This includes research for better understanding of the nutritional requirements of all species; technologies to increase productivity of raw materials as feed; thinking in productivity per hectare (protein per

* First published in *China Daily* (August 15, 2011).

hectare); alternative programs for disease control and the need to better understand microbial processes (pathogens, micro-bios) and the environmental and health consequences; added value via nutraceuticals, natural medicine and health combined with nutrition; search for alternative proteins like algae; identify cost-efficient alternatives to antibiotics; micro-encapsulation for controlled release of nutrition; animal welfare management and genetic development for sex selection (e.g. female-laying chicks would reduce cost and improve animal welfare), among others.

4. **Risks and waste management:** Search for new solutions to manage the increasing risks of food chains; food safety; controlled conditions with accountability and measurement and develop risk management tools that are suitable and standardized and to manage risk in supply chain all the way from the input supplier to the final consumer (with traceability). Develop more tools to analyze food losses in all chain participants (at home/cooking, supermarkets and restaurants, industry, farm, storage, transport); effective portion sizes (avoiding waste); develop processes for recycling and utilization of by-products and manure, particularly by-products of growing biofuels production.
5. **People´s management:** Management of human resources, labor force and teams.
6. **Government:** Search for innovation and efficiency in public management systems; harmonization of worldwide regulatory systems to improve efficiency and reduce transaction costs; the formalization of illegal and informal chains, that in some markets still represent 50% of market share; promote and facilitate financial flows and investments to agriculture; build innovative financial support systems for emerging nations and integration of regulatory groups with the private sector.
7. **Research, innovation, diffusion and knowledge transfer**: Build alliances with banks, universities and competitors for better use of assets; closer relationships with raw materials suppliers; public and private-sector partnerships; cooperatives for innovation; working together with the regulators and the University; focus on solution-driven management of research and development and the use of nanotechnology development. Establish a global online network to generate new technology and development to reduce response time (including all chain participants); social media to market and communicate innovation (web transfer); better communication with consumers about biotechnology; improve the image of agriculture and food production; use retail outlets and other points of sales as points of communication about new trends; guide about products/markets/trends in overall production chain ("get closer to customer"); extend technologies to backward parts of the chain (farmers spread all over) with extension systems; build bridges with developed and emerging economies to spread technology transfer and develop suitable practices for different markets and levels of development, with localized solutions.
8. **Logistics (storage and movement):** Optimize logistics within the entire supply chain, for more efficiency in emerging countries with poor infrastructure; invest in better storage capacities and use renewable fuel sources for transport, reducing carbon footprint, among others.

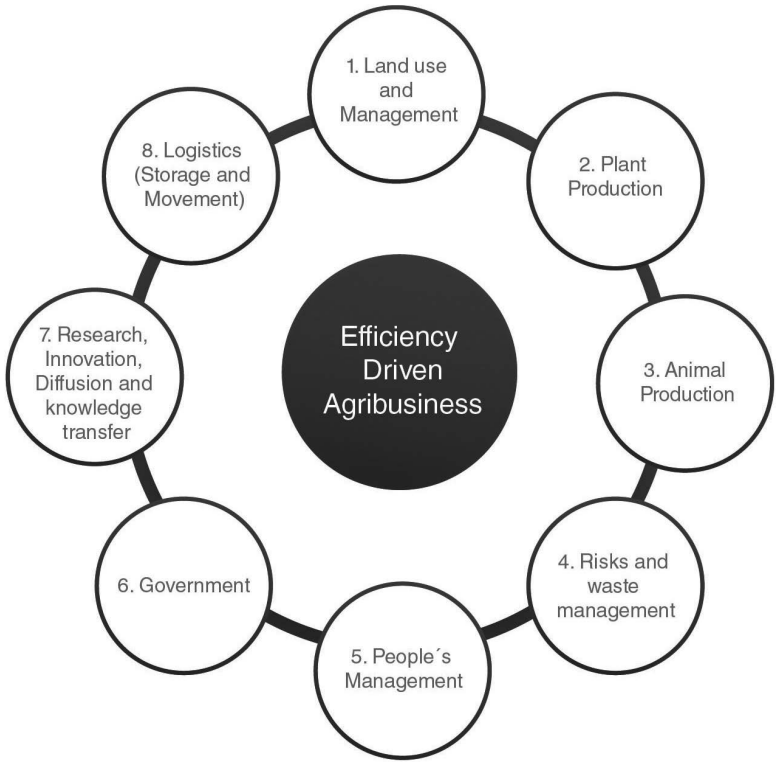


**Figure 28.1.** Efficiency-driven Agri-business — EDA.

*Source*: Author.

This list is not exhaustive, since several other factors are important, but we discussed here several ideas from a perspective of producing more with less. Each of these points can be turned to questions for debate and projects derived from this debate.

## Discussion question

How can your company increase efficiency using the EDA model? Which other topics not included in the model may be considered?

Chapter 29

# Sustainable Supply Chain Initiatives*

This chapter has been written to share my impressions after studying the document of McDonalds called "Best of Sustainable Supply 2012." This initiative was a competition launched by the company, stimulating suppliers to submit the best practices done. 400 projects were submitted and 51 selected by six companies and NGO experts based on criteria of measurable results and innovation. It is a value creating and sharing project.

The projects focused on areas that create and share value: employee wellness, waste, climate/energy, animal-welfare, water, raw materials and community impact. Here, I summarize findings in each area.

**Employee Wellness:** Value was created based on improving working conditions, where freedom, security, equity and dignity were guaranteed. Also criteria for compensation and benefits were considered. In the evaluation of McDonalds, these projects went beyond the "McDonalds Supplier Code of Conduct" promoting real benefits in creating value via differentiation. Among the winning initiatives were an educational program designed by a supplier in Thailand to help its employees to complete their primary, secondary and even higher education, with more than 2100 employees participating since the beginning (1994). Other initiatives included employee's health plans in South Africa, wellness programs with fitness-centre and weight watchers within the company and opening channels for better employee communication.

**Waste:** Food production operations can generate large amounts of waste within the production and packaging processes. Value was created within McDonalds suppliers via eliminating waste sent to landfill via control of production processes and

* First published in *China Daily* (April 20, 2012).

increasing recovery rates. Several suppliers took initiatives in the field, some of them approaching policies named "reduce, reuse and recycle," reducing excess materials in packaging, cutting delivery trips, the usage of recycled plastic pallets, recovering animal grease from dissolved air flotation units and collecting restaurant waste.

**Climate/Energy:** Here, the efforts of suppliers were to identify the sources of greenhouse gas emissions for a reduction in carbon footprint. To achieve these goals, the projects focused in increasing energy efficiency and the use of renewable sources of energy. One of the projects started with a "real time" energy management, another stimulated a program for energy-saving ideas among employees in order to raise awareness, use of flowing water and solar structures to generate electricity, transforming waste-water to biogas and using biodiesel in truck engines.

**Animal Welfare:** Efforts were taken to create value via proactive steps for the welfare of animals including responsible use of medication, growth promoters and genetic selection, and improving nutrition, husbandry and well being of animals in slaughter process and also within several transportations. Initiatives included animal welfare training, thermal comfort for poultry and best practices sharing.

**Water:** Value creation initiatives in water were related to improving water efficiency, reducing water pollution and creating policies for waste water treatment and reuse. The best were the projects to raise awareness, to collect ideas among employees, have more efficient equipment for water treatment, waste water recycling, water consumption in ice machines and the creation of specialized cross-functional teams that visited factories and discovered opportunities for water saving policies.

**Raw Materials:** Value also could be created with the McDonald's suppliers raw materials initiatives, really moving backwards at the supply chain (suppliers of the suppliers). The goals were to include agricultural working conditions, soil fertility, erosion and contamination, promote responsible use of chemical products and preserving biodiversity. McDonalds suppliers offered free programs for carbon assessment in their suppliers identifying potential saving initiatives and having innovative projects for carbon emission reduction. Such initiatives included plastic bottles produced with ethanol, micro-irrigation, safe handling of chemicals, package recycling, integrated pest management and programs for soil recovery. McDonalds suppliers worked together with their raw materials suppliers towards these value creation activities, building a real integrative chain approach.

**Community Impact:** This was the final possibility considered for value creation. Projects demonstrated their capacity to give value back to communities where they are located via volunteer efforts, investment in infrastructure and charitable organizations. This was done by supporting medical programs, creating nutrition for orphanage, supplying clean water for villages, teaching children, improving air

quality, offering free technical assistance, recycling uniforms as cloths and programs for fighting hunger.

Several learning lessons were derived from this initiative of a leading food-service company creating value via sustainable supply. The most important is the creativity to implement a program stimulating suppliers to compete and submit the projects for evaluation and then communicating the results, spreading knowledge and benchmarks. Several nice ideas were given in this real integrative chain approach for value creation and sharing.

## Discussion question

Which of these learnings could be applied in your company based on this discussion about sustainable initiatives?

Chapter 30

# More about Sustainable Supply Chains*

Nutreco is a Dutch multinational company operating in the feed industry, and in 2012 this company launched a report called "Nutreco Feeding the Future: How we can contribute to feeding 9 billion people in a sustainable way: Vision 2020." This chapter was written to share with *China Daily* readers my impressions studying the document, another example of sustainability.

The company aims to create value in several different activities. Nutreco states that they "aim to become the global leader in animal nutrition and fish feed, delivering innovative and sustainable nutrition solutions."

It is evident from the report that Nutreco has an integrated chain approach. For the company, the conditions of success include engaging people from inside and outside. "Every change depends on the efforts and commitment of one and more individuals. . . . Furthermore we have to keep our customers and end users in mind of what we do and helping them to be more productive and environmentally and socially responsible."

Nutreco divides the 2020 vision in four major areas: ingredients, operations, commitment and nutritional solutions. Each major area has four sub-divisions, summarized here:

**Ingredients sustainable sourcing:** The objective here is to build value sourcing through third party sustainable systems endorsed by vendor policies. The stimulus came from a pressure to reduce negative impacts over biodiversity, social and environment, coming from supplier activities. The actions will include round table initiatives, auditing, suppliers engagement activities, extending supply chain coordination, promoting demand for responsible ingredients, communicating to suppliers and measuring the results.

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* First published in *China Daily* (May 4, 2012).

**Ingredients sustainable partnerships:** This refers to increasing and strengthening sustainable partnerships and supply chain projects. One of the future challenges is the cooperation among businesses, governments, knowledge centers and NGOs to boost innovation, sustainability and cost reduction. Thus, companies will improve partnerships, classify supplier base, evaluate supplier classification and build sustainable supply chain projects.

**Ingredients flexible formulations:** This refers to building value via reducing dependency on scarce ingredients. This will be done by strategically analyzing long-term ingredient trends, researching for alternatives and developing scientific position papers.

**Operations reducing the environmental impact:** Value will be created by reducing by 50% carbon footprint in all operations till 2020. This will be achieved with an internal energy policy for factories, transport, waste and water management.

**Operations to improve feed to food quality and safety:** This refers to creating value, taking advantage of the growing worldwide demand for quality and safety, resulting in new policies and regulations. This will be done via specific Nutrace programs with standards and protocols (more information on the web of Nutreco).

**Operations to improve working environment:** This will be achieved by creating value via employee satisfaction and labor market position, building internal surveys and doing benchmarks worldwide to follow employee engagement.

**Nutritional solutions that are sustainable:** The aim is to create value till 2020 when sustainability will be fully integrated within the innovation process increasing the proportion of the portfolio having specific sustainability benefits. This will be done by quantifying sustainability, auditing and translating these benefits to marketing messages.

**Nutritional solutions via farm and feed performance:** This refers to creating value, enabling farmers to improve performance with predictive farm models and nutritional solutions that would improve production efficiency and reduce emission levels. This will be done by measuring availability, quality and usage of nutritional farm models, improvement of feed efficiency on the farms and reduction in emission levels.

**Nutritional solutions via animal and human health:** Value will be created by an effort to provide alternative technologies that would improve animal health and performance thus supporting customers needs to reduce antibiotic use.

**Commitment and employee engagement:** This refers to motivating employees to the challenge of feeding nine billion people in 2050, in a sustainable way. This value will be created using a system for internal engagement activities, integrating this as a central point for evaluation and reward systems.

**Commitment and stakeholder engagement:** This is achieved by creating value via strengthening the company's position in multi-stakeholder debates and initiatives around the sustainability challenges of the industry. There is an increasing level of cooperation and partnerships within the food chain and stakeholder organizing conferences, position papers, information flows, reputation surveys and other ways to engage.

**Commitment and community development:** Companies should create value enabling small farmers to raise productivity via knowledge sharing. This will be done by community development strategies, redefining expectations of local communities by continuing to refine this project with new strategies and criteria.

Nutreco's 2020 vision is an inspiring study to see how companies are moving to create and share value and improving sustainability toward the nine billion people planet.

## Discussion question

Which of these learnings about sustainable initiatives and vision to 2020 could be applied in your company based on this discussion?