

## CHAPTER 17

### SUSTAINABLE AGRO-FOOD CHAINS

*Challenges for research and development*

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**Abstract.** The current paradigm shift from supply-oriented and quantity-driven agriculture towards an understanding of demand- and market-driven food chains is leading to greater attention for quality aspects and environmental concerns. Rapid urbanization and increases in purchasing power cause important changes in dietary patterns that will restructure agriculture in the world. This affects the food chain in terms of the types of products that are produced and the kind of research that is required. For meeting global food demand, the volume of agricultural production will have to double through a process of sustainable intensification. Food safety has become a key factor in trade negotiations and bio-security is absolutely essential to all consumers in the world. Implementing quality standards begins with the selection of farmers' production methods. Knowledge institutions should face the challenge to design products and processes that meet food demands within developing countries while considering their specific ecological conditions.

**Keywords:** agricultural development; dietary patterns; bio-security; trade barriers; food safety standards

#### INTRODUCTION

It is obvious that we have not yet reached a full understanding of all aspects of international agro-food chains. In this brief final chapter, I cannot do full justice to the richness of the discussions of which this volume is a reflection. Therefore, I will only present here some of my thoughts and ideas, keeping in mind that my daily work is in FAO, one of the biggest international organizations dealing with agro-food issues.

#### SHIFTING PARADIGMS

We seem close to a paradigm shift in the way we look at agricultural and rural development. The conference that laid the foundation for this book would not have been possible five years ago. We are moving away from a view of agriculture and food that used to be highly supply-driven, quantity-driven and in fact mainly cereals-driven, towards a paradigm encompassing the entire food chain and *R. Ruben, M. Slingerland and H. Nijhoff (eds.), Agro-food chains and networks for development, 205-208.*

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including environmental concerns. This new paradigm is strongly demand-driven, market-driven in terms of involving many segments of the market. Hence, it is quality-driven and not just quantity-driven, and it relates to a very diversified and volatile type of market. In other words, our view of agriculture and food chains is diversifying and becoming more complex.

In twenty years from now, more than 60 percent or more of the world's population lives in cities. This rapid urbanization and the related income increase cause important changes in dietary patterns that will completely restructure agriculture in the world. We can expect a shift towards more fruit and vegetable consumption amongst the middle and upper middle classes, and more animal-protein consumption across all levels. The FAO/WHO report on diet, nutrition and chronic health indicates that changes in dietary patterns will be tremendous. The greatest increases in purchasing power will be felt in the group of 20 rapidly developing countries (Brazil, India, China, South Africa and others). Beyond large changes in dietary patterns we may expect attempt to match individual health and diet, leading to an increasing awareness of functional foods. That will affect the food chain in terms of the types of products that will be produced and the kind of research that is necessary.

#### AGRICULTURAL DRIVERS OF GROWTH

Seventy percent of the poor live in rural areas. For them agriculture will continue to be the main driving force for development. In many developing countries, the main basis of the economy is and remains to be agriculture. There are only two economic sectors that are likely to grow in these countries, particularly in sub-Saharan Africa, namely the energy sector and the agricultural sector. They provide most employment and will grow at the rhythm of population growth, even if nothing else changes and even if there is no export. We may see changes in these two sectors and they may become even more interconnected. Not only because agriculture can supply some bio-fuels, but also because plants are far more efficient producers of basic primary inputs for the chemical industry than the oil industry. We need to be aware of these changes now, because of the time lags of research and research investments. Overall, the volume of agricultural production will have to double to meet rising demands, irrespective of a quality shift in dietary patterns. That growth is in itself already an important challenge. All additional production has to come from the same natural-resource base we currently have available. The only real options for satisfying growing demand is through a process of sustainable intensification.

#### GLOBALIZATION, LIBERALIZATION AND SMALLHOLDERS

The core question regarding agro-food chain development is: how can small producers, small countries and – I would add – small companies benefit from this? The world does not only exist of a few large retailers. There are many small companies, both at the demand side and at the supply side. Innovation – particularly in Asia – takes place in small family-based companies that distribute seeds, produce

tools, process foods etc. The available room for smallholders depends on how they can benefit from liberalization and globalization. Although these terms are sometimes used as more or less interchangeably, they are not at all the same. Globalization is a process that can be loosely defined as an increased movement of people and goods around the world. One of the central problems in globalization is that we are moving germs, not just human germs but also many pathogens. That is the reason why food safety has become such an essential key factor nowadays in trade negotiations. I really would like to stress here that food safety – safety in the food chain – or what we more broadly at FAO define as bio-security, is not a luxury for rich consumers or rich countries. Bio-security is absolutely essential to all consumers in the world.

Liberalization has to do with prices and price support that affects the world market price. As far as I can see, in the next few years these price barriers will certainly go down and are bound to disappear. The latest developments in the Doha round suggest that this is only a matter of time. The potential effects are complex and may not immediately benefit the poor. For example, the liberalization of cotton prices is likely to benefit China, India and to a minor extent Egypt, but not one single African country. Therefore, liberalization of prices is no panacea. More importantly, the greatest barriers of trade are not between the developing countries and Europe or the US, but exist between developing countries themselves. There are major customs and trade barriers that actually prohibit interregional trade. In any case, a large share of the growth will come from south-south trade, south-south cooperation and south-south companies working together.

## STANDARDS

The use and application of standards in trade is currently a matter of much debate and confusion. There are different types of standards and various types of legal arrangements. First of all, we have the so-called *Codex Alimentarius* standards on food safety. In view of the globalization mentioned earlier the advantages of having universally uniform food standards for the protection of consumers are self-evident. The Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBT) both encourage the international harmonization of food standards. A product of the Uruguay Round of multinational trade negotiations, the SPS Agreement cites Codex standards, guidelines and recommendations as the preferred international measures for facilitating international trade in food. As such, Codex standards have become the benchmarks against which national food measures and regulations are evaluated as well as others that are formally recognized under the WTO.

However, concerns on food safety evolve faster than the standards adopted by Codex. Some 'standards' are set in a voluntary manner, either by the private sector, by countries, or by groups of consumers on ethical grounds. They may have similar effects on the market access of small farmers and business in developing countries. Although it has been suggested to develop special standards for developing

countries, the way to go is to invest in capacity building to enable developing countries and small farmers to participate in negotiations.

Food chains are very, very complex, involving many actors and many steps. When talking about partnerships, alliances have to be established in every single step. They start from base level, from individual farmers, all the way up to the international market and consumers. There is no such thing as linking the small farmer directly to the international market. Although the conference has said little about NGOs, they may also contribute in forging in these partnerships. Public resources and development-bank funds may be used as a guarantee to start this first stage of collaboration.

#### CHALLENGES AHEAD

What role can knowledge institutions like universities play in supporting sustainable agro-food chains and networks? First, I expect that the agro-food chain approach needs to be reflected in the curricula we teach and in the research we undertake. In fact, I believe that nobody should be able to graduate without a basic understanding of how agricultural and food markets work. Even students graduating in other areas should recognize the essential elements of how agricultural trade in the world is organized. In addition, we need more research on new products to respond to future demands for differentiation. The challenge is to design products and processes that meet these demands within the specific locations of developing countries and considering their specific ecological conditions.

Finally, I would like to stress the current and future importance of environmental issues. These are directly related to quality performance. Some remarks were made that quality is not an issue that small farmers can do something about, but that is not true. Take standards on maximum residue levels of pesticides: farmers' production methods make all the difference. Being aware of the environmental aspects in every single step of the chain, should be part of the way we think about rural development and development cooperation. Agro-food chains will become an ever more important part of our thinking: of negotiations, of our teaching and of our research.