PART TWO

TRANSNATIONAL CORPORATIONS, AGRICULTURAL PRODUCTION AND DEVELOPMENT

INTRODUCTION

For the greater part of humanity, primarily in developing countries, agriculture remains at the core of their existence: it provides sustenance, supports people's livelihoods and defines their traditions. Moreover, the bounty of agricultural production in many societies the world over, and throughout the ages, has created surplus value that has underpinned their material basis. This applies equally to urban civilizations founded in the past, the triangular trade of the colonial period which aided the industrialization of Europe and North America (Thomas, 1997), the more recent transformation of Taiwan Province of China from a tropical agricultural island to an electronics superpower (Lee, 1971; Wu, 1984), and the significant agriculture-based dynamism and diversification of Brazil's economy today (Brainard and Martinez-Diaz, 2009).

Given the fundamental importance of agriculture to most developing economies, its chronic neglect by many countries is of utmost concern. This has occurred because of a number of factors, including a "bias" by some countries against agriculture in favour of manufacturing (one which does not sufficiently recognize the interdependence of the two), and a lack of finance and other resources. To make matters worse, domestic and regional conflicts in many parts of the world have destroyed agricultural communities, resources and infrastructure. The *relative* neglect of agriculture is reflected in the numbers. For example, although the total agricultural gross capital formation (GCF) in developing countries tripled between 1980 and 2007, to $355 billion, agriculture's share in total GCF fell from 17% to less than 10% of the total over the same period. Similarly, official development assistance (ODA) in agriculture to developing countries, both in gross terms and as a share of total ODA, has been declining since its peak in 1990. A fall of investment in agriculture is not on its own an issue for concern, since this can signify both rising productivity in the sector itself and a growing economy that is diversifying into other industries and sectors. What is of concern is that the above-mentioned decline in investments is often the greatest in poorer countries – especially parts of Africa and in the least developed countries (LDCs) – which can ill-afford them.

The lack of investment in agriculture in particular regions and countries is one of the factors contributing to poverty and hunger, the reduction of which has been declared the first of the United Nations Millennium Development Goals (MDG-1).[1] In stark terms, 923 million people were undernourished in 2007. And on the basis of the global hunger index (GHI), 65 countries are in "serious", "alarming" or "extremely alarming" danger of food shortages, partly because of rising international food prices in recent years. Increasing investment in agriculture in developing countries is thus a priority, but it is likely to be hampered by the current financial and economic crisis. Efforts are being made to raise investment levels in agriculture, targeting specific developing countries, with the aim of halving world hunger by 2015. There is some scope for an increase in investment by governments, partly because of trade surpluses, and optimistic projections suggest that agriculture's share of ODA might soon return to 10%. However, for many countries this will still leave investment short of what is needed, which is why governments are looking to the domestic private sector and foreign investors to help meet the shortfall. It is essential for governments to tap into these additional sources of finance if, looking beyond MDG-1, they are to succeed in utilizing agriculture as an engine for growth.

A number of factors, which are not mutually exclusive, have resulted in a recent upswing in domestic private and foreign participation in agricultural industries in a significant number of developing countries. First, the rapid rates of growth in some of the more populous emerging countries such as Brazil, China, India and the Republic

of Korea have resulted in rising incomes, higher expenditures on foodstuffs (including a shift towards items such as meat, fish and milk products) and, in some cases, imports of some food items (or feedstock) from other developing countries. In turn these imports have created opportunities for investors from these and other countries to invest in agricultural industries in developing host countries. Secondly, biofuel initiatives around the world, which have received strong support from governments in Brazil, the United States and the European Union (EU), have resulted in a spate of investments in developing countries to grow sugarcane, grains (such as maize) and oilseeds (such as soya beans), as well as non-food crops such as jatropha. Thirdly, the rapid rise in food prices over the past few years (partly attributable to the above trends), with subsequent shortages in commodities such as rice and restrictions on exports of these products by some developing-country governments, has spawned "new investors" in agriculture. Many companies and governments in countries such as the Republic of Korea, Saudi Arabia and the United Arab Emirates are investing in agricultural production abroad. The underlying reasons behind their decision are the lack of arable land and insufficient water for safe and viable irrigation in their own countries. Finally, seizing on these trends, a number of purely speculative investors also appear to have emerged on the scene.

The renewal of interest by TNCs' and foreign governments in the agricultural industries of developing *host* countries represents an opportunity to raise the level of investment in this critical sector even further. At the same time, there is evidence that developing host countries are reviewing their policy frameworks and legislation to encourage and permit foreign participation in their agricultural sectors. This stance represents a significant change for many governments, which earlier had considered agriculture to be sacrosanct and open only to domestic interests. Of course, there are attendant risks to entry by TNCs into developing-country agriculture. These risks include, the possible disruption of traditional farming and loss of livelihood for subsistence farmers or other disadvantaged groups, such as indigenous peoples; the concentration of the industry into fewer hands, with the danger of market power being exercised against farmers and consumers; potential environmental degradation, for instance arising from the introduction of water-hungry "industrial" methods in agriculture; and the wider dangers of dependence on foreign investors, including concerns about "land grabbing" leading to neo-colonial relations between countries producing and consuming agricultural produce. On the other hand, encouraging and utilizing TNC participation (among other sources of investment), in their agriculture, if properly managed in the context of national goals, can support the development of the industry, further its essential role for poor-pro growth in rural communities, and, in the longer run, support the sector's potential as a motor for modernization and diversification of the economy.

Given these developments, it is an opportune time to examine the role of TNCs in the agricultural sector and its implications for development, hence the focus of the *World Investment Report 2009* (*WIR09*). The *Report* focuses on TNCs' involvement in and influence on *agricultural production* in host countries, including direct and indirect impacts on development. Many types of TNCs might invest or participate in agricultural production, including agriculture-based TNCs, manufacturers, retailers and commodity traders. They can do this by establishing a farm (FDI), by contract farming, or some other form. *WIR09* only examines TNC activity in agriculture *to the extent that this activity directly involves or influences agricultural production*. Thus, for instance, traders such as Cargill are discussed *only* if they influence the quality of agricultural production by introducing or reinforcing quality standards. Similarly, international supermarkets per se are *not* a focus of *WIR09*, but any farming of produce they contract with local interests in developing countries *is* relevant to the *report*.

Part two of *WIR09* consists of three chapters. Chapter III analyses the role and evolution of TNC participation in agricultural production in developing countries. It first provides a snapshot of agriculture in the developing world, followed by a conceptual framework for analysing and explaining existing and emerging trends and patterns in FDI and other forms of TNC participation in the industry. Particular attention is given to TNC drivers, motives and strategies inasmuch as these have a bearing on the impact of companies' participation on host economies and constitute a major concern for policymakers. Chapter IV discusses the development impacts and implications of TNC involvement in agricultural production, taking a case-orientated approach to examining issues where possible. Finally, chapter V charts recent policy developments and considers the implications of the findings of chapter IV for national and international policies pertaining to FDI and TNC participation in agriculture. The policy discussion focuses on a number of key concerns for both host and home developing countries, including issues of sustainable development and food security.

Note

[1] The MDG-1 target is to halve the number of people going hungry by 2015 (and living in poverty).

CHAPTER III

TNCs AND AGRICULTURAL PRODUCTION IN DEVELOPING COUNTRIES

A. Introduction

Agriculture is of fundamental importance to developing countries, both for meeting their growing requirements for food and for providing a basis for industrial development, diversification and growth. In some countries, increased investment and technological advances have transformed agriculture, raising productivity and output to meet food requirements as well as laying the foundations for rapid economic growth. In other countries, however, especially in Africa and parts of Asia, agricultural potential is not being fully exploited, with resultant shortfalls in food supply and constraints on economic development. Greater investment in agriculture is thus a priority for development, and one that has received growing attention during the recent food crisis.

Insufficient investment and declining official development assistance (ODA) in agriculture has prompted governments to look increasingly to the private sector – domestic and foreign – for significant new investment. This is reflected in the liberalization of policies related to agriculture and land ownership by host and home countries (discussed in chapter V). In fact, in the past foreign direct investment (FDI) has played an important role in agriculture, with TNC activity in agricultural production particularly strong in some export-oriented commodities. However, after the Second World War, there was a long-running decline in FDI flows to agriculture in developing host countries. This trend has been reversed in recent years for a variety of reasons, but some forms of foreign participation – not least the so-called "land grabs" by investors – are causing concern by some quarters in the development community.

There are no recent systematic studies of TNC participation in agricultural production in developing countries, which, along with the increasing interest in private investment mentioned above, is why it is the focus of this year's *World Investment Report*. Agricultural production consists of subsistence and commercial farming of crops and livestock (box III.1). Within this broader definition, this report concentrates primarily on crops grown for food, although production for other purposes (e.g. the production of biofuels)[1] is also discussed, where appropriate. The analysis of developments in foreign participation includes an examination of different aspects of involvement, for instance, by commodity value chains (e.g. coffee or soya beans) or types of TNCs (e.g. plantation TNCs or international supermarket chains), but only to the extent that this has a bearing on agricultural production. Thus, rather than examining, for example, the supermarket industry, it is concerned with how TNCs in that industry participate in or affect developing-country agricultural production (e.g. by establishing farms themselves or by implementing and reinforcing standards and procedures which affect the production methods of local farmers).

The analysis in this and other chapters relies not only on UNCTAD's databases on FDI and TNCs, recent research by international organizations and others, and surveys conducted for this report, but also on dedicated commodity, country and other case studies prepared to provide deeper insight into specific issues. Case studies were prepared on the following commodities: bananas, coffee, floriculture, rice, soya beans and sugarcane (including an assessment of the industries in which each of these products fall).

Box III.1. Definitions related to agriculture and agribusiness

In this report, *agriculture* refers to the production of food and non-food items through farming or animal husbandry. It encompasses both the rearing of livestock and the growing of crops, such as cereals, arboriculture, viniculture, seed growing, industrial crops, tea, coffee and cocoa production and horticulture (agricultural production), as well as agricultural animal husbandry and horticultural *services* such as harvesting, animal shearing, pest control, the picking and packing of fruits and vegetables, and the operation of irrigation systems (agricultural services). Agriculture excludes hunting, forestry and fisheries. However, in many national statistical sources, it is difficult to separate data on agriculture from those on hunting, forestry and fisheries.

Agribusiness refers to commercial agriculture, usually farms specializing in non-subsistence food and non-food production, and related businesses that are directly involved (upstream or downstream) in the value chain of agricultural products, "ranging across production, post-harvest handling, processing, transportation, marketing, distribution and other agro-based commercial activities" (OECD, 2008c: 72). *Agri-food* is a subset of agribusiness and refers to industries involved in the production, processing and inspection of solely food products made from agricultural commodities. It includes both the production of food items in agriculture, and their processing by the food and beverages industry. The *value chain* in agribusiness comprises the suppliers of inputs (such as seeds, chemicals and machinery), farmers and other agricultural producers and service providers, processors of agricultural goods (such as manufacturers of foods and beverages), trading companies dealing with agricultural commodities, and retailers (such as supermarket chains).

This report focuses on TNCs' involvement in agricultural production in host developing countries, sometimes truncated to "TNCs in agricultural production"[a] for ease of presentation. TNCs can be involved in farming or other types of agricultural production through both equity and non-equity forms of participation, by either the parent company or a local affiliate. TNCs' core activities may focus on any point in the value chain for agricultural products, but they are relevant for this report *only* if they are directly involved in agricultural production or services (e.g. supermarkets in developed countries for which contract farmers in developing countries produce fruits and vegetables). It is possible for TNCs and investors not in agribusiness to invest in agricultural production or services. Indeed, this may be a rising phenomenon, as evidenced by recent investments in agriculture by private equity investors and sovereign wealth funds. For ease of narrative flow, these investors are normally included in this report under "TNCs in agricultural production".

Source: UNCTAD.

[a] "TNCs in agricultural production", which can derive from any part of the value chain and participate in agriculture *to a degree*, are to be distinguished from "agricultural (or agriculture-based) TNCs", such as plantation companies, which are *purely* or primarily involved in agriculture. The latter are, however, a subset of the former.

This chapter provides an overview of key aspects of agriculture in developing countries. It examines trends and patterns of participation in agriculture by TNCs and other foreign investors, the main TNC players in various areas of agricultural production and related activities, and the factors and driving forces behind TNC activity in the industry. Section B examines the characteristics of, and current trends and developments in, agriculture in developing countries, with a particular focus on investment objectives to meet the United Nations' Millennium Development Goals (MDGs) and other development targets. It also examines the recent food crisis and other salient factors affecting investment in agriculture. Section C provides a brief historical account of and a conceptual framework to explain and understand TNC participation in agricultural production, synthesizing the eclectic (ownership-location-internalization (OLI)) paradigm with the global value chain approach. Section D analyses the patterns and forms of TNC participation in agriculture in developing countries, focusing on the key modalities utilized by TNCs, especially FDI and contract farming. Section E presents a picture of major TNCs in agricultural production (such as those running farms or plantations), as well as those in related industries, such as food processing and distribution, since the latter are also involved in agriculture in many developing countries. The section includes an examination of the evolution of the relevant TNCs over time, including the emergence of new players such as sovereign wealth funds. Section F concludes with the key issues that are discussed further in subsequent chapters.

B. Agriculture in developing countries: characteristics, significance and salient issues

1. Characteristics of agricultural production

a. A diverse industry

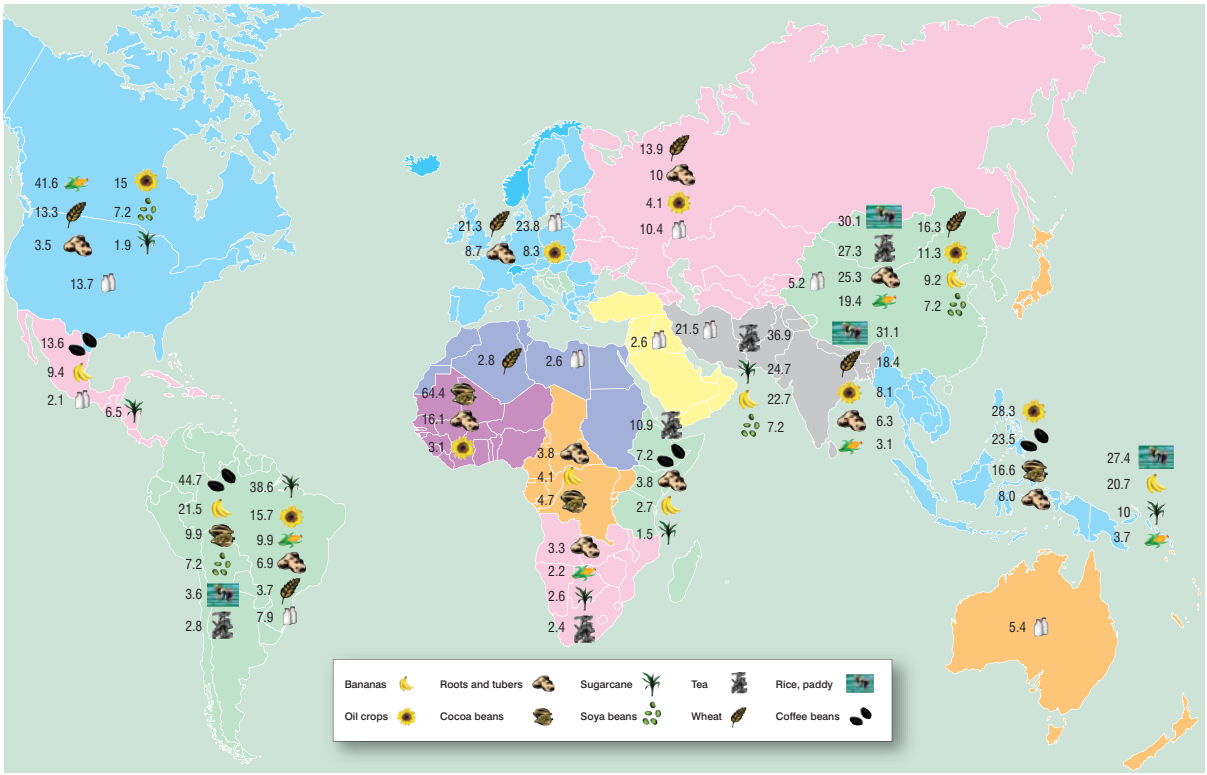
Agricultural production is a very special social and economic activity. It is central as a provider of food, a channel to eradicate poverty and hunger, a

significant agent for mass and rural employment, a major contributor to national economic growth and a considerable foreign exchange earner for many developing countries. Agriculture is also a sensitive and strategic industry, and, for this reason, foreign participation in agricultural production may be restricted in some countries (chapter V). Agriculture has features distinct from the manufacturing and services sectors in terms of its importance to an economy, food security and a number of social considerations. The characteristics examined in this section include country and regional differences in agricultural production, the types of crops farmed, and key producers and companies that participate at various stages of the agricultural value chain.

Because of differing soil, water and climatic conditions, not every region can produce all types of agricultural commodities and in sufficient quantities, either for local consumption or for export. Moreover, the production of some agricultural commodities is heavily concentrated in some geographical areas, and less so in others. For example, among staple crops, rice is grown mainly in Asia, while wheat is grown in many different regions, notably in Europe, Asia, North America and the Commonwealth of Independent States (CIS) (figure III.1). Overall, Asia accounts for more than 40% of the world production of bananas (including plantains), oil crops, roots and tubers, and sugarcane. The African continent on the other hand, particularly West Africa, contributes to nearly 70% of world cocoa production, in addition to considerable farming of roots and tubers, which are a major staple food for the region. The Latin American region is a major producer of coffee, soya beans and sugarcane. Within each region, the production of specific agricultural crops is concentrated in a few key countries. Brazil and Argentina are the two biggest producers of soya beans in Latin America (and among developing countries). The largest producers of sugarcane are Brazil in Latin America, and China and India in Asia. These differences are partly shaped by the geographic diversity inherent in agriculture, partly by historical trends and partly by policy differences (chapter V).

Within agriculture, crops can be categorized as food and non-food commodities, and both can be domestically consumed or exported. Non-food agricultural crops include, for example, cotton, linen and jute, which can be used for purposes such as garments and building materials. Food crops can also be cultivated and used for non-food purposes, such as the use of sugarcane, soya beans and maize as feedstock for biofuels (FAO, 2008c) – an aspect which deserves special attention because of the potential implications for food production in the context of a global economy in which people go hungry in large

Figure III.1. Share of subregions in world production of selected agricultural commodities, average for 2002–2007
(Per cent)



Source: UNCTAD, based on FAOStat data.

segments of the world (chapter IV). Similarly, food crops such as soya beans are also used as animal feed, which has raised concerns in the light of the recent food crisis.

Agriculture is a diverse industry as indicated by the vast number of crops grown globally, with their geographic distribution reflecting not only climatic conditions, as mentioned above but tastes, demand patterns, trade and socio-cultural aspects (table III.1). For instance, staple food crops such as rice are produced and consumed in large quantities in Asia. Although rice is also produced in Africa, until recently it was only farmed in small quantities as it is not a traditional food in the region. Similarly, commodities such as bananas, soya beans, coffee, sugarcane and cut flowers have distinctive features in terms of their consumption patterns, geographical concentration in production, key players involved and the extent to which TNCs participate in their supply chains.

The growth of agriculture has been uneven across developing regions and countries, reflecting different endowments and underlying conditions, development policies, technological progress and the consequent evolution of agricultural production over time. The World Bank (2007) categorizes countries into three groups, based on agricultural development, poverty reduction and growth indicators, with an implied evolution of countries from "agriculture-based" to "urbanized" over time. However, agriculture, in addition to manufacturing and services, remains highly important to the economies of some developed countries such as Australia, Denmark, France and the Netherlands. The same applies to some relatively higher-income developing countries such as Argentina, Brazil, Malaysia and Thailand. For many other developing countries, such as Benin, Cambodia, Ethiopia, Fiji, Ghana, Nicaragua, Paraguay, Uganda and the United Republic of Tanzania, although agriculture is important to their economies, its full potential for supporting modernization and development has not yet been realized (annex table A.III.1).

The diversity of agriculture can also be seen from the varied players participating in its value or supply chain (section C). The different *types of producers* range from local subsistence farmers to individual farmers and private firms (local and foreign), producing crops on a commercial basis (table III.2). While many developing countries now promote domestic private and foreign participation in agriculture in general, some, especially in Asia and Latin America, restrict foreign investment in the production of food crops (chapter V), such as rice in a number of Asian countries. On the other hand, many countries in Africa actively encourage foreign private sector participation, even in staple food crops, in order to increase agricultural output and foreign exchange earnings. Such policy differences partly explain why TNCs play a more prominent role in certain agricultural commodity groups (e.g. food crops) in some regions and countries than in others, and why some types of TNCs play a more significant role in agricultural production than others (sections C and E; chapter IV).

Agricultural value chains can be long, and at each stage of the chain many different players (local and foreign) are involved (section C; figure III.3). Each player contributes specific functions and adds value to the chain. This could range from being an input supplier to farmers, engaging in harvesting operations, transportation, processing, marketing and retailing. For instance, in cut flowers, many local farmers and companies, including foreign-owned businesses, are involved in different parts of the value chain, working closely together to produce and deliver cut flowers from farms to markets.

Table III.1. Categories of agricultural commodities from developing countries

Categories	Examples	Consumption/ export patterns/other issues
Staple food crops (limited trade)	Rice, wheat, tapioca and maize.	Except in the case of some surplus countries, *staple crops* are produced mainly to meet domestic consumption. Examples: rice in Asia, tapioca and maize in Africa and wheat in Latin America. Though a staple crop in much of East Asia, soya beans increasingly also fall into the other two categories in this table.
Food export commodities	Coffee, tea, cocoa, spices, bananas (excluding plantains), horticultural produce (vegetables and other fruit)	Largely produced for export and relatively small amounts consumed locally. These commodities are grown as *cash crops* for earning export revenues. Colonial ties have an important influence on the production of some of these commodities. Suitable climatic conditions and availability of farm workers favour production in some developing countries, such as Brazil, Colombia and Viet Nam for coffee; Indonesia for spices; China, Kenya and Sri Lanka for tea; and Côte d'Ivoire and Ghana for cocoa.
Non-food (export) commodities	Rubber, cotton, cut flowers and biofuel crops (e.g. palm oil, soya beans and maize).	These are non-food export commodities or *cash crops* farmed in countries with climatic advantages. Examples: Malaysia and Indonesia for rubber and palm oil. Colonial plantations sometimes played a role in their earlier development, but later, because of scarcity of land and labour shortages, production shifted to new countries such as Thailand and Viet Nam in the case of rubber plantations. Some food crops – especially sugarcane, soya beans and maize (which is generally not traded) – are increasingly being used as biofuels feedstock. Planting of GM crops, such as types of cotton or soya beans, is also a significant feature of commodities grown for non-food purposes.

Source: UNCTAD.

Table III.2. Agricultural producers, farmers and firms in developing countries

Types	Examples	Characteristics
Self-sufficient and semi-commercial farmers	Individual farmers, mostly living in rural areas.	Self-sufficient farmers in rural areas operating on a subsistence farming basis. They grow crops on small plots of land to feed themselves and their families. Any produce that is left may then be sold in local markets. Semi-commercial farmers are involved in agricultural production to meet their consumption needs, but a part of the farming activities is undertaken for commercial purposes – selling their produce to small traders, cooperatives or on a contract farming basis.
Other domestic private sector enterprises and cooperatives	Domestic commercial farmers individual or corporate.	Entrepreneur farmers or local firms producing agricultural commodities (both food and non-food crops) for commercial purposes and on larger tracts of land. Their agricultural production is either sold in local markets or exported abroad, mainly through an export agent or wholesaler. Some may operate as contract farms to produce specific commodities and qualities, such as horticulture produce for a group of customers, or for a single large buyer such as a local or overseas supermarket group.
State-owned enterprises (SOEs)	Agricultural SOEs.	Agricultural public companies or SOEs established by governments to support production and marketing of certain commodities. Some SOEs also undertake to produce or act as large buyers of agricultural produce such as rice, soya beans or cocoa.
Foreign firms	Largely TNCs from developed countries and increasingly from developing countries (for examples, see section E).	Farms on large agricultural land mainly to export agricultural commodities. Some production could be for local markets but in proportionately smaller amounts than for export. Agricultural production by TNCs covers both food and non-food crops. TNCs also involve local farmers to produce crops for them on a contract farming basis.

Source: UNCTAD.

b. Agricultural inputs, technology and institutions

(i) Land, water and other inputs

Agriculture is highly dependent on natural resource endowment such as the availability of arable land, fertile soil, climatic conditions and water. These endowments and climatic conditions differ significantly across the world, with implications for the pattern of global agricultural production, investment and trade. Arid and water-scarce countries face a big challenge to produce food crops for their own consumption. Land issues, such as uncertainty of land rights and ownership and land and civil disputes, have also limited the rate of growth of agricultural production in some developing countries. Of all industries, farming is the biggest user of water resources (*WIR08)*. Apart from land and water, other important agricultural inputs include seeds, chemicals, fertilizers, machinery and tools. In some of these agricultural inputs, TNCs play an important role as producers and suppliers, including through participation in agricultural production.

Because of disparities in agricultural endowments some economies have become large net importers of food, [2] while others with food surpluses are net food exporters. However, there is a third group of countries that possess arable land and water, but are unable to become self-sufficient in agriculture/food production or enter export markets partly because of their underutilization of arable land and low productivity. This third group of countries requires investment, technology and a better use of arable land. This is where increased investment by private and foreign investors can play a role, alongside the public sector. However, the role of foreign investors can be contentious because of the economic and social importance of agriculture to developing countries, and concerns over land lease or ownership and food security. The degree and nature of contention varies, for example between regions, countries and types of commodities and depending on whether farming is done on new or existing farm lands; and what the crops are used for (e.g. biofuel as opposed to food). Some African countries have policies that encourage private and foreign participation in agricultural production, ostensibly because they possess large tracts of arable land which are undercultivated, and sometimes in relatively underpopulated areas (chapter V).

(ii) Technology and R&D

Technological improvements and research and development (R&D) play an important role in increasing agricultural productivity.[3] They were a key factor in the Green Revolution for instance in Asia, which significantly increased the yields of major food grains in some countries in the 1960s and 1970s (David and Otsuka, 1994; USDA, 2003), although the Green Revolution itself had negative side effects, too, especially on the environment (George, 1976; Tudge, 1977). More recently, in Sub-Saharan

Africa, agricultural research has contributed greatly to productivity growth and poverty reduction. It has been estimated that doubling agricultural research expenditures per hectare in Africa can increase agricultural productivity by about 38% (Alene and Coulibaly, 2009).

In general, there are two major aspects to investment in research: fundamental and development research, with the former primarily undertaken by the public sector (*WIR05*; Beintema and Stads, 2008). A considerable amount of R&D, including in agriculture, and especially that with a commercial interest, is undertaken by the private sector (World Bank, 2007). Developed countries invest considerably more in agricultural R&D than developing countries; indeed, in the latter countries, investment has stagnated over time, or even declined. Within developing regions, there are large differences in agricultural R&D spending, with relatively more public spending in South and South-East Asia. On average, Asia spends five times more than Africa in agricultural R&D per hectare (Alene and Coulibaly, 2009). Despite its critical role, there is an underinvestment in R&D in agricultural farming and food production in developing countries, as compared to its potential and need; von Braun, 2008; Beintema and Stads, 2008).

Agricultural technological development and basic R&D have gone beyond "just" raising crop yields. They now encompass the application of biotechnologies, improvements in agricultural resource management (including land use and water conservation), reductions in the use of pesticides and fertilizers (FAO, 2003a; World Bank, 2007) and support measures for sustainable farming. A well-known example of the application of biotechnology to agricultural production is the introduction of GM crops, which are disease resistant and give a higher yield. This has revolutionized agricultural farming. The planting of GM crops has increased in some developing countries,[4] but it is largely confined to certain crops (e.g. soya beans, maize and cotton) and is concentrated in a relatively small group of countries (e.g. Argentina and Brazil) (World Bank, 2007; James, 2008). While the benefits of GM crops have been recognized by some, their use is controversial. It raises particular concerns about food safety and risks to health (chapter IV), which is partly why GM crops have been largely restricted to animal feeds and non-food commodities such as cotton.[5]

(iii) Institutional support

Institutional support is important for agricultural development. Agricultural institutions such as R&D centres and cooperatives play a crucial role in agricultural extension, development of new seed varieties and in national agricultural planning and productivity. The government can contribute to such support by providing agriculture-related infrastructure facilities, such as irrigation and building rural roads and those linking farms to markets, along with their maintenance. Increasing productive capacities of farmers, such as through technical training and better water management, are other important aspects of public sector institutional support. However, the extent to which institutions contribute to agricultural production varies by country and by type of institution. Budgetary constraints in poor countries limit their capacity to establish relevant and adequate institutions in support of agricultural development. Therefore it is essential to increase public budgets and ODA in support of agricultural institutional development to enhance agricultural productivity and food production in developing countries, the distribution of food to consumers and the transformation of rural economies (Haggblade, Hazell and Reardon, 2009; FAO, 2004a; FARA, 2006; OECD, 2006).

c. Environment and biodiversity

An important characteristic of agriculture is its close association with the environment. Agricultural farming can be a major contributor to environmental degradation through pollution, greenhouse gas (GHG) emissions, deforestation and soil degradation. Extensive use of chemicals and pesticides has polluted rivers, lakes and other water resources and has had detrimental effects on the health of farm workers (Food and Water Watch, 2008; Loukes, 2008; ETI, 2008; Wee and Arnold, 2009). The conversion of forest into new farmland increases deforestation and has a significant impact on biodiversity, in particular the destruction of wildlife and its habitats (Tan et al., 2009; Koh and Wilcove, 2007). Intensive farming can deplete water resources (thus increasing water scarcity) and contribute to soil erosion, which damages the prospects of future food production for a growing population. Agriculture also contributes to climate change, as it is the second largest source of GHG emissions – after energy – globally, accounting for 15% of global emissions[6] (World Bank, 2007). The clearing of forests for agriculture, field burning and the associated haze problem are further factors contributing to environmental degradation and climate change. Climate change and climate variability affect agricultural production because of increasing unpredictability of weather patterns and changes in temperature.

These agriculture-related environmental concerns are already influencing how local farmers and TNCs operate in agricultural production by adopting more sustainable and environment-friendly farming techniques, such as hydroponic farming in floriculture, better water management, utilization of renewable energy sources (e.g. geothermal) in farms and technologies and practices that use fewer

pesticides and chemicals, as in integrated pest management (chapter IV). Recycling of waste water for irrigation and crop waste as a source of nitrogen are further examples of sustainable farming and making agricultural systems more environmentally sustainable (World Bank, 2007).

2. The significance of agriculture in developing countries

a. General importance

Agriculture is vital for material well-being and the alleviation of poverty and hunger in the vast majority of countries. Technological transformation and growth in agriculture have provided the impetus for rapid industrialization and overall economic growth in the developed countries as well as several developing countries. That process has been accompanied by structural changes in economies, with an increased share of manufacturing and services in GDP and a much decreased share of agriculture. For instance, during 2003–2007, the share of value added of agriculture in GDP averaged 3% globally: less than 2% in developed countries, more than 10% in developing countries and about 7% in the transition economies of South-East Europe and CIS (table III.3). There are considerable regional differences: for example, between 2003 and 2007, agriculture contributed to about one third of GDP in West and East Africa, a marked contrast to Latin America and the Caribbean where it contributed to less than 6% of GDP. In addition, while agriculture remains a mainstay in many developing countries, over time its contribution to GDP has declined in all regions in part because of underinvestment in, and neglect of, the industry in favour of manufacturing (section B.3 below; FARA, 2006; DESA, 2009).

Agriculture is a major contributor to exports in many developing countries, and especially LDCs. For some developing countries, especially LDCs, it accounted for more than 60% of total merchandise exports in 2002–2006.[7] Particular regions and countries dominate in the export of specific commodities, reflecting their locational advantages, historical and colonial influences, policy encouragement and agribusiness development over time. For instance, during 2002–2006, more than 50% of world exports of tea came from Asia, some 68% of world cocoa bean exports were associated with four countries in Africa (Cameroon, Côte d'Ivoire, Ghana and Nigeria), nearly 50% of world banana exports originated from five countries in Latin America (Colombia, Costa Rica, Ecuador, Guatemala and Honduras), about 60% of the world's coffee exports came from Latin America, and developed countries

Table III.3. Regional differences in significance of agriculture, 2002–2007

(Percentage)

Region	Share of agricultural exports in total merchandise exports[a]	Share of agricultural employment in total employment[b]	Share of value added of agriculture in GDP[c]	Share of rural population in total population[d]	Share of agricultural population in total population[a]
	2002–2006	2002–2006	2003–2007	2003–2007	2002–2006
World	**6.5**	**30.8**[e]	**3.0**	**51.1**	**40.5**
Developed economies	6.9	4.4	1.6	24.7	4.0
Developing economies	5.9	40.0	10.2	57.3	49.1
Africa	8.0	51.2	16.5	62.1	52.2
North Africa	3.7	32.2	13.5	49.9	35.1
West Africa	13.1	53.6	33.1	58.3	44.9
Central Africa	4.5	..	20.7	66.0	60.8
East Africa	38.0	74.6	32.7	79.7	76.5
Southern Africa	7.3	21.7	5.3	55.5	44.7
Latin America and the Caribbean	18.9	17.3	5.9	22.6	18.7
South America	22.3	17.1	6.9	18.3	16.0
Central America	13.0	17.7	4.6	29.9	24.1
Caribbean	11.5	17.0	3.3	36.5	24.1
Asia and Oceania	3.6	42.9	10.8	61.4	52.9
West Asia	2.7	24.3	5.9	35.5	22.1
East Asia	1.8	42.8	9.8	57.5	61.6
South Asia	7.8	46.1	17.6	69.6	50.9
South-East Asia	7.1	44.3	11.8	55.9	46.9
Oceania	13.4	70.6	13.1	76.8	63.5
South-East Europe and the CIS	4.5	17.5	6.9	36.8	14.2
South-East Europe	13.4	25.8	10.7	47.8	15.3
CIS	3.9	17.0	6.6	36.0	14.1

Source: UNCTAD, based on data from FAO, ILO and World Bank (as specified in the notes below).

[a] Data based on FAOstat, average of available data for the period shown. Last accessed 24 April 2009.
[b] Data based on ILO data (LABORSTA database), average of available data for the period shown. Available data covers 130 out of 243 countries. Last accessed 24 April 2009.
[c] Data based on United Nations Statistics Division (UNSD), average of available data for the period shown. Last accessed 24 April 2009.
[d] Data based on World Bank, World Development Indicators, average of available data for the period shown. Last accessed 24 April 2009.
[e] Based on data for 130 out of 243 economies. Data for China are included but not for India.

(e.g. Australia, Canada, France, Germany, the United Kingdom and the United States) dominated in the export of wheat (annex table A.III.2).

Agriculture also provides significant employment opportunities in developing countries and is a crucial source of livelihood for the rural poor, in particular women (chapter IV; OECD, 2006). In 19 developing countries, agriculture accounted for more than 40% of total employment during 2002–2006.[8] More than 60% of the population in Africa and Asia live in rural areas, and most of them are employed in agriculture (table III.3). While agriculture accounts for more than half of employment in Africa, wide variations exist within the region.[9] Similarly, large variations exist in Asia where employment in agriculture accounted for over 40% of total employment in South, East and South-East Asia but less than 25% in West Asia during 2002–2006. Effective agricultural growth could therefore contribute to employment creation and reduce poverty in developing countries, in line with MDG-1.[10] Indeed, in poor countries, under the right conditions, agriculture is at least twice as effective in reducing poverty as compared to GDP growth originating outside agriculture (World Bank, 2007: 6).

b. Agriculture as a neglected motor for development

Despite the importance of agriculture as a motor of development, it has been neglected in many developing countries (FAO, 2008d; HLTF, 2008). Investment in agriculture, measured as a proportion of gross capital formation (GCF),[11] has been declining in both developed and developing countries over the past few decades, although the absolute level of investment has been increasing (table III.4). In 2007, agriculture's share in GCF in developing countries was 9.3%, with significant variations across regions.[12] Much of this relative decline has been due to underinvestment by the domestic public sector, as well as the low level of private investment. It has also been due to the falling share of agriculture in total ODA, from a high of 13% in 1985 to less than 4% between 2002 and 2007 (figure III.2; UNCTAD, 2008g).

Agriculture's relative economic importance in developing countries has fallen significantly since the 1970s, as many developing and transition economies have shifted or attempted to shift their economies towards manufacturing and services (United Nations, 2006: 32). However, there is a significant difference between those countries where the low/declining importance of agriculture is due to their passing through a process of agricultural transformation and transition or diversification, and those where it is the result of neglect, underinvestment and consequent low productivity in agriculture. Low agricultural commodity prices over a prolonged period of time in the past have also affected developing-country agricultural exports and terms of trade, resulting in stagnant or low rates of growth and investment capacity in commodity-export countries. In some countries, national policies favouring rapid industrialization, urbanization and other industrial activities over the

Table III.4. Estimated gross capital formation in agriculture,[a] 1980–2007
(Millions of dollars and percentage share in total)

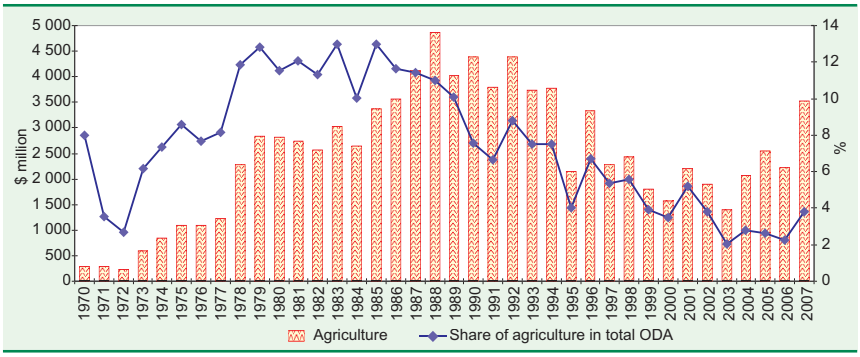
Region	Value ($ million)						Share in total gross capital formation (%)					
	1980	1990	1995	2000	2005	2007	1980	1990	1995	2000	2005	2007
World	215 585.6	272 894.8	279 923.8	255 830.7	386 403.3	525 413.0	7.5	5.5	4.4	3.7	4.0	4.4
Developed economies	77 677.0	112 885.7	112 177.9	97 233.8	122 049.5	145 681.1	3.9	2.9	2.3	1.9	1.8	1.9
Developing economies	104 336.1	115 161.8	155 359.5	150 929.7	248 042.7	354 478.2	16.8	14.0	11.5	9.8	9.2	9.3
Africa	20 117.1	15 870.5	14 004.9	14 317.8	22 336.6	34 617.8	18.5	17.3	14.2	14.1	12.9	13.9
North Africa	4 757.1	6 115.4	5 375.6	5 836.2	7 525.8	11 754.8	12.1	15.1	11.7	11.8	10.3	11.6
West Africa	10 119.6	3 317.9	2 711.5	2 697.2	5 732.2	10 157.4	30.2	31.8	31.5	27.6	30.6	31.5
Central Africa	1 260.3	1 458.0	1 177.8	1 058.1	1 899.6	2 589.3	22.0	24.6	25.7	20.5	16.4	15.7
East Africa	1 751.2	2 796.1	2 512.9	3 030.8	4 654.8	6 630.7	37.3	40.7	36.2	34.4	33.1	32.0
Southern Africa	2 228.9	2 183.1	2 227.3	1 695.5	2 524.2	3 485.6	8.7	7.8	6.9	5.9	4.6	4.5
Latin America and the Caribbean	16 573.1	21 636.0	23 386.3	21 530.4	28 145.2	44 837.9	8.5	9.6	6.9	5.5	5.8	6.2
South America	10 600.1	15 683.6	18 669.2	13 771.3	19 390.0	33 620.3	8.4	10.1	7.0	6.1	6.7	7.1
Central America	4 850.0	4 432.5	3 839.7	6 663.3	7 620.6	9 767.7	8.9	8.5	6.8	4.8	4.6	4.6
Caribbean	1 122.9	1 520.0	877.5	1 095.7	1 134.6	1 449.9	8.8	7.8	4.6	3.8	3.3	3.4
Asia	67 272.5	77 235.1	117 414.2	114 662.8	197 028.2	274 435.0	21.2	15.3	13.0	11.0	9.8	9.7
West Asia	4 332.2	8 903.2	10 408.8	10 075.9	12 414.4	19 378.2	6.3	11.6	10.3	8.5	5.8	5.8
South, East and South-East Asia	62 940.3	68 331.9	107 005.3	104 586.9	184 613.7	255 056.8	25.2	16.0	13.3	11.4	10.2	10.2
Oceania	373.4	420.1	554.1	418.8	532.7	587.5	20.1	15.4	16.3	14.7	10.8	10.1
South-East Europe and the CIS	33 572.5	44 847.3	12 386.4	7 667.1	16 311.2	25 253.7	11.4	19.0	10.5	10.6	7.4	6.2
South-East Europe	3 109.4	2 038.8	1 478.3	1 269.1	2 556.9	3 517.3	13.6	17.2	18.8	14.9	10.5	10.3
CIS	30 463.1	42 808.5	10 908.1	6 398.0	13 754.3	21 736.3	11.2	19.1	9.9	10.0	7.1	5.8

Source: UNCTAD, based on data provided by the United Nations Statistical Office.

[a] Agriculture, hunting, forestry and fishing.

Note: Gross capital formation (GCF) data were available for 10 to 30 countries only, which account for 13%–18% of total GCF. For other countries, the share of agriculture, hunting, forestry and fishing in value added was applied to total GCF to estimate GCF in agriculture.

Figure III.2. ODA in agriculture: value and share in total ODA, 1970–2007



Source: UNCTAD, based on OECD, OECD.Stat Extracts (accessed on 6 May 2009).
Note: Data from 1970 to 1994 include forestry and fishing, which account for roughly one quarter of total agriculture, forestry and fishing.

rural economy have further contributed to lower agricultural growth and development (annex table A.III.1; United Nations, 2006).

Although the opportunity exists for agriculture to act as an important motor for development in many developing countries (see box III.2 for the case of Ethiopia), more needs to be done to realize this promise. Trends towards lower relative investment in agriculture need to be reversed. In this regard, public investment, ODA, private and foreign investment can all play a role.

3. Salient issues influencing investment in agriculture

The re-emergence of agriculture as a priority at the national and international levels, by both the public and private sectors, is interlinked with a number of emerging issues, including those arising from the food crisis of 2008, the MDG targets and the rise of biofuel production. For example, commitment to meet the MDG-1 target has encouraged countries to step up or promote agricultural investment, including by the domestic private sector and TNCs.

a. The food crisis and the drive for food security

The food crisis of 2008 brought to the fore the need to seriously address the issue of future food insecurity in developing countries (FAO, 2008b and 2008d; UNCTAD, 2009l).[13] The crisis has forced the international community to reassess whether, and how, the current global food production system will be able to meet various challenges, including reaching the MDG targets on hunger and poverty. This includes the need to secure a future food supply to feed a growing world population of more than nine billion people by 2050. Unlike previous food crises, caused partly by poor harvests, the latest one was linked with a number of interconnected factors, such as rapidly increasing demand and competition between grains for both human consumption and for feeding livestock and biofuel production.

As discussed in the introduction, an interplay of factors resulted in a hike in food prices in 2008, and shortages in food supply in some developing countries. The price hike was more broad-based than in previous incidents, covering many food commodities as well as cash crops (UNCTAD, 2008b). While prices of such crops have receded from the peak of 2008, they are nevertheless high relative to their historic levels,[14] and are likely to remain high in the future,[15] raising concerns for future food security.[16] Growth of agricultural productivity, particularly in food crop production, has fallen behind growth in

Box III.2. Ethiopia: agriculture as a motor for growth and development

Agriculture is an important pillar in Ethiopia's economic development. Its value added contributed to about 46% of Ethiopia's GDP between 2003 and 2007, and it accounted for 68% of total employment and 57% of the country's total merchandise exports between 2002 and 2006. Agriculture is therefore an important motor for development in the country, which has led Ethiopia to pursue an "agricultural development-led industrialization" strategy. This framework for national economic development emphasizes the need to raise the share of manufacturing in the economy by promoting agricultural productivity and a resource-based process of industrialization. The rationale for this strategy is that the country's rich and diverse agricultural output offers a basis for a wide range of manufacturing activities for the domestic and export markets. In addition, the manufacturing sector is heavily dependent on inputs from agriculture. Under Ethiopia's Industrial Development Strategy, launched in 2003, efforts have concentrated on creating an enabling environment for the private sector to be a driving force for economic development. The sectoral focus of that strategy is on developing agro-based industries and strengthening the interrelationship between agriculture and manufacturing.

Source: UNCTAD, based on research by Aurelia Calabro, UNIDO (Ethiopia office) and Juliana Gonsalves, UNECA (Ethiopia).

global demand; and changing consumption patterns in fast-growing developing economies have also contributed to pressure on food prices (ECOSOC, 2008a; United Nations, 2008).[17] The low agricultural productivity growth arises from a combination of factors, such as underinvestment in agricultural R&D and infrastructure, land degradation, growing water scarcity in some developing regions and fragmented as well as uneconomical land holdings in small plots (ECOSOC, 2008b). High energy prices have also pushed up the cost of food production, chemical fertilizers and transportation.

The food crisis has triggered a number of responses. At the international level, there is growing concern about food security amid the further challenges posed by global warming, which is expected to affect food systems. At the national level, some countries worried about food security have taken measures to address their anxieties, including through efforts to increase investment in agriculture. Some food crop producing countries restricted the export of staples at the height of the food crisis, while food importing countries have started investing in overseas farming to secure future food supply (Brown, 2008; Blanche, 2009; Smith, 2008; sections D and E). However, food security does not imply food autarky. Both imports and exports of agricultural products constitute elements of government policies for food security and agriculture's role in economic development.

b. Investment to meet MDG targets

The decline in investment in agriculture in developing countries in recent years has significantly hindered countries and the global community in meeting the MDG-1 targets. A number of studies, based on varying assumptions, coverage and methodology, have estimated the food security-related agricultural investment needs of developing countries. For instance, the Common Framework of Action proposed by the United Nations High-level Task Force on the Global Food Crisis estimated that the global incremental financial requirement for investment in agricultural development for food and nutrition security and to meet other objectives would range from $25 billion to $40 billion per annum;[18] and this investment would primarily have to be covered through public finance and ODA (HLTF, 2008). Similarly, FAO estimates that an extra $30 billion per year needs to be invested in agriculture and safety nets to ensure that the MDG target of halving the absolute number of hungry is met by 2015 (FAO, 2003b and 2008b).

Although national public sectors and ODA are seen as providing the bulk or entirety of funding for this investment, it is not clear how feasible this is, especially in Africa. For example, in their Maputo Declaration in 2003, African Heads of State and Government agreed to allocate at least 10% of their countries' national budgets for agriculture and rural development within five years (African Union, 2003; FAO, 2006b).[19] However, the average agricultural budget allocation for the region had not reached the agreed target in 2008: fewer than 10 countries achieved the 10% level or higher (IFPRI, 2008; African Union, 2008). The impact of the current economic and financial crisis means that some countries will be challenged to find agricultural investment funds for meeting MDG-1 targets, but this goal nevertheless remains an imperative for investment in agriculture (UNCTAD, 2009e), some of which needs to come from the private sector (FAO, IFAD and WFP, 2005; HLTF, 2008).[20]

c. The rise of biofuel production

The rapid growth of the *biofuels* industry is contributing to major structural changes in global agricultural production (Flammini, 2008). In particular, the profitability of growing crops for biofuel feedstock is an important incentive for private investment in this activity. [21] A number of large developed and developing countries and groupings, such as Brazil, China, the European Union, India and the United States, are among the leaders in the global growth in biofuel production (table III.5), which has had a knock-on effect on agricultural commodity prices (World Resources Institute and A.T. Kearney, 2008).

Government policies in some countries have facilitated the growth of biofuel production and use. For instance, in support of the ethanol industry, Brazil introduced legislation requiring the use of ethanol-gasoline blends. In an effort to produce alternative fuel sources, other developing countries are also launching biofuel programmes that use molasses, sugarcane and/or oilseeds such as soya beans, oil palm and *Jatropha curcas.* Biofuel production receives support through consumption incentives (e.g. fuel tax reductions), production incentives (such as tax incentives and loan guarantees) and mandatory consumption requirements (World Bank, 2007; FAO, 2008c). Currently, global biofuel production is dominated by just a few major producing economies (James, 2008), but many other developing countries are launching their own programmes (World Bank, 2009c). Current estimates indicate that the biofuels industry will continue to grow, with output of global ethanol and biodiesel projected to more than double between 2007 and 2017 (FAO, 2008c). That would make the industry a potentially significant contributor to the expansion of agricultural production in some developing countries. However, there is a strong debate on whether agricultural resources should be diverted from food production to biofuel crops, especially since this use of crops for biofuel was seen

Table III.5. Biofuel production in selected economies and grouping, 2007
(Million litres and per cent)

Economy/ grouping	Ethanol		Biodiesel		Total
	Volume	Share in world production	Volume	Share in world production	
World	**52 009**	**100.0**	**10 204**	**100.0**	**62 213**
Brazil	19 000	36.5	227	2.2	19 227
Canada	1 000	1.9	97	0.9	1 097
China	1 840	3.5	114	1.1	1 954
European Union	2 253	4.3	6 109	59.9	8 361
India	400	0.7	45	0.4	445
Indonesia	-	-	409	4.0	409
Malaysia	-	-	330	3.2	330
United States	26 500	50.9	1 688	16.5	28 188
Others	1 017	2.0	1 186	11.6	2 203

Source: UNCTAD, based on FAO 2008c, based on F.O. Licht, 2007, and data from the OECD-FAO Aglink-Cosimo database.

as a contributor to the price hikes during the recent food crisis. There is a need to examine the challenges and opportunities posed by biofuel production in the context of the twin challenges of world food and energy security.[22]

C. TNC participation in agriculture: historical and conceptual insights

1. Historical developments: from plantations to value chain coordination

Early examples of TNC involvement in agricultural production include FDI in the nineteenth and twentieth centuries by companies based in Japan, Europe and the United States, primarily to produce cash and food crops such as cotton, rubber, sugar and others (Freeman, Holslag and Wei, 2008; Suret-Canale, 1964). The history of foreign investment in agriculture is actually even older, and goes back to the early colonial era (from the sixteenth century onwards), when foreign expansion by European powers to the developing countries of today was largely motivated by the search for natural resources, combined with cheap labour by indentured workers or slaves (Thomas, 1997). Thus agricultural production, together with extractive industries, was an early target for foreign investors, some of which resembled TNCs in the modern sense; others were traders or State-mandated companies, all of which aimed at supplying agricultural goods to the growing populations and industries of their home countries (and third markets) (Jones and Khanna, 2006; Wilkins, 2008; Munro, 1976). Very few, if any, processing activities were located in the developing host countries.

After the Second World War, FDI in agriculture grew slower than that in other industries, although there were major variations by region, country and commodity (Twomey, 2000; Tsakok and Gardner, 2007). The general trend was towards industrialization, including in developing countries, which increased the share of manufacturing unrelated to agriculture. In many countries, this industrialization was accelerated by government policies which, through various measures, favoured manufacturing over primary industries (section B.2). In addition, as part of the decolonization process, host governments increasingly assumed control over their natural resources, including land, making it more difficult for foreign investors to become involved in the production of agricultural goods directly. During the period 1960–1976, agriculture was second, after banking and insurance, among activities affected by a wave of nationalizations of foreign enterprises in developing countries, with 272 cases of expropriations (compared to 349 cases in banking and insurance) out of an overall total of 1,369 nationalizations. In South and East Asia, nearly half of all expropriations took place in agriculture (UNCTC, 1978: 233).

From the early 1980s, foreign ownership of land became more restricted across most of the developing world, with implications for FDI in agricultural production (Rama and Wilkinson, 2008; UNCTC, 1983: 218). For example, in Central America, TNCs have moved away from banana plantation production to purchasing bananas from local farmers and providing technical advice and marketing services (Striffler and Moberg, 2003). The tea industry in Kenya, originally based on the foreign-owned plantation model, has undergone a similar transformation, as has the international tobacco industry (Eaton and Shephard, 2001; Neilson and Pritchard, 2009). This does not mean, however, that former agriculture-based TNCs have withdrawn completely from the control of agricultural production. Indeed, some are still significant in agricultural FDI (as shown in section E),[23] but most operate mainly through non-equity forms, such as contract farming, often linked to their activities in processing, marketing and distribution. In general, contract farming has been historically used by companies in high quality fruits and vegetables, organic products, spices, flowers, tea, tobacco, seed crops and other quality sensitive and perishable commodities (Bijman, 2008). The main reason is that such products require good coordination between buyers and farmers for harvesting, quality control and timely delivery.

In the post-war era, TNCs' involvement in agriculture-related activities in developing countries has increasingly focused on the upstream or supporting industries (e.g. provision of inputs, seeds and machinery) or downstream industries

(trading, processing and retailing). Partly, this is a consequence of the reduced involvement of TNCs in farming and plantations; but it is more because of the rise in relative importance of TNCs in other highly profitable segments of the global value chain (GVC) in agribusiness (box III.3; figure III.3). Their ownership of created assets such as brands, logistics expertise and intellectual property[24] allows them to compete dynamically with incumbents and newcomers alike. Changing consumer preferences, especially in developed countries, are also a factor.[25] The expansion of relatively new activities connected with the industry, such as biofuels production, has also resulted in the involvement of some companies not previously associated with agriculture. In general, in today's agriculture-related activities, value creation resides mainly in the non-agricultural production segments of agribusiness GVCs (figure III.3) (e.g. downstream activities such as retailing, and upstream activities such as biotechnology-enhanced seeds). This also affects the revenues of local farmers in developing countries. (Table III.6 provides an illustration of the global value chain in agribusiness as it applies to floriculture.)

2. Conceptual overview

The degree of involvement, geographical spread and forms of TNC participation in agricultural production in developing countries can be understood by applying the theoretical framework of ownership-location-internalization (OLI) advantages (box III.4)

Box III.3. Global value chains and their implications for types of TNC participation in agricultural production and related activities

The concept of a global value chain is a commonly used framework for analysing the sequence or stream of interrelated activities performed by firms, organizations or individuals in different geographical locations, necessary for bringing a product or service from production stages to final customers (UNCTAD, 2006a). In the case of agriculture, a typical or generalized agribusiness GVC includes the production of inputs (such as seeds and fertilizers) feeding into agricultural production and leading onto trading and logistics, processing and ultimately to retailing, and thence to final consumers in the downstream part of the chain (figure III.3).

GVCs help understand how activities performed at different stages of the chain are coordinated and the complexities of the governance structure (Gereffi, Humphrey and Sturgeon, 2005). In terms of the power of companies at different stages of GVCs, chains can be typified as either "producer driven" (e.g. during the colonial era, ownership of a plantation was key in delivering fresh produce to industrial or final customers), or "buyer driven" (e.g. in the post-war era, ownership of brands or distribution, among others, means that the lead firms in GVCs are more often companies such as traders and supermarkets, depending on the commodity) (Gereffi, 1989).

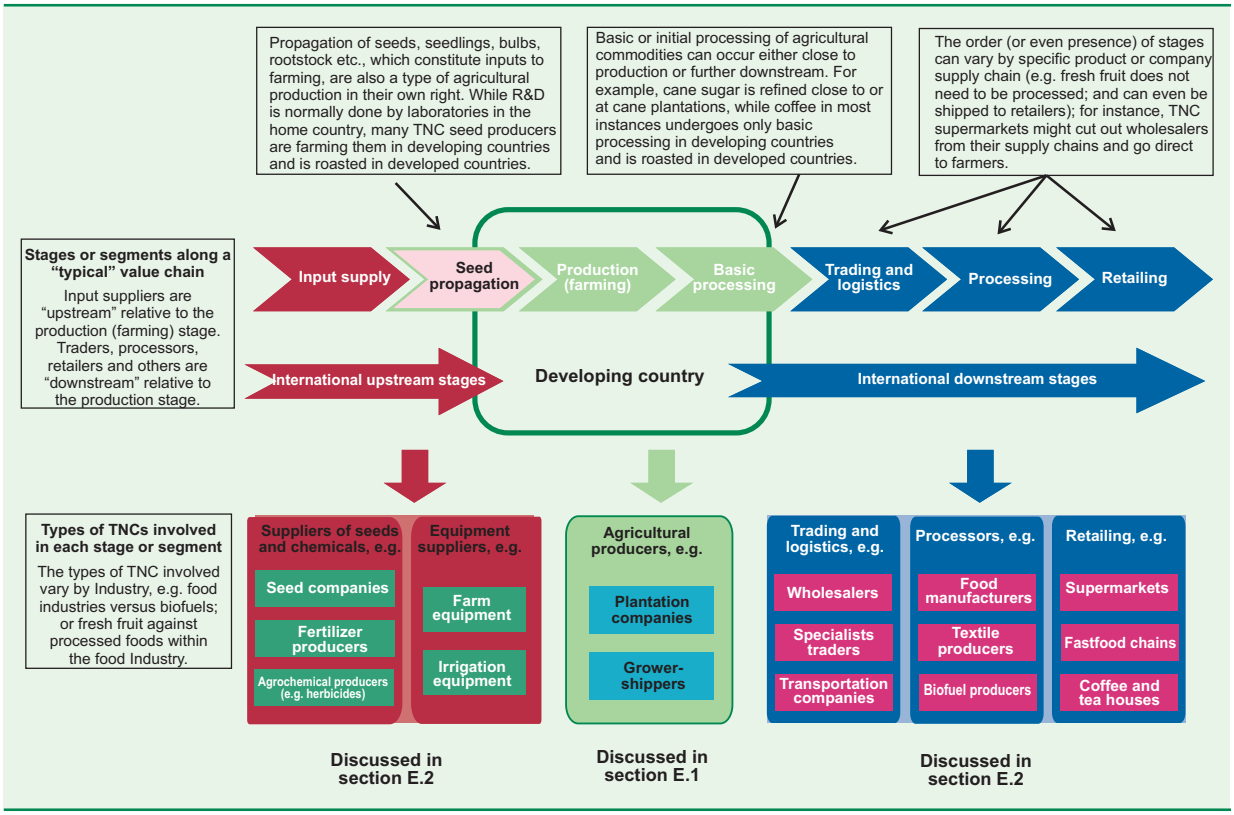
Five basic types of relationships (or patterns of governance) between firms in GVCs can be distinguished (Humphrey and Schmitz, 2002; Schmitz, 2005; Sturgeon and Gereffi, 2008).[a] They are:

- *Arm's length* (pure market) relations where there is no close relationships between buyer and supplier firms. In the case of agriculture, manufacturers and other downstream firms buy commodities on the international market. There is no direct participation by such TNCs in agricultural production.
- *Modular networks* (market-like, but inter-firm linkages are tighter than simple markets): firms develop information-intensive relationships, frequently dividing essential competences between them. Suppliers produce to the customer's specifications, which, in the case of agricultural production involves farmers meeting *standards* such as those related to quality control or safety. Lead firms may support farmers or other agricultural producers, for example through technical training, funding and provision of seeds. TNC involvement with farmers through modular networks can be considered an indirect form of TNC participation in agricultural production.
- *Relational networks:* these involve mutual dependence between firms, regulated by trust, which may derive from, among others, reputation, family and ethnic ties and commonly held values. In the case of agriculture, an example is the close links between Indian agricultural TNCs and parts of East Africa (*WIR06*).
- *Captive networks:* the buyer exercises a high degree of control over other, less powerful and usually smaller firms in the chain. In the case of agricultural production, this can take the form of *contract farming*. Contract farming can be regarded as a non-equity form of TNC participation in agricultural production.
- *Hierarchy*: governance is characterized by vertical integration and managerial control (i.e. *foreign direct investment*). Transactions are internalized within firms, and affiliates (which may be joint ventures) produce for the parent firm and other parts of its network. This represents an equity form of TNC participation in agricultural production. In addition, there may be instances where a TNC does not own the farming land, but has a long-term lease.

Source: UNCTAD.

[a] Most of these authors refer to four basic types of relationship, but more recently relational networks were introduced, especially to take into account a wider range of TNCs, such as those from developing countries, than was envisaged in earlier theories. This is analogous to the wider formulation of competitive or ownership advantages in *WIR06*.

Figure III.3. A typical agribusiness global value chain in a developing economy and types of TNC players



Source: UNCTAD.

(or the "eclectic paradigm", first formulated by John Dunning, 1993) to internationalization in the context of agribusiness GVCs (box III.3). In doing this, one can distinguish horizontal international expansion by TNCs located in a *particular segment of the value chain* from vertical expansion and international coordination of activities undertaken *along the segments of a value chain.* In the former, an agricultural, manufacturing or retail TNC moves to a host country and establishes an affiliate or a contractual arrangement for production in the same activity as that in which it is engaged at home (e.g. establishment of a supermarket by a retail company), or undertakes a subset of the activities it carries out in the home country. Thus, as box III.4 shows, an agricultural firm with competitive advantages might be drawn to a particular host economy because of the country's locational (L) advantages, including agricultural endowments and a favourable policy on land ownership; furthermore the TNC can choose to operate in that location through direct investment in a plantation by using its ownership or competitive advantages (O), such as technical knowledge or management expertise, or by making such assets available to host-country firms through a licence, or a management contract or other arrangements. Which of these modalities of operation a TNC chooses rests on the internalization decision (I) (i.e. whether it is better to own and run the plantation itself (through FDI or not). This decision is influenced by factors such as the relative profitability and risks involved in the various choices, and whether a mutually acceptable price can be agreed on for the sale of its knowledge assets.

TNCs coordinating a network of activities along a GVC can also have both the motives and the capabilities to participate in agricultural production. Examples of motives are to secure commodity inputs and sell seeds, while examples of capabilities include a subset of ownership advantages that facilitate value chain coordination, such as control of, and expertise in, distribution and procurement systems. TNCs can participate in, or influence, relevant agricultural production in countries with the necessary locational advantages (such as the availability of land, water and labour), especially in countries in which they are already present in the upstream or downstream activities (box III.3, figure III.3). Whether TNC participation in agricultural production through such vertical expansion of TNCs occurs and what form it takes depend on a number of factors, including:

- The nature and extent of the TNC's ownership advantages relevant to value chain coordination. For instance, supermarkets are extremely proficient supply chain coordinators;

Table III.6. The global value chain in floriculture: key stages and selected TNCs at each stage, 2009

Value chain stage	Supply of inputs		Production	Trading and logistics			Retailing
	Chemicals, fertilizers and equipment manufacturers	Breeders and propagators	Farming and grower-distributors	Transport and logistics providers	Sourcing and marketing	Wholesale	Retail and distribution
Activities	TNCs at this stage include chemical and fertilizer companies, as well as manufacturers of greenhouses and other farming equipment.	TNCs or inter-national companies that provide farmers with different varieties of flowers, developed for size, colour, etc.	TNCs with investments in farmland in developing countries that grow flowers for export or for local markets. Grower distributors distribute cut flowers from their own farms. Some TNCs subcontract local farmers to produce flowers for them.	TNCs that provide transportation (incl. airfreight) for cut flowers from farms to markets. Some charter daily flights for this purpose.	TNCs with affiliates in overseas locations (mostly in major producing countries) to source flowers for sale.	International auction centres that establish business ventures in emerging centres for the flower trade. Flowers are traded by auction and reshipped to final buyer markets. International companies purchase flowers and operate as wholesalers.	TNCs that market and distribute cut flowers directly to final customers through supermarkets, specialist flower shops and retail chains. Some supermarket chains – as large buyers – are involved in contract farming in developing countries.
Examples of TNCs	**BASF** (Germany) **Syngenta** (Switzerland)	**Rosen-Tantau** (Germany) **Nirp International** (France) **Lex+** (Netherland) **Dekker Chrysanten** (Netherlands)	**Homegrown** and **Flamingo** (part of Finlay, United Kingdom) **Sher Karuturi** (India) **Oserian** (Kenya) **Finlay** (United Kingdom) **Welyflor** (Ecuador)	**East African Flowers-**Netherlands **and Airflo-** Kenya (members of Mavuno Group) **Swire-Finlay Group** (United Kingdom) **Emirates Sky Cargo** (United Arab Emirates)	**Bloom** (Netherlands) **World Flowers** (United Kingdom) **Sourcing, marketing, wholesale** **Dutch Flower Company** (Netherlands)	**Dutch auction centres** (Netherlands) **Mayesh Wholesale Florist** (United States)	**Tesco** (United Kingdom) **Asda** (United Kingdom) **Marks & Spencer** (United Kingdom) **Albert Heijn** (Netherland) **Sainsbury** (United Kingdom) **Waitrose** (United Kingdom)
	Integrated business networks This includes groups of companies that are involved in breeding, contract farming, distribution and marketing of cut flowers produce by members of the group. These TNCs include: **Karuturi Group** (India) **Mavuno Group** (Netherlands) **Swire-Finlay Group** (United Kingdom) **Beekenkamp Group** (Netherlands) **Esmerralda Farms** (United States) **Falcon Farms** (United States) **Golden Rose** (Canada) **Continental Floral Greens** (United States)						

Source: UNCTAD.

- The agricultural resources available and the capabilities of the farmers whom the TNC deals with. If they have the technology and expertise to deliver produce of the quantity and quality required, then contractual arrangements are more likely to prevail than FDI;
- The risks involved (e.g. might it be cheaper and/or less prone to political risk to procure agricultural commodities through the market?); and,
- How much value added can be captured through direct investment in agricultural production (i.e. control of the movement of goods and services along a chain gives considerable leverage over the setting of prices).

Depending on how these factors play out concretely,[26] the types of "vertical" TNC participation along the value chain in agricultural production can thus take one (or a mix) of three principal forms (box III.3, figure III.4):

(i) Indirect, non-equity participation through implementation of standards and other information-intensive relationships in which a host country farmer/firm produces to the specifications of a foreign TNC involved in activities downstream or upstream of production in the host country. Coordination of the relationship by the TNC can be loose or strong, but either way an inability to meet standards can have negative commercial repercussions for the supplier.

(ii) Direct, non-equity participation through contract farming, in which host-country farmers/firms are tightly coordinated and controlled by the TNC, which may also provide inputs and assistance of various kinds, for instance because of the need for secure or timely delivery (such as in the case of fresh fruit and vegetables) to geographically distant outlets.

(iii) Direct equity participation through FDI, whereby coordination and control of transactions are fully internalized within the TNC.

The ownership advantages of TNCs involved mainly in the downstream stages of agribusiness value chains tend to be information-related, particularly concerning markets, prices, consumer preferences and the forecasting of changes in these critical parameters. Much of this is owed to experience and accounts for the longevity of TNCs in these industries. Two key processes are at work: coordination of the multistage processes of agri-business by TNCs, and their internalization and control of key markets in information and expertise. The first process arises because of the need to ensure product quality over the time that agricultural production, processing and

Box III.4. The OLI paradigm and international production in agriculture

The OLI paradigm (Dunning and Lundan, 2008) is a simple but effective framework for understanding the factors that determine the internationalization choices of firms. It explains the choice of FDI over other forms of internationalization (such as trade or contractual arrangements) in terms of the presence or otherwise of: a) ownership-specific advantages of firms; b) location-specific advantages of countries abroad; and c) internalization advantages from cross-border transactions within firms rather than through markets or contractual arrangements.

The basic rationale for internationalization by firms is to increase or protect their profitability and/or capital value, usually triggered by threats or opportunities such as for example those related to the food crisis or the rise of biofuels and the related price increases in the case of agriculture (section B.3). In order to compete effectively in foreign host economies, TNCs normally need to possess and utilize competitive or *ownership-specific* (O) advantages, which may derive from a number of sources. Most commonly, these ownership advantages consist of the possession of "strategic" created assets, such as technology and R&D capabilities, production-related expertise, ability to finance large-scale operations, brands, distribution networks, production related expertise, business models and managerial competences. For instance, for a firm to engage in agricultural production abroad, the ability to establish, manage and run plantations or farming operations to a high standard of performance that can compete with host-country farming enterprises, requires a number of such assets, both explicit (e.g. financial strength, technical expertise on, say, oil palms or tea) and tacit (e.g. effective management of a large-scale workforce).

The possession of ownership advantages does not necessarily lead to FDI. For example, instead of FDI, an agricultural enterprise might sell or provide its ownership advantages to host country companies in a number of ways. Technological knowledge can be made available through sales of intermediate goods and the licensing of technology to host-country firms, which then establishes production facilities and pays the TNC (the licensor) a royalty. Under conditions where the host-country firm does not possess the capabilities to absorb the technological (or other) knowledge, or where the knowledge is of a tacit nature and not easily transferable, the agricultural TNC can enter into a management contract: the host-country firm puts up the capital and owns the plantation or other facilities (thereby bearing much of the risk), while a team from the TNC manages them for a fee. For the TNC, returns may be lower, but so are the risks. The decision whether to *internalize* (I) operations (i.e. FDI) or exploit ownership advantages externally through the market for goods, services or knowledge (e.g. through licensing or management contracts) depends on various factors. The most important factor is the relative return versus the relative risks (e.g. FDI can be expensive and is beset by commercial and political risks; in contrast, sale of knowledge, even on a contractual basis, runs the risk of the TNC's very ownership advantages being lost to the buyer.

The specific choice of locating production abroad, rather than exploiting competitive advantages through international trade, will depend on the presence of *locational* (L) advantages in a country or countries abroad, including economic determinants (e.g. market size, natural resources and created assets), policy framework, business facilitation measures, and business conditions. The presence of host-country advantages is the third condition necessary for international production. Differences between locational advantages of different countries are important determinants of the international location pattern of FDI or other types of TNC activity. In the case of agricultural production, agricultural endowments, historical legacies (e.g. the introduction of coffee production to Brazil) and government policies can all affect the location of TNC activity.

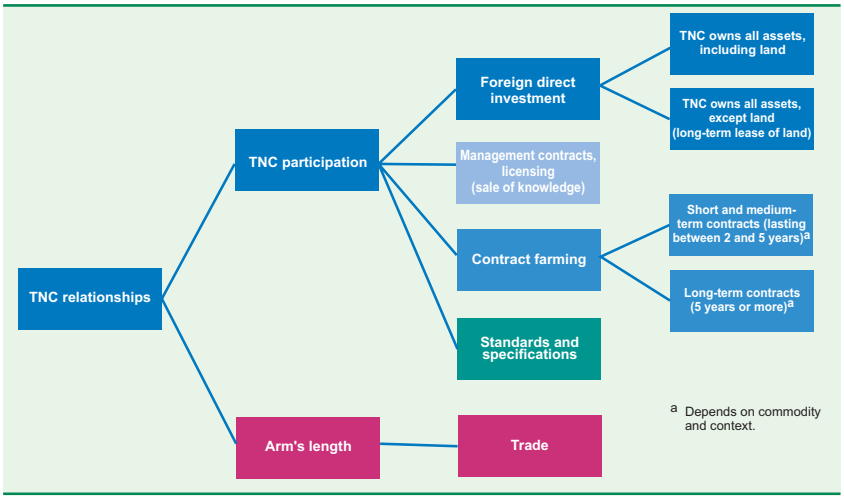
Source: UNCTAD.

sales take place. This necessitates the coordination of planting, growing, harvesting, transportation, packing and delivery. Product quality in retail markets is often associated with branding, and TNCs derive profits by guaranteeing the consistent quality represented by key brands. This is strongly linked to the second factor, namely the control and use of critical information throughout the TNC-controlled value chain. Information on consumer tastes and on relative costs of production, transportation and delivery from the major sources of agricultural production to key markets is a vital element in TNC strategy (Buckley, 2009; Gereffi, 2007; boxes III.3 and III.4).

The degree and form of TNC participation in agricultural production is likely to differ according to a company's stage in a GVC, as suggested by examples from the GVC in floriculture (table III.6). For instance, large *supermarket chains* have the coordinating ability and the power to enforce standards/specifications in order to secure supplies of quality cut flowers directly from growers in developing countries, in circumstances where they cannot secure them from traders, or, if it is more profitable, to cut out the "middle man". Enforcement of standards suffices in most cases of direct procurement from growers (sometimes through agents), but contract farming does occur to some extent in order to ensure security of supply (the supermarkets have a large number of outlets which need to receive equivalent products).

In contrast to supermarkets, most *retail outlets* are not able to procure cut flowers directly from developing countries and are not involved in

Figure III.4. Types of TNC participation in agricultural production in host countries



Source: UNCTAD.

activities in those countries. The *trade/wholesaling stage* is therefore very important to the industry as a whole. Companies in this segment of the floriculture value chain primarily source flowers at arm's length (through the market), and have little participation in agricultural production. However, some TNCs in this segment have adopted an integrated value chain approach, which involves both agricultural production and wholesaling. In order to side-step the power of traders/wholesalers, a number of TNCs in floriculture have extended their ownership assets beyond production and evolved into *grower-distributors*. This helps them to better control channels of distribution and therefore capture more value added in the cut flowers industry. *Breeders and propagators* are an important part of the floriculture GVC.[27] They undertake research and breed and propagate new and different varieties of flowers, in colours and sizes demanded by consumers. Some of them farm inputs (i.e. seeds, bulbs and seedlings) in developing countries to ensure that they are available to farmers (Wee and Arnold, 2009).

To summarize, whether or not agribusiness TNCs participate in agricultural production abroad, their form of participation (e.g. through FDI in agriculture or contract farming) and where (e.g. in traditional host countries or in new locations) depends on the specific ownership advantages they possess in some vital parts of the value chain (which also depends on the particular agribusiness chain in question); the existence of location-specific reasons for choosing international production rather than arm's length transactions and operating in a particular host economy; and finally, the costs and benefits to TNCs in agriculture and related industries of the internalization of transactions across borders (FDI),[28] as opposed to non-equity, contractual forms of coordination of the supply chain. The TNC will choose the best mix that provides security of supply, flexibility and quality assurance. TNCs are, of course, faced with the costs of such global operations. These include coordination costs – requiring sophisticated management and information systems – and the potential risks of losses through unforeseen hold-ups, production failures and potential discrimination against foreign firms by hostile host-country elements.

D. Trends in FDI and other forms of TNC participation in agriculture

As mentioned in section C, prior to the Second World War, agriculture in developing countries, especially export-oriented production of crops such as bananas, sugar and tea, was an important host for TNC participation (mainly FDI, but also other forms of participation). After the war, as a result of the rise of FDI in manufacturing and then services, as well as the restrictions on FDI in agriculture imposed by newly independent developing countries, the relative importance of foreign investment in agricultural production declined considerably. However, in many cases TNCs from the earlier period retained control, as specialist traders and retailers, over trade and access to industrialized country markets. At the same time, to guarantee a supply of the relevant commodities, they partly moved over to contract farming in lieu of FDI. As this section shows, TNCs continue to be involved in plantation agriculture, although they constitute a smaller part of the total picture now.

After a long period of decline in TNC participation in agricultural production, a resurgence may however be under way. Although it is still too early to present a fully reliable statistical picture, this section maps emerging trends and patterns, documents how different forms of TNC involvement have evolved, and attempts to gauge the extent of agricultural production by new actors, such as private equity funds and a variety of investors from developing countries. An analysis of patterns of TNC participation in agricultural production shows that it takes various modes, from wholly-owned affiliates and joint ventures, to management contracts and contract farming.

Much of the analysis in this section and in the report focuses on FDI and contract farming because these are the two most common forms of TNC participation in agricultural production. To the extent that their impact is relevant for agriculture, data on TNCs in agriculture-related industries are also taken into consideration while discussing the role of TNCs in agriculture (section E).While efforts have been made to use a common industry or group of industries methodology based on standard international classifications, due to differing collection practices and methodologies, the industries covered vary slightly among the two data sets used: (a) FDI stocks and flows, and (b) cross-border M&As (box III.5).

1. FDI trends and patterns

a. FDI

In the recent past, allowing for data limitations (box III.5), the direct involvement of TNCs in agriculture has been limited. World inward FDI stock in agriculture comprised only $32 billion – only 0.2% of total inward FDI stock in 2007 – despite significant growth in FDI since 2000, particularly in developing countries (table III.7). Between 1989 and 1991, world FDI flows in agriculture remained below $1 billion per annum, as compared to more than $7 billion in food and beverages (table III.7 and figure III.5). By 2005–2007, world FDI inflows in agriculture exceeded $3 billion per annum. This still constituted less than 1% of total world FDI inflows. The low levels of FDI in agriculture may be partly explained by the regulated nature of the industry, restrictions on ownership of agricultural land by foreigners, and corporate strategies which favour control over the supply chain through upstream and downstream activities (section C). FDI outflows in agriculture in 2005–2007 were even smaller than inflows: they remained on average around $1 billion per year. This difference between inflows and outflows suggests that an important part of agricultural FDI is undertaken by TNCs coming from related industries (and therefore the capital outflows are registered under those industries in the outward data) (table III.7).

In terms of FDI stocks, agriculture accounts for a considerably smaller share than food and beverages, indicating a greater focus by TNCs on downstream activities (table III.7). The inward FDI stock in agriculture was higher in developing countries than in developed countries over the period 2001–2007. Moreover, in terms of its share in the total FDI stock of all industries in all sectors – primary, manufacturing and services – combined, agriculture has been much more important for developing countries than for developed countries. This may reflect various factors, including the relative importance of agriculture in the economies of developing countries in general, the availability of land for cultivation and government policies. On the other hand, developed countries consistently receive more FDI in food processing than developing countries, suggesting that the majority of higher value added activities in agri-food supply chains are still concentrated in the former group.

At the country level, the share of agriculture in total inward FDI flows is less than 1% for 17 of the 40 economies shown in figure III.6a, while agriculture's share in total FDI stock does not exceed 1% in 21 of the 40 economies shown in figure III.6b. However, in some LDCs, the share of FDI in agriculture in total FDI flows or stocks is relatively significant (e.g. Cambodia, Lao People's Democratic Republic, Malawi, Mozambique and United Republic of

Box III.5. Data sets used in *WIR09*

FDI data based on balance of payments. These data are available for 24–65 countries, for inward FDI and for 9–30 countries for outward FDI in agriculture, forestry and fisheries (in the primary sector); and for 20–50 countries for inward FDI and for 13–28 for outward FDI in food and beverages (including tobacco) (in the manufacturing sector), for 1990 to 2007. A detailed breakdown of data by sub-industries was not available, and neither were data for some important host and home countries. For example, there were no relevant outflow data for Brazil, Mexico and the Russian Federation.

FDI data based on completed cross-border M&A transactions: A full analysis of cross-border M&As along the supply chain is possible, as a detailed industry breakdown was available (including for agriculture and the above-mentioned manufacturing and service industries, as well as for input industries such as fertilizers and agricultural machinery).Detailed information was available for individual deals from 1987 onwards. Data on some 840 deals in agriculture (primary production), 6,900 in food processing and food-support industries (manufacturing) and 2,200 in services related to agriculture and food were available for 1987–June 2009. Data have been calculated on a net basis: The value of net cross-border M&A sales takes the gross value of M&A sales of companies (either national or foreign) to foreign TNCs, from which is subtracted the value of the sales of foreign affiliates (to either national or foreign investors). The value of net cross-border M&A purchases takes the value of purchases of companies abroad by home-country based TNCs, from which is subtracted the value of sales of foreign affiliates of home-country based TNCs.

Source: UNCTAD.

Table III.7. Estimated FDI in agriculture, forestry and fishing[a] and food and beverages[b], various years
(Billions of dollars and per cent)

Region	FDI flows				FDI stock			
	Inflows		Outflows		Inward stock		Outward stock	
	1989–1991	2005–2007	1989–1991	2005–2007	1990	2007	1990	2007
(a) Agriculture, forestry and fishing[a]								
World	0.6	3.3	0.5	1.1	8.0	32.0	3.7	10.2
	(0.3%)	(0.2%)	(0.2%)	(0.1%)	(0.4%)	(0.2%)	(0.2%)	(0.1%)
Developed economies	- 0.0	0.0	0.5	0.6	3.5	11.8	3.4	7.5
	..	..	(0.2%)	..	(0.2%)	(0.1%)	(0.2%)	(0.1%)
Developing economies	0.6	3.0	0.0	0.5	4.6	18.0	0.3	2.4
	(1.8%)	(0.8%)	(0.7%)	(0.4%)	(1.3%)	(0.5%)	(1.5%)	(0.1%)
South-East Europe and the CIS	..	0.3	..	0.0	..	2.2	..	0.3
	..	(0.7%)	..	(18.2%)	..	(0.7%)	..	(1.3%)
(b) Food and beverages[b]								
World	7.2	40.5	12.5	48.3	80.3	450.0	73.4	461.9
	(3.8%)	(2.8%)	(5.6%)	(3.3%)	(4.1%)	(2.9%)	(4.1%)	(2.8%)
Developed economies	4.8	34.1	12.2	45.7	69.9	390.7	73.1	458.1
	(3.2%)	(3.2%)	(5.6%)	(3.4%)	(4.4%)	(3.4%)	(4.1%)	(3.2%)
Developing economies	2.4	5.1	0.3	2.6	10.4	46.9	0.3	3.5
	(6.8%)	(1.4%)	(4.1%)	(1.9%)	(2.9%)	(1.2%)	(1.4%)	(0.2%)
South-East Europe and the CIS	..	1.4	..	- 0.0	..	12.4	..	0.3
	..	(3.2%)	..	(-4.5%)	..	(4.2%)	..	(1.7%)

Source: Annex tables A.I.4–A.I.7.

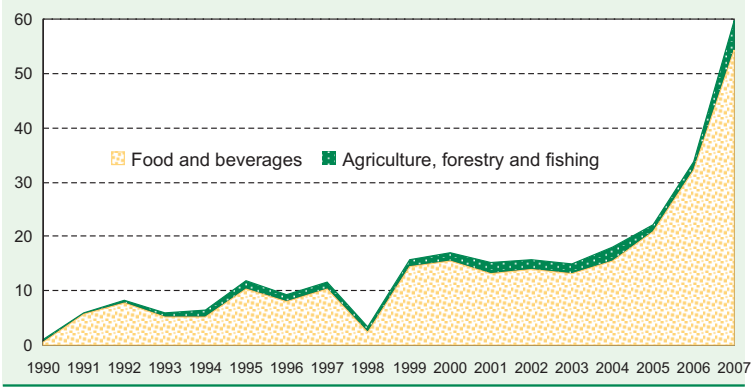
[a] Includes hunting.

[b] Includes tobacco.

Notes: Data are estimates for global flows and stocks of FDI in agriculture, forestry and fishing, and in food and beverages and tobacco, projected from available data. Therefore, these estimates may not be comparable with data shown elsewhere. Figures in parenthesis show the share of these industries in total FDI to all industries. (For details on data sets used, see box III.5.)

Tanzania), as also in some other developing countries (e.g. Ecuador, Indonesia, Malaysia and Viet Nam) (figure III.6). Some reasons for this relatively high share relate to the structure of the domestic economy (especially the high share of agriculture in GDP), availability of agricultural land (mostly for long-term lease), and national policies (including investment promotion in agriculture). Furthermore, some developing countries such as Egypt and Paraguay are also important host economies for food processing FDI: the share of food and beverages in their inward FDI is more than one tenth of their total inward FDI, and this results in linkages with agricultural production.

Figure III.5. FDI inflows in agriculture, forestry and fishing, and food and beverages, 1990–2007
(Billions of dollars)

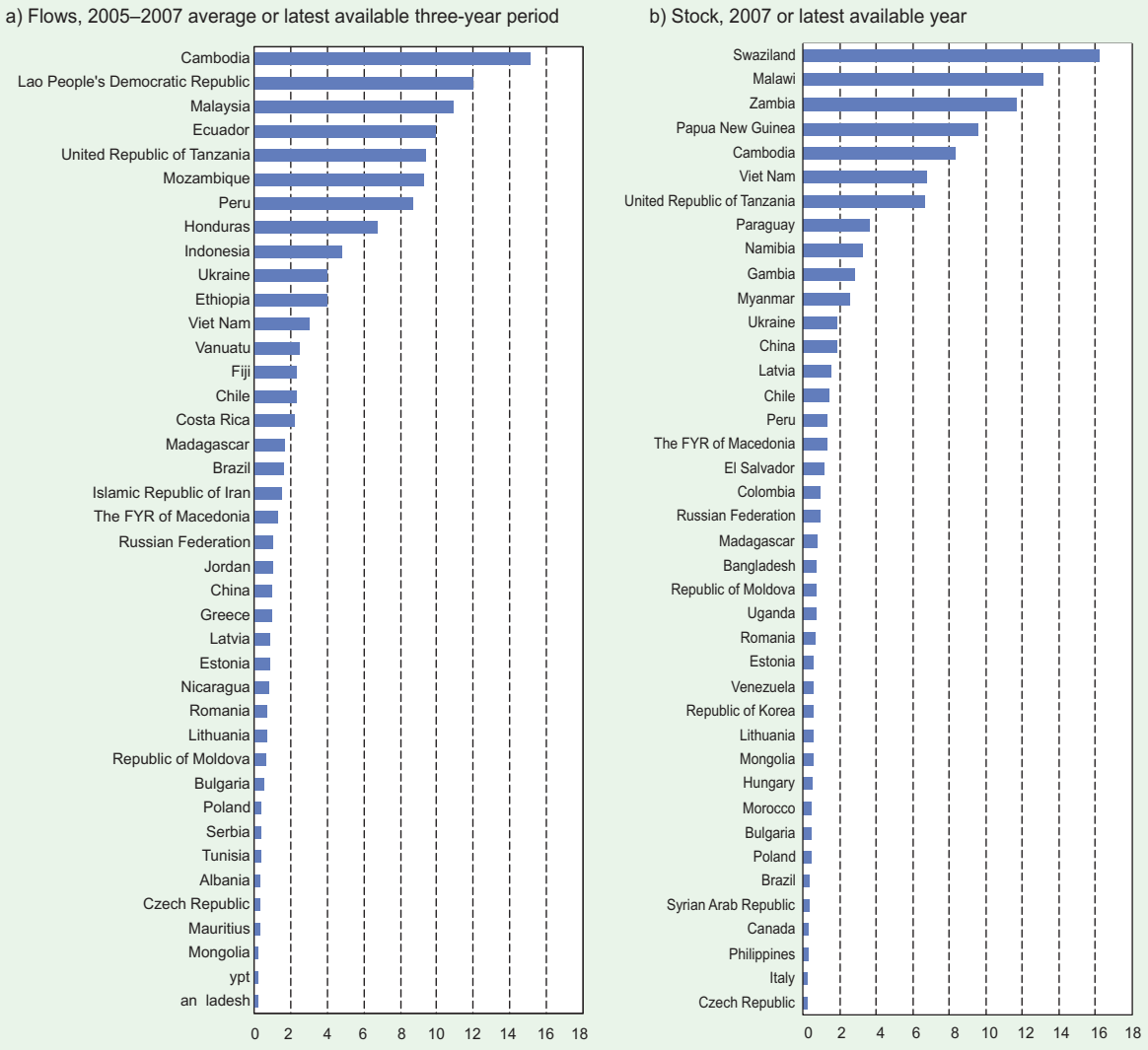


Source: UNCTAD, FDI/TNC database.

Note: Agriculture, forestry and fishing include hunting; food and beverages include tobacco. Figures are for the sum of countries for which data were available for each year. Therefore, the number may vary from year to year, covering an average of 45 countries accounting for about two thirds of world inflows.

The importance of FDI and TNCs also varies by commodity. FDI is usually minimal in staple food items such as rice, but relatively important in some cash crops, such as cut flowers, and in the sugar industry in which crop production is closely linked with the first step of processing (i.e. in sugar mills) (box III.6). In some other commodities such as soya beans, TNCs control the value chain from their position in the wholesale trading segment, and are involved in production mostly through contractual arrangements (section C).

Figure III.6. Share of agriculture in inward FDI of selected economies, various years
(Per cent)



Source: UNCTAD, based on annex table A.III.3.

b. Cross-border M&As

Cross-border M&As have been a relatively important mode of TNC entry into agriculture and related activities (Rastoin, 2008) and hence may be viewed as another indicator of TNC involvement in agriculture. In some years (e.g. 1995 and 1998), the value of net cross-border M&A sales in agriculture has come close to that of FDI flows, and in other years, such as 1991 and 2005, their value has even exceeded that of FDI inflows (table III.8).[29]

Cross-border M&A data for the most recent period (2007–2008) confirm a major rise of investments in agriculture and related activities. This co-evolution is linked to the fact that, until recently, greenfield investments have been very small in agricultural production (see below), and have had little influence on overall FDI flows. Net cross-border M&A sales in agriculture reached $1.8 billion in 2007 and $2.1 billion in 2008 (table III.8). This is partly a parallel trend to that in the food processing industry, where M&As increased sharply in 2007 and 2008 (to $33 billion and $86 billion, respectively). A large proportion of M&A deals targeting agricultural production itself were undertaken by TNCs operating primarily in food processing and trade, confirming the importance of vertical integration.

Cross-border M&A data also throw light on the relative importance of the various stages of the value chain for TNC activities in recent years. Agriculture alone accounts for only a small part of the total value of net cross-border M&As, which is dominated by the food processing industry. Taking the agribusiness value chain as a whole, in 2007 agriculture (primary sector) accounted for 5% of total cross-border M&As and food processing (manufacturing) for 95%, while

Box III.6. TNCs in the production of bananas, coffee, cut flowers, rice, soya beans and sugar

The participation of TNCs varies widely between the six different products for which UNCTAD has prepared in-depth case studies: bananas, coffee, cut flowers, rice, soybeans and sugar. It is limited in rice production, and mostly confined to contractual arrangements through trading in the coffee and soya bean industries. On the other hand, it is fairly strong in bananas, cut flowers and sugar production.

There are no dominant players in global *rice* production. TNCs which are involved in contract farming in Asia and Africa are often rice wholesalers (e.g. Kitoku Shinryo in Viet Nam and VeeTee in Nigeria) or major food manufactures (e.g. PepsiCo in India). In general, with the exception of Tilda's (United Kingdom) contract farming in Uganda, the scale of these TNCs' involvement, and thus their impacts on rice cultivation in host countries has been marginal relative to overall rice production in those countries.

In the major *soya bean* producer countries (Argentina, Brazil and the United States), a small number of TNCs dominate all the stages of the value chain except farming (Moussa and Ohinata, 2009). For instance, four TNCs (ADM, Bunge, Cargill and Louis Dreyfus) control over 40% of crushing capacity in Brazil. In the area of genetically modified soya, one TNC (Monsanto) alone provides 90% of the world's GM soya seeds.

Since the early twentieth century, international *banana* trade has been dominated by vertically integrated TNCs that control production, packing, shipping, import and ripening. Economic power in the banana trade today remains in the hands of a few large developed-country TNCs such as Chiquita, Dole, Del Monte and Fyffes (Liang and Pollan, 2009). It is estimated that about half of the bananas sold by Chiquita, Dole and Del Monte originate from their own plantations. The role of TNCs in production varies considerably across regions and countries: in Central America, their direct involvement is still significant in Costa Rica, Honduras, Guatemala and Panama; in South America, they are involved in Colombia; in the Caribbean, they are no longer directly involved in production; in Africa and Asia, they have some control over production through joint ventures.

Coffee is grown mostly by local producers, the overwhelming majority being small farmers. TNCs play an important role at the stage of purchasing coffee beans in the major growing countries, such as Brazil, Colombia and Viet Nam, as well as in further processing (Krueger and Negash, 2009). At these stages of the supply chain, a few TNCs specializing in trading and roasting dominate the international market.

In certain developing countries where floriculture is a major export industry – such as Ethiopia, Kenya and Uganda – the participation of foreign firms in *cut flower* farming has been significant, and they provide an important opportunity for business linkages with local farmers through outgrower arrangements or contract farming (Wee and Arnold, 2009).

In countries such as Brazil, South Africa and some LDCs in Southern Africa (Malawi, Mozambique, the United Republic of Tanzania and Zambia), FDI has played a major role in expanding *sugar* production and exports (Van Giffen and Kalotay, 2009). In Brazil, sugar and ethanol production attracts TNCs – from traditional sugar producers to energy companies and investment funds. In Southern Africa, newly emerging investors, such as the Associated British Foods' South African affiliate Illovo, are becoming major players in local sugar production, while Tongaat Hulett, a South African sugar TNC, has expanded production to Mozambique, Swaziland and Zimbabwe.

Source: UNCTAD, based on the commodity case studies.

wholesale trade, which underwent restructuring in 2007 and 2008, had a negative value of net M&A sales, due to divestments in certain foreign locations (figure III.7).[30]

The dominance of food processors as a target for M&As in the agricultural and food supply chain suggests that food TNCs (figure III.7) are major investors in primary production, distribution and marketing of food products (see also section E). In agricultural production alone there were 63 cross-border M&A purchases valued at $4.5 billion in 2007, 70% of these M&As by value were undertaken by food-related manufacturing and services TNCs.

Data on the *international production* of affiliates of TNCs, including information on indicators such as sales, exports, employment and assets of foreign affiliates in host economies, are available on a selective basis. Data for affiliates abroad of United States TNCs in agriculture, hunting, forestry and fishing show that in the total sales of affiliates, the share of domestic sales in host countries was the most dynamic element in 1983–2006, closely followed by sales to foreign countries. On the other hand, the value of sales back to the home country was shrinking (figures III.8 and III.9). These patterns suggest dual motivations on the part of investors: market-seeking motives related to local sales in host countries, and resource-seeking ones related to exports, mainly to third countries. The composition of exports themselves revealed that a large proportion of exports to third countries took place within the corporate network (i.e. between affiliates of the same firm), confirming a high degree of international integration of TNCs involved in agricultural production (section C).

Table III.8. Comparison of FDI inflows and net cross-border M&A sales in agriculture and food processing, 1990–June 2009
(Millions of dollars)

Year	Agriculture (primary)		Food processing (manufacturing)	
	FDI inflows	Net cross-border M&A sales	FDI inflows	Net cross-border M&A sales
1990	559	112	505	9 261
1991	308	453	5 688	4 151
1992	363	- 25	7 846	5 632
1993	544	- 8	5 276	4 810
1994	1 194	- 113	5 218	10 180
1995	1 439	891	10 324	7 793
1996	1 346	- 36	8 027	397
1997	1 338	158	10 246	14 579
1998	1 127	595	2 330	1 621
1999	1 391	301	14 308	3 293
2000	1 601	485	15 337	44 595
2001	1 901	85	13 180	4 105
2002	1 627	121	13 997	21 333
2003	1 689	174	13 212	16 812
2004	2 471	306	15 575	8 178
2005	1 256	7 568	20 772	31 646
2006	1 420	56	32 252	9 196
2007	5 450	1 818	54 298	32 998
2008	..	2 102	..	86 338
January–June 2009	..	404	..	3 895

Source: UNCTAD, FDI/TNC database and cross-border M&A database.

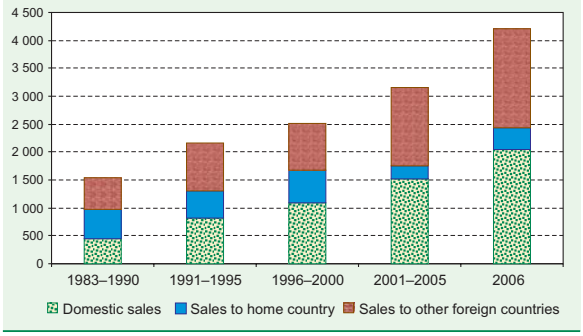
Note: FDI data refer to agriculture, forestry, fishing and hunting; and food, beverages and tobacco. M&A data refer to agricultural production and food processing only, as detailed industry data are available. Figures for inward flows are the sum of countries for which data are available for each year. The number may vary from year to year, and covers an average of 45 countries accounting for about two thirds of world inflows. Cross-border M&A sales are calculated on a net basis as follows: cross-border M&A net sales in a host economy = sales of companies in the host economy to foreign TNCs (-) sales of foreign affiliates in the host economy. The data cover only those deals that involved an acquisition of an equity stake of more than 10%.

Figure III.7. Distribution of cross-border M&As along the value chain in agriculture and food industries, 2006, 2007 and 2008
(Millions of dollars)

Source: UNCTAD, based on the cross-border M&A database.

Note: Secondary for food includes the processing of food, the manufacturing of food processing machinery and fertilizers. For technical description of agricultural M&A data see note of table III.8.

Figure III.8. Sales and exports of majority-owned affiliates abroad of United States TNCs in agriculture, hunting, forestry and fishing, 1983–2006
(Millions of dollars)



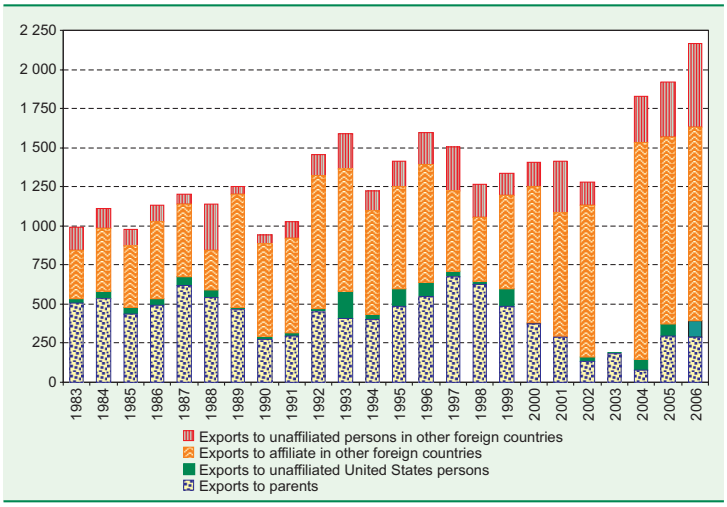
Source: UNCTAD, based on data from United States Bureau of Economic Analysis.

c. Geographical patterns

Data on FDI inflows in agriculture since 2000 indicate the increasing attractiveness of developing regions, particularly Asia and Oceania and Latin America and the Caribbean – and of the transition economies of South-East Europe and the CIS as hosts to FDI in agriculture (figure III.10). In contrast, flows to Africa appear to have declined.[31] After 2000, the FDI inflows to agriculture in developed countries remained small and declined overall. These trends are also reflected in inward FDI stock data (figure III.11). The data suggest that, as mentioned earlier, countries with large territories (such as Australia, Canada, China, Indonesia, the Russian Federation and the United States) are hosts to significant levels of inward FDI stocks or flows in agriculture (table III.9). Other host countries which receive significant amounts of FDI (according to either inward FDI stock or flow data available) include various Asian countries, such as Cambodia, China, Indonesia, Viet Nam (in terms of both flows and stock); Malaysia (in terms of flows only); the Republic of Korea and Turkey (in terms of stock only); and Latin American countries, such as Brazil and Chile (in term of both flows and stock); Ecuador, Costa Rica, Honduras and Peru (in terms of flows only). There was only one African country (the United Republic of Tanzania) on the list of the 20 largest recipients of flows or stocks reported (table III.9). Among developed countries, important recipients include various EU members: France, Poland, Romania and the United Kingdom (in term of both flows and stock); Bulgaria (in terms of flows only); Hungary and Italy (in terms of stocks); as well as Australia, Canada and the United States (in terms of stocks only).

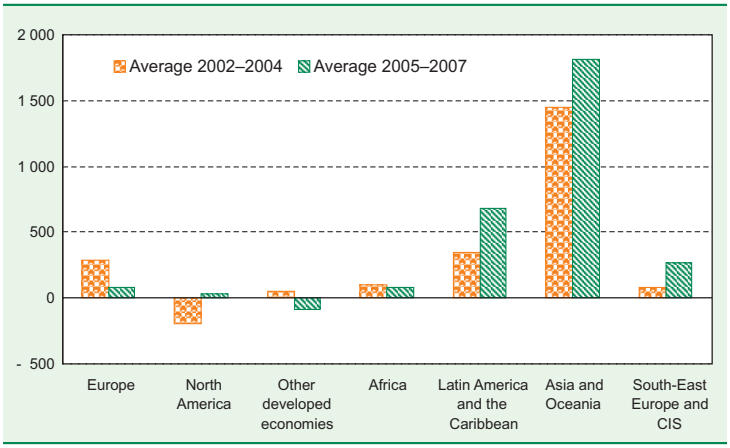
FDI and other forms of TNC participation in agriculture vary by product, region and time (figure III.12). In terms of the main produce targeted by foreign

Figure III.9. Exports of majority-owned affiliates abroad of United States TNCs in agriculture, hunting, forestry and fishing, by destination, 1983–2006
(Millions of dollars)



Source: UNCTAD, based on data from United States Bureau of Economic Analysis.

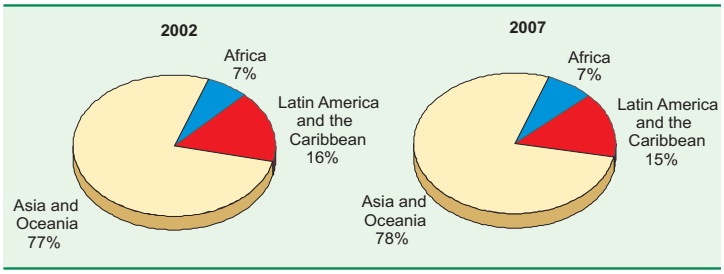
Figure III.10. Inward FDI flows in agriculture by region, 2000–2007
(Millions of dollars)



Source: UNCTAD, FDI/TNC database.

Note: Regional and sub-regional totals include flows to only those countries for which data are available.

Figure III.11. Inward FDI stock in agriculture by developing region, 2002 and 2007
(Per cent)



Source: UNCTAD.

Note: Regional shares cover only those countries for which data are available.

investors, each region and subregion of the world exhibits some degree of specialization. In developed regions, most of TNC activity has concentrated on cash crops such as fruits, vegetables and flowers, and on animal products like meat, poultry and dairy. Developing regions show a somewhat different and more diverse picture: For instance, South American countries have attracted FDI in a wide range of products such as wheat, rice, sugar cane, fruits, flowers, soya beans, meat and poultry, while in Central American countries FDI has focused mostly on fruits and sugar cane. In Africa, foreign investors have shown a particular interest in staple crops such as rice, wheat and in oil crops. But there is also TNC involvement in sugar cane and cotton in Southern Africa and in floriculture in East Africa. In South Asia, foreign investors have mainly targeted the large-scale production of rice and wheat, while TNC activities in other Asian regions have concentrated more on cash crops, meat and poultry. TNCs in transition economies have been mainly involved in dairy products but more recently they also seek to invest in wheat and grains. While the bulk of FDI in developing regions has targeted food and cash crops, various projects related to oil crops in Africa and sugar cane in South America aim at increasing biofuel production (box III.6, figure III.12).

Cross-border M&A sales data – the equivalent of inward FDI – show a slightly different picture: developed countries as targets of takeovers remained relatively important until recently, despite a rise in the share of developing countries in 1996–2000 (table III.10). Cross-border M&A sales of developing countries exceeded those of developed countries for the first time in 2007, and remained the main targets of M&As in 2008. The net cross-border sales of economies in transition, too, rose quickly after 2000. They nevertheless declined after the peak of 2007.

Information on the countries of origin of FDI in agriculture is available on a selective basis. Of the 20 most important countries of origin of outward FDI stock in agriculture, 12 were developed countries, with the United States and Canada occupying the top

Table III.9. Inward FDI flows and stock in agriculture, selected countries, various years
(Millions of dollars)

Host economy	Flows, average 2005–2007	Host economy	Stock, 2007 or latest year available
China	747.0	China	6 156.2[a]
Malaysia	671.2	United States	2 561.0
Brazil	420.9	Viet Nam	1 753.1
Russian Federation	187.7	Canada	1 497.8
Indonesia	119.6	Indonesia	1 001.4[a]
Cambodia	87.0	Russian Federation	953.0
United Kingdom	84.7	Chile	949.7
Poland	73.9	Italy	624.3
Papua New Guinea	71.1	Australia	624.2
Romania	67.7	France	616.4
France	61.5	Ukraine	557.6
Ukraine	57.3	Hungary	493.9
Viet Nam	51.4	United Kingdom	490.8
Peru	51.0	Poland	446.3
Chile	49.5	Romania	412.8
United Republic of Tanzania	40.5	Korea, Republic of	400.5
Honduras	36.2	Brazil	383.6
Bulgaria	34.6	Cambodia	318.7
Ecuador	31.8	Turkey	289.0
Costa Rica	31.4	United Republic of Tanzania	252.4

Source: UNCTAD, based on annex table A.III.3.

[a] Based on approval data.

Note: Data were available for a selected number of countries only (box III.5). Moreover, certain countries reported only FDI flows or FDI stock in agriculture.

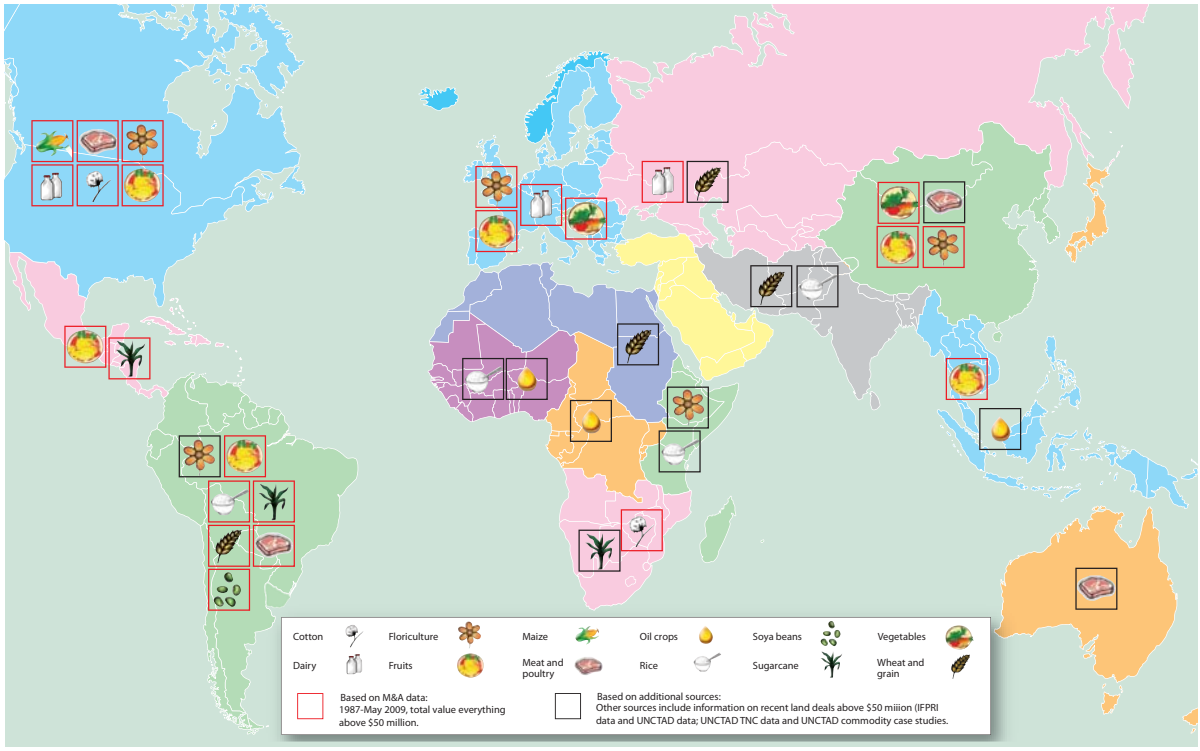
positions in 2007 (figure III.13). There were also six developing countries on the list – with China in third position and the Republic of Korea seventh – and one economy in transition (Croatia). Developed countries also continue to be the main home-countries of acquirers in cross-border M&As in agriculture, but since 2000, developing countries, mainly from South, East and South-East Asia as well as Latin America and the Caribbean, have been gaining in importance as sources of purchases.[32] In 2008, developing economies became major sources of cross-border take-overs, with Latin American firms this time taking the lead.[33]

2. Contract farming

As discussed in section C, contract farming is a significant alternative to FDI in terms of TNC participation in agriculture, and there are some indications that it is growing (Da Silva, 2005). The term contract farming covers a variety of arrangements (box III.7), differing by type of contractor, type of product, intensity of coordination (usually vertical) between farmer and TNC, and number of key stakeholders involved. Five different basic models of contract farming can be distinguished: centralized, "nucleus estate", multipartite, informal and intermediary (box III.7).

TNCs in downstream stages of value chains, such as food manufacturers and retail TNCs, secure

Figure III.12. Main agricultural produce targeted by TNCs in foreign locations, by subregion, up to 2009



Source: UNCTAD, based on the sources cited above.

Table III.10. Net value of cross-border M&As in agriculture by target region, 1987–May 2009
(Millions of dollars)

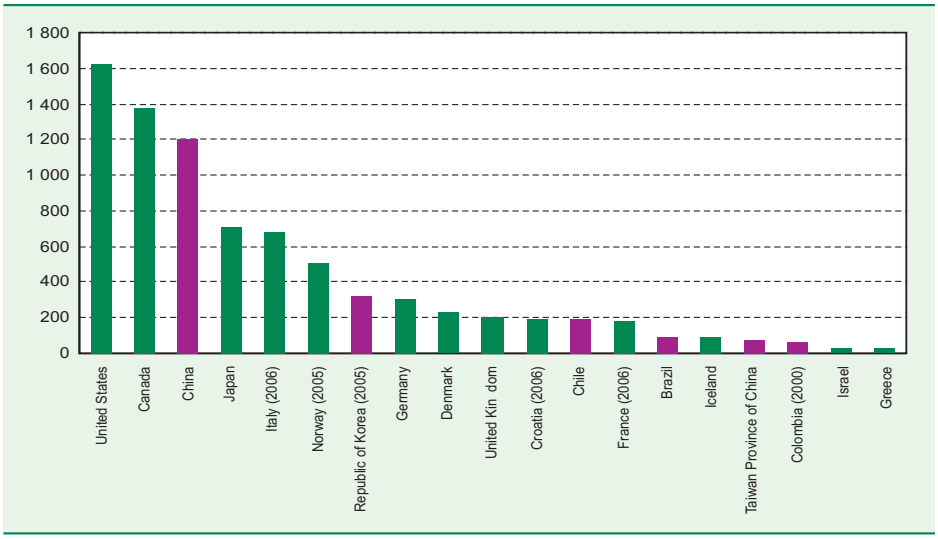
Target region / economy	1987–1990	1991–1995	1996–2000	2001–2005	2006	2007	2008	2009 [a]
World	444.9	239.9	300.7	1 650.6	56.3	1 818.3	2 102.1	400.8
Developed economies	393.3	249.9	160.6	1 639.1	50.8	315.3	1 049.5	348.5
Europe	8.3	29.9	134.3	1 286.1	7.7	277.2	235.2	13.7
North America	371.1	176.4	- 26.0	- 11.8	15.2	-	750.6	-
Other developed countries	13.8	43.6	52.4	364.9	27.9	38.1	63.7	334.7
Developing economies	51.6	- 10.0	140.0	8.1	- 30.9	1 101.2	1 050.3	52.4
Africa	-	-	2.3	-	-	-	-	-
Latin America and the Caribbean	51.6	12.9	93.7	19.8	- 6.0	277.8	849.5	43.0
South and Central America	51.6	12.9	93.7	21.4	- 6.0	277.8	849.5	43.0
Caribbean	-	-	-	- 1.6	-	-	-	-
Asia	-	- 22.9	44.0	- 11.7	- 24.9	778.9	200.8	9.4
West Asia	-	-	-	-	4.0	3.7	2.5	-
South, East and South-East Asia	-	- 22.9	44.0	- 11.7	- 28.9	775.3	198.3	9.4
Oceania	-	-	-	-	-	44.5	-	-
South-East Europe and the CIS	-	-	-	3.3	36.4	401.8	2.3	-
South-East Europe	-	-	-	2.4	18.6	397.9	-	-
CIS	-	-	-	0.9	17.8	3.9	2.3	-

Source: UNCTAD, cross-border M&As database.

[a] Up to May 2009.

Note: Net cross-border M&A sales in a host economy are the sales of companies in the host economy to foreign TNCs minus the sales of foreign affiliates in the host economy. Data cover only those deals that involved an acquisition of an equity stake of more than 10%. (See also box III.5.)

Figure III.13. Outward FDI stock of selected economies in agriculture, 2007 or latest year available
(Millions of dollars)



Source: UNCTAD, FDI/TNC database.

Note: Data for Taiwan Province of China are on an approval basis.

agricultural inputs in host countries by entering into contracts with local farmers. These contracts can be negotiated and managed by the parent company, agents or local affiliates. There are no overall data available at the global level – and in the large majority of countries, even at the national level – to gauge the full extent and contours of contract farming in the same quantitative manner as for FDI or cross-border M&As. However, there are sufficient data available to measure the general magnitude of the phenomenon, as well as its wide geographic spread and considerable intensity in developing countries.

The global spread of the phenomenon across Africa, Asia and Oceania, and Latin America and the Caribbean can be gauged from the contract farming activities of the largest agribusiness TNCs – from manufacturers to traders. TNCs are engaged in this and other non-equity forms of participation in agricultural production in over 110 countries worldwide. For example, in 2008 the food processor Nestlé (Switzerland) had more than 600,000 contract farmers in over 80 developing and transition economies as direct suppliers of various agricultural commodities (Nestlé, 2008). Similarly, Olam

Box III.7. A typology of contract farming

In recent years, contract farming has spread widely, and particularly rapidly to developing countries, as a way to coordinate production and ensure quality. One reason is that it offers companies higher returns from high-value export crops and the introduction of new technologies. In Viet Nam, for example, there are indications that 90% of cotton and fresh milk, 50% of tea and 40% of rice production are being purchased by enterprises through contracts (Kirsten and Sartorius, 2002; Da Silva, 2005). There are five different models of contract farming:

- The *centralized model* is the classical model for contract farming in which a TNC buys produce from a large number of (small) farmers. In this model there is strict vertical coordination, which means that quality is tightly controlled and quantity is determined at the beginning of the growing season. Products produced and traded under this model are those requiring a high degree of processing (e.g. sugar cane, tea, coffee).
- The *nucleus estate model* differs from the centralized model in that the contractor not only sources from independent farmers but also has its own production facilities (an estate plantation). The central estate is usually used to guarantee throughput for the processing unit but is also sometimes used only for research and breeding purposes. This model is mainly used for perennial crops, but there are examples of its application for other crops as well. One *variation* of this model is *outgrowing,* under which a central facility is surrounded by growers who produce on their own land under contract; the central facility provides inputs and technical assistance to growers; it guarantees to purchase the growers' crop subject to meeting predefined standards; and offers growers a pre-agreed percentage of the final sale price of their product (UNCTAD, 2002a: 10–11). Outgrower schemes are most commonly organized around a processor, though they may also be constituted by other off-takers (including traders, exporters or end users), as well as input suppliers, governments or government agencies and non-governmental organizations. Outgrower schemes, in particular, play a special role in agricultural development.
- In the *multipartite model* the contractor is a joint venture between a statutory entity and a private company (such as a TNC). Public or private providers of credit, extension services and inputs may be part of the arrangement. This model has often been used by developing countries as part of the liberalization process. Vertical coordination often increases once the joint venture has sufficient control over its transactions with the farmers.
- The *informal model* is characterized by individual entrepreneurs or small companies contracting informally with farmers on a seasonal basis. The success of this model often depends on the availability of supporting services, sometimes provided by government agencies. An informal contractual relationship provides fewer options for vertical coordination than a more formal relationship. This model is used particularly for crops that require only a minimal amount of processing, such as fresh fruit and vegetables.
- In the *intermediary model,* contractual arrangements are made between at least three different levels: a processor or major trader formally contracts with a collector (or "middle person"), who then informally contracts with a number of farmers. The model has both elements of the centralized and the informal models. Vertical coordination is more difficult under this model as there is no direct link between the principal contractor and the farmers.

Source: UNCTAD, based on Eaton and Shepherd, 2001; and Bijman, 2008.

(Singapore), a developing-country TNC, has a globally spread contract farming network: in 2008, it sourced 17 agricultural commodities from approximately 200,000 suppliers in 60 countries (most of them developing countries) (Olam, 2008). As for Unilever (United Kingdom/Netherlands), agricultural crops which make up two thirds of the raw materials used by the company, are sourced mostly from 100,000 smallholder farmers and larger farms in developing countries.

Apart from these global players, many other TNCs are involved in contract farming on a regional or geographically selected basis. For example, SAB Miller (United Kingdom) has contract farming programmes with smallholder farmers in India, South Africa, Uganda, the United Republic of Tanzania and Zambia. The number of smallholder farmers involved in contract farming in these countries with SAB Miller has increased from 62 in 2000–2001 to 16,829 in 2009.[34] Another example is Grupo Bimbo (Mexico), which in 2008 had more than 3,000 contract suppliers spread across various Latin American countries (Grupo Bimbo, 2008). Supermarket TNCs such as Wal-Mart (United States) and Carrefour (France) are other prime examples of companies with geographically selected contract farming. The latter, for instance, is sourcing from large numbers of contract farmers in 18 developing countries.[35]

In various developing economies, including more advanced and lower-income countries, the share of contract farming in total farming is high, and the intensity of TNC involvement is important. For instance, in Brazil, 75% of poultry production and 35% of soya bean production is sourced, largely by TNCs, through contract farming (UBA, 2005; Moussa and Ohinata, 2009); in Viet Nam the story is similar, with 90% of cotton and fresh milk, 50% of tea and 40% of rice being purchased through farming contracts (Anh, 2004); and in Kenya, about 60% of tea and sugar are produced through this mode.[36] Among

the poorest countries, contract farming – primarily by TNCs – in some cash crops can be exceptionally high: for example, in Mozambique this was the case for 100% of cotton production, as also in Zambia for both cotton and paprika. An extreme example of TNC involvement in contract farming is Nestlé in Pakistan where in 2007 the local affiliate collected milk from 140,000 farmers over an area of 100,000 square kilometers.[37]

Case study evidence (as illustrated below) highlights the major role that contract farming plays in various host countries. These cases confirm that contract farming with TNC involvement is present in all developing regions and significant in some instances. In countries where FDI in agriculture is permitted (through leasing or ownership of land), contract farming can still be a leading choice of TNCs, because it is midway between coordination through markets or standards on the one hand and FDI on the other. Compared with coordination of standards, contract farming is riskier, but ensures better control over product specifications, and compared with FDI, it may be less capital-intensive and less risky, but requires that farmers develop better capabilities.

- In *Asia*, an example of a contract farming scheme that is part of a GVC is provided by Nestlé India which has a retail network of some 700 outlets in India, serviced by 4,000 distributors and covering 3,300 towns. Its products include baby food, infant milk powder, dairy whiteners, sweetened condensed milk, ghee, UHT milk, curd and butter. In 2001, Nestlé sourced milk from over 8,500 local farmers, from larger ones directly and from smaller ones through agents.[38] In Malaysia, Nestlé was reported to have started a red rice contract farming project in 2007, with the support of the Agricultural Department of Sarawak, to supply its global production of infant cereals (GRAIN, 2008a).
- Again in *Asia*, Pepsi (United States) has been involved in the export of Basmati rice from India since 1990. After extensive R&D in the country, Pepsi ventured into contract farming in Basmati rice in 1999 after having invested over Rs.5 million in a processing plant (MANAGE, 2003). By the end of 2004, the company extended contract farming from 800 hectares to 4,000 hectares to meet the requirements of its manufacturing plant.
- In China's rice industry, Japanese trading TNCs started procuring specific Japanese rice varieties through contract farming in the late 1990s, and exported them back to Japan. For example, Mitsui

Box III.8. Contract farming in the Lao People's Democratic Republic

In the Lao People's Democratic Republic, contract farming takes various forms mentioned in box III.7. In the *rice* industry, the Lao Arrowny Corporation, a joint venture between a Lao and a Japanese investor, established in 2002, produces organic Japanese rice for export to Japanese expatriates in South-East Asia. The company recruited small farms throughout the country, covering a combined area of 18,500 hectares countrywide. In 2004, the company had approximately 2,000 households under contract. In the *tea* industry, contract farming involves 520 households and covers a production area of approximately 400 hectares. The contracts are signed between Chinese traders and a local Provincial Government, which organizes farmers to grow the tea for a predetermined price. The Chinese investors provide seeds and technical assistance on production and processing methods, and they purchase all of the tea from the farmers to sell in the Chinese market. In the *maize* industry, verbal contracts have been made between a Thai import firm and approximately 600 households with a total cultivation area of 1,136 hectares. The firm supplies contracted farmers with inputs including seeds, fertilizer and credit. In *Soya bean* production, contract farming is organized mostly by a United States–Lao joint venture feed mill firm, although in 2004, many contracts were breached and the supply chain broken when Chinese traders offered more competitive prices and purchased soya beans from the contracted farmers. In the *sugar* industry, Lao farmers produce sugar cane for a Chinese sugar mill across the border. The buyers provide some seeds and fertilizer, but do not offer a guaranteed price. In *sweetcorn* production, Vientiane Province Lao Agro Industry Co. (LAI) is a Thai–Lao joint venture affiliated with Lampang Food Products, a Thai food processor and exporter. LAI has been operating in the country since 1994, processing bamboo shoots, baby corn, mangoes, and sugar palm seed. LAI contracts households from the sweetcorn farmer production and marketing group (FPMG) to supply sweetcorn to its cannery. The company provides credit for seeds and fertilizer, while the local government provides credit for land preparation. Although only 11 households on 3.5 hectares were contracted in the 2006/07 dry season, LAI is targeting a planting area of approximately 160 hectares to produce 2,000 tons of sweetcorn. In *horticulture*, Thai processing firms organize contract farming of horticulture crops such as mustard cabbage. Finally, in the *rubber* industry, Pará rubber tree cultivation was introduced in the mid-1990s with Chinese assistance. The area under rubber cultivation in the Northern provinces has since expanded steadily due to growing demand from China. Although large-scale concession areas currently account for most of the rubber production, the Government is promoting smallholder rubber production as a way of stabilizing shifting cultivation and increasing upland farmers' incomes.

Source: UNCTAD, based on Setboonsarng, Leung and Stefan, 2008.

has been engaged in rice contract farming in China since 1998 through a joint venture with Satake (a Japanese manufacturer of machinery for rice and other food products) and a local company.[39]

- In the rice industry of Viet Nam and its neighbours in Indochina, Kitoku Shinryo (Japan), which is mainly a wholesale dealer of rice and maize products, established a joint venture in 1991 with An Giang Import-Export, a local SOE, to construct a rice-processing mill in Viet Nam. The joint venture company procures high-quality rice from 2,000 contracted farmers from An Giang Province of Viet Nam, as well as adjacent provinces in Cambodia and Thailand (ADB, 2005; Khiem, 2005).
- In some countries, such as the Lao People's Democratic Republic, there is relatively ample information available on the product scope of contract farming (box III.8). It covers rice, tea, soya beans, sugar cane, sweetcorn, horticultural and rubber production, and involves various types of foreign investors. In the provinces of the Lao People's Democratic Republic (as well as Cambodia) which border Thailand and China, contract farming has emerged in response to the lack of local markets and the attraction of the markets of the larger neighbouring countries (Setboonsarng, Leung and Cai, 2006).
- In *Latin America and the Caribbean*, large banana TNCs, such as Chiquita, Dole, Del Monte and Fyffes, have developed extensive contract farming schemes since the 1970s (Hall, 2008; Arias et al., 2003), and have kept their own plantations only in some countries (e.g. Chiquita, Del Monte and Dole in Colombia, Costa Rica, Ecuador, Guatemala and Honduras). In countries such as Ecuador, Nicaragua and the Caribbean countries, TNCs involvement in banana production is mainly through contract farming (Hall, 2008).
- In *Africa*, one example of contract farming is horticulture and floriculture in Kenya. Over time, the country has become a major source of horticultural exports to various developed countries (Wee and Arnold, 2009). TNCs have established business linkages with local farmers through various outgrower arrangements. Wholesalers that source flowers from different parts of the world also contribute to contract farming, which involves many local smallholders. One of the South African affiliates of the Flower Group (Netherlands) sources flowers from more than 70 growers in Kenya. Flamingo Holdings (United Kingdom), a flowers and vegetables TNC, involves over 600 smallholders in growing vegetables for the company in Kenya.
- In *Africa*'s coffee industry, an important contract farming scheme in Uganda involves the production of Kawacom Sipi Organic Arabica coffee. The scheme is run by Kawacom (U) Ltd., an affiliate of Ecom Agroindustrial Corporation (a commodity trading company incorporated in Switzerland). In the area covered by the scheme, 62% of households have registered in it. Kawacom pays an organic premium which gives the farmers the incentive to undertake more stages of the production process on the farm, including assuming the risks associated with the necessary investment in equipment and labour (Bolwig, Gibbon and Jones, 2009).
- In the banana industry in *Africa*, TNCs' involvement takes place mostly via contract farming, with the exception of Cameroon and Côte d'Ivoire (Hall, 2008). These TNCs still control banana exports.

3. Trends in South-South investment in agriculture

Although no clear trends can be discerned so far, there are indications that South-South investment in agricultural production, both FDI and non-equity forms, is on the rise. The drivers behind most of these investments do not differ in kind from those of developed-country TNCs. For instance, Sime Darby's (Malaysia) $800 million investment in a plantation in Liberia in 2009 is a horizontal diversification by the world's largest firm in the oil palm industry.[40] Similarly, Chinese investments and contract farming in commodities such as maize, sugar and rubber in the Mekong region – especially in the Lao People's Democratic Republic and Cambodia – are driven by the home country's strategy to gain access to resources for its agribusinesses, and the host countries' objective to secure investments for developing their agriculture (Rutherford, Lazarus and Kelley, 2008). The proximity of home and host countries means that relatively small companies can be involved in the China-Mekong region investments. At a more modest level, regional expansion also underlies Zambeef's (Zambia) expansion into Ghana and Nigeria.[41] In Latin America, the Grupo Bimbo (Mexico) has ventured into a number of countries in that region.[42]

However, in the wake of the food crisis (section B.3), an additional significant home-country driver of the expansion of South-South investments is the push for food security by countries such as China, the Republic of Korea and, most significantly, the Gulf Cooperation Council countries of West Asia. All of these countries are major importers of grains, with large populations relative to arable land (Woertz, 2009; World Bank, FAO and IFAD, 2009a; Freeman, Holslag and Wei, 2008). To varying degrees, the governments of these source countries have decided that investment abroad in countries, which gives them control over crop production and export of the output back to the home economy, can contribute

towards ensuring food security for their populations. In fact, historically there has been a recurring cycle of reliance on foreign investment in agriculture.[43] However, inasmuch as the recent food crisis seems to be the result of a confluence of factors, the drivers of food-security-related FDI may be less volatile than before.

Until recently, the availability of underutilized agricultural land was seen as perhaps the main host-country factor driving for food-security-related FDI in agriculture (Woertz et al, 2008). However, it is now increasingly recognized that perhaps the most crucial factor or driver is not land per se, but rather the availability of water resources to irrigate the land. For example table III.11 shows that many West Asian economies possess very little fresh water (per capita), and a number of these countries are making (or considering making) investments in relatively water-abundant countries and land. It is this critical water situation that primarily explains why a number of GCC countries have overturned their decades-old policy of fostering agricultural production in their own economies to undertake agricultural investments in other developing countries, as well as transition economies. Saudi Arabia is an example of this policy shift (box V.14). Apart from the GCC, other investor countries from the South, including China, face severe water shortages for agricultural production (FAO, 2003; UNESCO, 2009; Xie et al., 2009).

Irrespective of longer term considerations, South-South FDI that is driven by food security concerns is currently in a cyclical upswing, but its scale is not easy to determine because many relevant deals have only recently been signed; others are being considered or in negotiation. So far, of the definite larger scale investments involving land acquisitions (i.e. outright ownership and long-term leases), the largest investing countries from the South include Bahrain, China, Qatar, Kuwait, the Libyan Arab Jamahiriya, Saudi Arabia, the Republic of Korea and the United Arab Emirates. The leading developing host countries are in Africa, with Sudan, Ethiopia, and the United Republic of Tanzania among the foremost recipients of investments (figure III.14).

As mentioned earlier, the scale of South-South FDI for food security cannot be gauged, as the majority of projects are at early stages of negotiation, and it is unclear whether they will become actual investment projects in the future. Nevertheless, the scale of some of these potential investments is large and controversial, especially as they affect the existing use of agricultural lands and the production structures of host economies, thereby creating major changes and potential displacements in traditional agriculture (chapter IV).

Table III.11. Water resources in selected regions and countries, 2008

(Cubic metres)

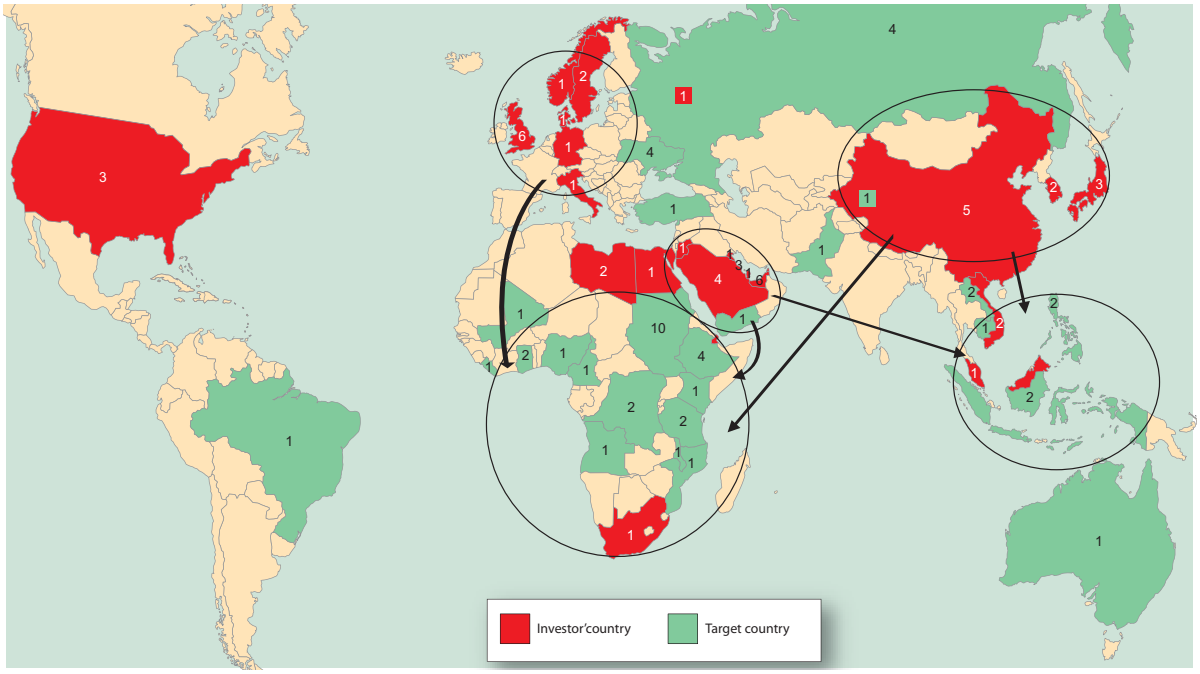
	Region / country	Fresh water resources per capita
Selected West Asian countries	Bahrain	..
	Iran, Islamic Republic of	1860
	Iraq	..
	Kuwait	..
	Oman	399
	Qatar	126
	Saudi Arabia	104
	United Arab Emirates	49
	Yemen	194
Regions	Latin America and the Caribbean	24 471
	Europe and Central Asia	11 473
	Sub-Saharan Africa	5 093
	East and South-East Asia, and Oceania	5 022
	South Asia	1 230
	West Asia and North Africa	757
Major host countries for investors seeking to operate farms for food security	Australia	24 118
	Brazil	29 000
	Cambodia	8 642
	Ethiopia	1 623
	India	1 152
	Kazakhstan	4 978
	Kenya	581
	Myanmar	..
	Pakistan	366
	Philippines	5 664
	Sudan	813
	Thailand	3 333
	Turkey	3 150
	Ukraine	1 127
	Viet Nam	4 410

Source: UNCTAD, based on FAO data.

E. Major TNCs in agriculture and related activities

This section identifies the major TNCs involved in agriculture and related industries, and examines their characteristics and competitive or ownership advantages. Most major TNCs operating in agriculture and related industries – with the notable exception of "new investors" – have operated overseas for many decades. However, a number of them no longer focus on agricultural activities, trying instead to influence these activities by controlling and coordinating value chains via various forms of non-equity participation. This does not mean, however, that they are entirely absent from agricultural production (section C). For example, TNCs in the banana industry still source about half of their produce from their own plantations (box III.6). TNCs therefore may be directly involved in agricultural production, or they may be purchasers of agricultural output, or key suppliers of critical inputs to agriculture, or distributors of that production, or they may internalize downstream activities such as processing, marketing, branding and merchandising downstream outputs.

Figure III.14. Investor and target regions and countries in overseas land investment for agricultural production, 2006–May 2009
(Number of signed or implemented deals)



Source: UNCTAD.

Notes: This map covers only confirmed deals that have been signed, some of which have been implemented. However, not all signed deals have been implemented, and all signed deals that were rescinded by one or both parties before the end of May 2009 are excluded. Prospective deals reported in the press, but which have not progressed to the stage of agreement are excluded. The total number of deals was 48, shown by both source and destination countries.

In addition to TNCs in agribusiness value chains, firms from unrelated activities may also move into agriculture. Notable examples are foreign extractive industry firms moving into agriculture in Africa, services firms diversifying into agricultural assets,[44] and manufacturing firms attempting to acquire land abroad for agricultural production. Additional notable cases are general trading TNCs, especially Japanese *sogo shosha* (general trading companies), which sometimes also have projects in agricultural production (Goerzen and Makino, 2007). Some of these projects started in the 1970s, while others, such as Mitsui's investment in Brazil,[45] are more recent. These borderline cases are not covered in the section below, which focuses on TNCs with a systemic involvement in agriculture and directly related activities.

Some of the analysis below uses lists of top TNCs (when data are available) to identify the major TNCs in agriculture and related activities, while other parts use more descriptive methods. There is a separate list for large privately owned TNCs, which are important players in all segments of agribusiness, but for which data on international activities were not available (table III.12). For that reason, those firms are ranked by their sales in agriculture and related industries rather than by foreign assets. TNCs with a major link with agriculture, and thus the ones covered in this section, are either those based in agricultural production, or have stronger than arm's-length relationships or modalities with agricultural producers such as contract farming. Most of these TNCs are from developed economies, but some are also from developing economies such as Malaysia, Hong, Kong (China), Mexico and Singapore (table III.13, box III.9).

1. Agriculture-based TNCs

The universe of TNCs based, or primarily involved, in the agricultural production segment of the value chain (farms and plantations) is relatively small at present (annex table A.III.4). Judging from the top 25 list, most companies based in agriculture usually also have major operations in downstream activities (such as processing or trading of the commodities produced), especially abroad. Consequently, the distinction between agriculture-based TNCs and those further downstream, is not always clearcut. The group of the 25 largest agriculture-based TNCs also differs from the list of top firms in agriculture-related industries (section E.2) in terms of a major presence of developing-country firms. The list of leading agriculture-based TNCs is almost evenly

Table III.12. Top 25 TNCs in agribusiness industries, ranked by foreign assets, 2007
(Companies in bold are based in a developing or transition economy)

Rank	Agriculture-based	Suppliers	Food and beverages	Retail	Privately owned (ranked by agri-food sales)
1	**Sime Darby Bhd.**[a] (Malaysia)	BASF AG[b]	Nestlé SA	Wal-Mart Stores	Cargill Inc.
2	Dole Food Company, Inc.	Bayer AG[b]	Inbev SA	Metro AG	Mars Inc.
3	Fresh Del Monte Produce[c]	Dow Chemical Company[b]	Kraft Foods Inc	Carrefour SA	Lactalis
4	Socfinal SA	Deere & Company	Unilever	Tesco PLC	Suntory Ltd.
5	**Charoen Pokphand Foods Public Company Ltd.**[d] (Thailand)	El Du Pont De Nemours	Coca-Cola Company	McDonalds Corp.	Dr August Oetker KG
6	Chiquita Brands International, Inc.	Syngenta AG	SAB Miller	Delhaize Group	Louis Dreyfus Group
7	**Kuala Lumpur Kepong Bhd. (Malaysia)**	Yara International ASA	Diageo Plc	Koninklijke Ahold NV	Barilla
8	KWS Saat AG	Potash Corp. of Saskatchewan	Pernod Ricard SA	Sodexo	Ferrero
9	**Kulim (Malaysia) Bhd.** (Malaysia)	Kubota Corp.	Cadbury PLC	Compass Group PLC	Keystone Foods LLC
10	Camellia PLC	Monsanto Company	Bunge Limited	Seven & I Holdings Company Ltd.	McCain Foods Ltd
11	Seaboard Corp.	Agco Corporation	Heineken NV	**China Resources Enterprise Ltd.** (Hong Kong, China)	OSI Group Companies
12	Sipef SA	The Mosaic Company	Pepsico Inc	Yum! Brands, Inc.	Perdue Farms Inc.
13	Anglo-Eastern Plantations PLC	ICL-Israel Chemicals Ltd	Molson Coors Brewing Company	Autogrill	Bacardi Ltd.
14	Tyson Foods Inc	Provimi SA	Kirin Holdings Company Limited	Alimentation Couche Tard Inc	Groupe Soufflet
15	**PPB Group Bhd.** (Malaysia)	Bucher Industries AG	Archer-Daniels-Midland Company	Safeway Incorporated	Golden State Foods
16	**Carsons Cumberbatch PLC** (Sri Lanka)	Nufarm Limited	Associated British Foods PLC	Sonae Sgsp	Groupe Castel
17	**TSH Resources Bhd.** (Malaysia)	CLAAS KGaA	Carlsberg A/S	George Weston Limited	J.R. Simplot
18	**Multi Vest Resources Bhd.** (Malaysia)	Sapec SA	HJ Heinz Company	**Dairy Farm International Holdings Ltd.** (Hong Kong, China)	Schreiber Foods
19	**Bakrie & Brothers Terbuka**[e] (Indonesia)	Terra Industries Inc	Danone	Jeronimo Martins SA	Muller Gruppe
20	PGI Group PLC	Aktieselskabet Schouw & Co.A/S	Anheuser-Busch Companies Inc	**Kuwait Food Company (Americana)** (Kuwait)	Bel
21	Firstfarms A/S	Genus PLC	**Wilmar International Ltd.** (Singapore)	Kesko OYJ	Perfetti Van Melle
22	**New Britain Palm Oil Ltd.** (Papua New Guinea)	Scotts Miracle-Gro Company	Sara Lee Corp.	Starbucks Corp.	Rich Products
23	**Karuturi Global Ltd.** (India)	Kverneland ASA	Constellation Brands Inc	Burger King Holdings, Inc.	J. M. Smucker
24	Nirefs SA	Sakata Seed Corp.	**Fraser & Neave Ltd.** (Singapore)	Maruha Nichiro Holdings, Inc.	Haribo
25	**Country Bird Holdings Ltd.** (South Africa)	Auriga Industries A/S	Danisco A/S	Familymart Company Limited	Eckes-Granini

Source: Annex tables A.III.4–8.

[a] A conglomerate with its core business in agriculture and plantations.
[b] General chemical/pharmaceutical companies with large activities in agricultural supply, especially crop protection, seeds, plant science, animal health and pest management.
[c] Legally unrelated with Del Monte Foods.
[d] Members of the Charoen Pokphand (CP) Group report their activities by company.
[e] Diversified company with important presence in agriculture.

Note: Various companies are present in more than one agribusiness industry. In those cases, they have been classified according to their main core business.

split between developed- and developing-country firms, indicating that while agriculture-related TNCs from developed countries dominate the international markets, firms from developing countries are also emerging as important players in global food and non-food agricultural production (box III.9). For instance, 12 of the top 25 agriculture-based TNCs are headquartered in developing countries and 13 in developed countries (annex table A.III.4). Indeed, a developing-country TNC, Sime Darby Berhad (Malaysia), occupies the top position (box III.9), while United States firms (Dole Food and Del Monte) are in second and third positions (table III.12).

Of the top 25 agricultural TNCs, Malaysia, a developing country, has the largest number of TNCs (6), followed by the United States (5) and the United Kingdom (3) (annex table III.14). By region, the developed-country TNCs on the list are split between the EU (8) and North America (5), while all but two of the dveloping-country firms are headquartered in Asia. The remaining developing-country TNCs are from South Africa and Papua New Guinea. It is notable that TNCs from some major agricultural regions and countries – including Latin America and the Caribbean, South-East Europe and the CIS, and developed countries such as Australia and New Zealand – are missing from this list.[46] This picture remains similar even if privately owned large agricultural TNCs such as Lactalis (France) and Perdue Farms (United States), listed separately (annex table A.III.8) are taken into account, as these firms are also headquartered in either the EU or North America.

In terms of international assets, there is a big gap between the top five companies, each of which have foreign assets exceeding $1 billion, and the

bottom nine companies, each of which have foreign assets below $100 million. A general characteristic of the largest agricultural TNCs is that, in addition to horizontal integration (investments in agriculture in foreign countries), they are often engaged in downstream (especially food processing activities, or vertical integration), and in unrelated activities (conglomeration). Examples include firms such as Sime Darby (Malaysia) and Charoen Pokphand Foods (Thailand) (box III.9).

2. TNCs from other segments of the value chain

The universe of agriculture-related TNCs includes food processors/manufacturers, retailers, traders and suppliers of inputs. They can participate in agricultural production through FDI in farming/plantations, as well as contract farming and other contractual forms (section D.2). These TNCs are usually larger than agricultural TNCs. For example, the world's largest food and beverages TNC, Nestlé (Switzerland), controls $66 billion in foreign assets, while the largest food retailer, Wal-Mart (United States), has $63 billion in foreign assets. In contrast, the largest agricultural TNC, Sime Darby (Malaysia), has foreign assets of only $5 billion. In addition to FDI, the largest agriculture-related TNCs are extensively involved in agricultural production through contract farming and the setting/implementing of standards for products in the cultivation of which they are involved through non-equity forms or other means (section D.2; chapter IV). These firms are still predominantly headquartered in developed countries. Indeed, the largest suppliers to farming operations are headquartered *only* in developed countries. Their main features include the following:

- *Suppliers of inputs such as equipment, fertilizers and seeds:* Only developed-country firms figure on the list of the largest TNC suppliers to agriculture, as mentioned earlier (annex table A.III.5). Eight of them are headquartered in the United States, three in Germany, while Denmark, Japan, Norway and Switzerland are each home to two of them. The largest suppliers are diversified firms (such as BASF, Bayer and Dow Chemicals) engaged in the production of all kinds of chemical products, including agricultural supplies (table III.12). The power of TNC suppliers of inputs over their buyers can be significant, especially when the TNCs control key technologies. Some of the largest TNCs, such as Monsanto, have close links with trading companies (e.g. Cargill).
- *Manufacturers/processors:* Manufacturers and processors that are closely linked with production (e.g. through contract farming, and in some cases, direct production) can have a major impact on agriculture. Food and beverage processors are large firms, and the majority are headquartered in developed countries (39 of the largest 50) (annex table A.III.6). In terms of foreign assets, the largest agricultural TNC, Sime Darby, is only comparable in size to the 24th largest food and beverages TNC (Fraser & Neave). The top three food manufacturing TNCs (Nestlé, Inbev and Kraft Foods) are particularly large. The international activities of food and beverages TNCs are highly concentrated: the nine largest, all headquartered in developed countries, control more than $20 billion in foreign assets each; together, they represent about two thirds of the foreign assets of the top 50 such firms. In comparison, the foreign assets of the largest developing-country food processing TNC, Wilmar International Limited (Singapore) (box III.10), amounted to only $6 billion in 2007.[47] The United States is home to by far the largest number of food processing TNCs (14 of the top 50, of which Kraft Foods and Coca-Cola have the largest foreign assets), followed by the United Kingdom (5 TNCs plus co-ownership of Unilever), and the Netherlands (3 TNCs plus co-ownership of Unilever). Of the 11 developing-country firms, 8 are headquartered in Asia and 3 in Latin America and the Caribbean (Mexico). In the developing world, Hong Kong (China), Singapore and Mexico are the most important home economies. There are no African firms in the top 50 list. Some of the major food processors, such as Mars (United States), Barilla (Italy) and Suntory (Japan), are privately owned and thus listed separately (annex table A.III.8).
- *Retailers/supermarkets:* Retailing and supermarket TNCs also play a major role in international agricultural supply chains. The majority of the 25 largest TNCs in this industry (22) are from developed countries (table III.12 and annex table A.III.7). The largest TNCs are engaged in the distribution of not only agricultural or food products, but also a wide range of other goods. The largest supermarket TNCs have significant buying power vis-à-vis suppliers such as farmers. Seldom engaging in direct production of crops or agricultural commodities (Weatherspoon, 2003; Bijman, 2008), they are more likely to participate in agriculture in developing countries through contract farming. The United States is the most important home country of large retail TNCs (6 companies), including Wal-Mart, which, with assets abroad of $63 billion, is in a league of its own. It has an international presence similar to that of Nestlé (Switzerland), the world's largest food processing TNC, with $66 billion of assets abroad. The other TNCs on the list are geographically disperse; no other country has headquarters of more than two firms. By region, 11 of the top 25 firms

Box III.9. Selected agriculture-based developing-country TNCs

Recently, agriculture-based companies from developing countries have started emerging as TNCs, investing in both agricultural production abroad, and in downstream activities further afield. Some agriculture-based developing-country TNCs have a long corporate history, started in some cases with colonial-linked expatriates (e.g. in South-East Asia's rubber plantation industry). Over time, these companies have diversified into oil palm and other crop plantations. Some of them also evolved into locally owned conglomerates through change of ownership and acquisition of shares by investors of the host country (e.g. Sime Darby). These companies figure prominently on UNCTAD's list of the largest agriculture-based TNCs (annex table A.III.4).

Sime Darby Berhad (Malaysia) (which tops the list of largest agriculture-based TNCs) is today a major developing-country TNC, involved in a wide range of activities, with agriculture remaining its main business. With 633,000 hectares of land ownership, Sime Darby Berhad is today one of the largest plantation companies in the world. The merger with Golden Hope Plantations Berhad and Kumpulan Guthrie Berhad in 2007 helped Sime Darby Berhad become the world's largest palm oil producer, with the potential to produce 8% of the world's total palm oil output. Sime Darby Berhad has operations that span 20 countries with a total workforce of 100,000. Its plantation operations are mainly in oil palm in Malaysia and Indonesia. Its plantation operations in Indonesia account for about 35% of its total planted oil palm land. It is also involved in rubber plantation and processing. Apart from plantations, Sime Darby Berhad is involved in downstream activities such as oils, fats and oleochemical businesses in 15 countries in Asia, Western Europe, Africa, West Asia, Latin America and North America.

Charoen Pokphand (CP) (its affiliate Charoen Pokphand Foods Public Company is 5th on the list) is the largest agro-industrial and food conglomerate in Thailand. The main business of CP is in livestock and aquaculture operations, involving upstream and downstream activities such as animal farming, animal feed production, food processing and fish farms. While most of its business is based in Thailand, CP has expanded abroad, with operations in China, India, ASEAN countries, Turkey, the Russian Federation and the United Kingdom. In 2008, 15% of its $4.7 billion revenues came from its overseas operations.

Kulim Berhad (Malaysia) (9th on the list) was originally incorporated in the United Kingdom in 1933 and started rubber plantation operations in Malaysia in 1947. It is now a leading Malaysian plantation and processing TNC in oil palm and is also involved in oleochemicals production, other downstream activities and processing. Other important operations relate to foods and restaurants, and manufacturing. The drive for more land for oil palm cultivation had pushed Kulim to internationalize actively since 1996 with investments in Papua New Guinea and later in Indonesia and the Solomon Islands. Its overseas investments in oil palm plantations were made through a series of acquisitions. In 2008, Kulim generated total revenues of $1.2 billion, of which only 37% were generated in Malaysia. As at 31 December 2008, some 70% of the plantation land the company owned was outside Malaysia, in particular in Papua New Guinea and the Solomon Islands.

Karuturi Global Limited (23rd on the list), headquartered in India, was incorporated in 1994. It is today a global leader in the production and export of roses through both the growth of existing business and acquisition of assets abroad. In 2007, it acquired Sher Agencies, the world's largest rose farm in Kenya, for $69 million. Started as a floriculture company, Karuturi has now expanded into food processing in India, and large-scale agricultural farming in Ethiopia.[a] In 2008, it acquired more land in Ethiopia to expand operations into production of rice, wheat, palm oil and sugar cane for sugar and ethanol. The company is involved in the entire value chain in floriculture – from R&D and production to marketing of cut flowers from its farms. It supplies flowers on a contractual basis to Tesco supermarkets in the United Kingdom and Edeka in Germany. In the financial year ended March 2008, the company generated $100 million revenue of which the lion's share was generated from its operations abroad.

Source: UNCTAD, based on annual reports of companies and company information from their websites.
[a] In 2008, its operation in Ethiopia employed 1,200 workers and 4,000 in Kenya.

are from Europe (all of them headquartered in the EU-15), 8 from North America and 3 from Japan. There are only a few developing-country TNCs on the list, and their foreign assets are much smaller than those of their developed-country counterparts. The largest developing-country TNC in this group (China Resources Enterprise) is one-tenth the size of the largest developed-country TNC in terms of foreign assets.

- *Traders/wholesalers:* Data on trading TNCs is scarce, as most of these firms (e.g. Cargill, Louis Dreyfus) are privately owned and do not provide detailed statistics on their foreign activities. However, they are large players on the international scene (UNCTAD, 2008d), and have a major impact on agricultural producers through their purchasing schemes. They seldom invest or participate, through contract farming, in agricultural production in host countries. There are also various TNCs that are active in both trading and manufacturing, such as Noble Group (Hong Kong, China) and Baywa (Germany) (annex table A.III.6). Certain traders, such as Olam International (Singapore) (box III.10) are headquartered in developing countries. In certain industries, such as coffee growing, trader TNCs have a major influence on

Box III.10. Selected agriculture-related developing-country TNCs

There are various developing-country TNCs with important activities in agriculture that have evolved from downstream segments of the value chain. Most of them started their activities in manufacturing, and then diversified their activities to the whole value chain, including agricultural production. Examples of agriculture-related developing-country TNCs, some of which are on the list of the top 25/50 of their industries, are described below.

Wilmar International (21st on the list of food processors), headquartered in Singapore, is one of the largest agriculture-related TNCs in the world. With operations in 20 countries on four continents, and annual revenues of roughly $29.1 billion in 2008, the company has evolved rapidly since it was established as a palm oil trading company in 1991. It has systematically internalized nearly the entire palm oil value chain – from cultivation to sales of retail products. Today, the company is a substantial plantation operator in Malaysia and Indonesia; it operates 250 processing plants in Asia and Europe; and sells edible oils under its own brands in China, India and Indonesia.

San Miguel Corporation (35th on the list of food processors) is headquartered in the Philippines. Established in 1890 as a brewery, today it is a conglomerate with beverages, food, agribusiness and packaging businesses. It has brewery operations in many ASEAN countries and China, and owns meat processing plants in Indonesia and Viet Nam, as well as a feed mill and hog farm facility in Viet Nam.

Grupo Bimbo (42nd on the list of food processors) is a leading Mexican producer of baked foods with a significant presence in many Latin American countries and in the United States. The group comprised more than 108,000 associates in 18 countries, including China and the Czech Republic. It produces, distributes and markets over 5,000 products, including breads, buns, cookies, cakes, pastries, bagels, packaged foods, tortillas, salted snacks and confectionary goods. It has internationalized rapidly through both greenfield and M&As. In 2008, Grupo Bimbo generated $9.4 million in sales of which half came from its operations based in the United States and Latin America.

IOI Corporation (44th on the list of food processors), headquartered in Malaysia, started as a real estate company in 1982. Today it is an integrated palm oil company involved in the entire value chain, from seedling, extraction and other value added manufacturing, to processing, refinery and commodity trading activities. In 1985, it started oil palm plantation activities in Malaysia and extending those activities to Indonesia in 2007. Most of its plantations are in Malaysia and it employs about 30,000 people in 15 countries.

Olam International Limited (Singapore) (not on the list), is often portrayed as one of the world's leading traders of agricultural commodities such as cocoa, coffee, cotton, cashew, rice, sesame, sugar and timber. It has 43 majority-owned affiliates abroad, most of which are located in developing countries. The most important ones are located in Nigeria, Ghana, Indonesia, Viet Nam and Côte d'Ivoire. Developing countries account for 82% of its foreign assets. Today, with global sales of over $5 billion and 8,000 employees worldwide, Olam is "a global leader in the supply chain management of agricultural products and food ingredients".[a] Its activities in each product include not only sourcing but also primary processing, storage, transport, warehousing, marketing and distribution. The company sources 16 agricultural commodities from 200,000 suppliers in 56 countries (most of them developing countries) selling them to 6,500 of customers in over 60 destination countries. Olam supplies many of its products to international brand owners and processors such as Cadbury, Cargill, Lavazza, Kraft, Mars and Nestlé.

Zambeef Products Plc (not on the list) is one of Zambia's leading agri-businesses based in Zambia with a presence in West Africa, particularly in Ghana and Nigeria. It is involved in the production, processing, distribution and retailing of livestock, dairy products and edible oils, as well as in the plantation of sugarcane and oil palm. In 2008, more than 20% of the group profits of $10 million came from crop farming operations, mainly in Zambia.

Source: UNCTAD, based on companies' annual reports and their websites.
[a] Olam: News release: "Milestone Year for Olam" (accessed 13 June 2009).

the production process. Trader TNCs, such as Louis Dreyfus, have affiliates operating in all key coffee producing countries, carrying out milling, trading and warehousing operations. TNCs often purchase raw or semi-processed coffee directly from growers or their cooperatives, through both contract farming and spot market transactions (Krueger and Negash, 2009).

3. New investors in agriculture

Certain trends with respect to FDI in agriculture, observed from the end of the Second World War have been showing signs of a reversal since the beginning of the new millennium. The emergence of new investors in agricultural production signals the possibility that FDI in this industry could become more significant in the new millennium. For some home countries, this could be for strategic reasons similar to those of the first industrializing countries: ensuring the supply of agricultural goods for their growing populations and industries. Additional, and relatively new, factors include securing agricultural feedstock for new industries such as biofuels (sections B.3 and D.3). Historically, foreign private investors were not the only cross-border actors involved in agricultural production. States, international public institutions (e.g. aid agencies), trading houses, and individual

migrant farmers, to mention a few, also participated in international investment in agriculture. Today, there seems to be a revival of this trend, and if these actors retain their residence in their home country, their activities can be regarded as FDI. In other cases, for example when farmers move their residence abroad together with their operations (essentially an act of migration), these activities are not FDI in the narrow sense of the definition. However, their patterns of involvement in agricultural production and their impact may be similar to those of TNCs.[48] Overall, FDI by the new investors is relatively recent, and its scale not yet known. Nevertheless, it is important to examine these trends because these investors represent a relatively untapped source of investments for agricultural development.

Some developing-country governments (e.g. China, the Republic of Korea and GCC countries) have shown a growing interest in investment in food production abroad, which has contributed to the rise of FDI and other contractual arrangements in agricultural production from those economies. Some of this investment is by SWFs, which often act in tandem with their respective governments. These activities have contributed to strengthening further the South-South dimension in international investment in agriculture. As most of the SWFs have limited reporting on their international activities, it is difficult to separate their foreign agricultural involvement from the rest of their activities. For that reason, it is not possible to draw a list of the most important SWFs ranked according to their foreign agricultural production. Moreover, most of the agricultural projects of SWFs are currently in the phase of exploration and consultations.[49]

New investors in agricultural production are "new" for a number of reasons: for instance, they may originate from countries, such as those of the GCC, which have not traditionally invested overseas in this industry; or they may be cross-industry TNC entrants into the industry, such as Daewoo Logistics (Republic of Korea) and ExxonMobil (United States); or they may be non-TNC actors, usually private equity or State-owned funds, sometimes especially established for this purpose, such as Palmer Capital/Bidwells private equity fund (Germany/United Kingdom) and Gulamerah Fund (Malaysia) (table III.14). The main drivers (or motives) behind the rise of the new investors are both threat and opportunity. For example, Agricapital (a State-owned fund based in Bahrain) and Hadco (Saudi Arabia) are investing in food crops overseas to support government food security policies, while at the same time supplying food to the world's burgeoning markets. These markets are seen as a considerable opportunity, which is spurring international investment in agriculture by companies and funds such as Vision 3 (United Arab Emirates) and Goldman Sachs (United States) (table III.13). Similarly, companies such as ExxonMobil (United States), Al Jenat (Saudi Arabia) and Wuhan Kaidi (China) see the production of food crops for biofuels as both a way of fending off the threat of an energy crisis and an opportunity to enter a new market (table III.13).

Some of the opportunities have arisen from policy changes in host countries, which, though generally aimed at increasing investment in agriculture, also encourage niche investments, such as research into the medicinal properties of plants in Cambodia and the Lao People's Democratic Republic, and – in this case – links to the pharmaceutical industry (Shaw and Callander, 2007; George 2005). The likely importance of agricultural production in the future, especially because of the rising world population and change in consumption patterns (section B), has also prompted large-scale speculative overseas purchases of land by companies and funds, such as Jarch Capital (United States) and Landkom (United Kingdom) (table III.13). Many of these speculative land purchases take place in developed or transition economies, but a large number are also developing countries (figure III.14), which has drawn much attention, including accusations of "land grabbing" (Cotula et al., 2009, Smaller and Mann, 2009; chapter IV, section D.4).

F. Conclusions

This chapter has examined the main characteristics of agriculture, as well as the involvement of TNCs in agricultural production and related activities. Its major findings, summarized below, indicate that the participation of TNCs in developing country agriculture is on the rise, with major implications for these economies' modernization, and consequent policy challenges for their governments.

Agriculture is an important and socially, as well as politically, sensitive industry in developing countries, despite a history of relative neglect after the Second World War. It differs considerably from manufacturing and services because it is central to the provision of food, the eradication of hunger and poverty alleviation, and is usually a major source of employment. Moreover, recent trends in agricultural production have given rise to a host of politically charged issues, including those related to food security and food crises; non-food uses of agricultural produce such as biofuels; its impact on the environment (such as depletion of water resources, deforestation and soil degradation) and biodiversity; the high levels of carbon emissions from some forms of agriculture and their impact on climate change; and the controversial use of GM crops. Agriculture is diverse in terms of the different actors involved, the types of crops that

Table III.13. Examples of new investors in agricultural production in developing countries, based on their motivations for investment

Purpose of agricultural production	Overall context of investment			
	Threat (e.g. food security)		Opportunity (e.g. new profitable niches)	
	Type of Investor	Examples	Type of Investor	Examples
Food crops	State-owned funds (including SWFs)	- Agricapital (Bahrain) - G2G (Qatar) - Libya Africa Investment Portfolio (Libyan Arab Jamahiriya)	Start-up companies	- Trans4mation Agritech (United Kingdom)
	Private sector investors with state support	- Hadco (Saudi Arabia) - Ald Dahra (United Arab Emirates) - IFFCO (United Arab Emirates)		
			Private equity funds	- Gulamerah Fund (Malaysia) - Palmer Capital/Bidwells PEF (Germany/United Kingdom) - Nagathom Fund (Cambodia) - Vision 3 (United Arab Emirates)
	Large (cross-)industry entrants, including SOEs	- Zad Holding Co. (Qatar) - ZTE (China)		- Goldman Sachs (United States) - Dubai World Trading (United Arab Emirates) - Mitsui (Japan)
Non-food crops/ activities			Start-up companies	- Sun Biofuels (United Kingdom) - Skebab (Sweden) - Flora EcoPower (Germany) - CAMS Group (United Kingdom) - ScanFuel (Norway) - Agroils (Italy)
			Investors in land (and "land rush") Private equity funds	- Jarch capital (United States) - Landkom (United Kingdom) - Renaissance Capital (Russian Federation)
	Large cross-industry entrants, including SOEs	- ExxonMobil (United States) - Al Jenat Consortium (Saudi Arabia) - Wuhan Kaidi (China)		- CNOOC (China) - ZTE International (China)

Source: UNCTAD.

Note: Investors can have multiple motives, some of which are indicated by arrows. For example, large TNCs such as Daewoo Logistics (Republic of Korea) and Zad Holding Co. (Qatar) are investing in food crops for food security reasons (sometimes at the behest of their home Governments), but also because they see investment in crops as a viable long-term opportunity.

are produced and the dominance of certain regions in the production of particular commodities because of historical and climatic factors and policy influences.

In developed and certain developing countries, increased investment and technological progress have transformed agriculture into high-productivity activities, but in other developing economies, agriculture continues to suffer from a chronic lack of investment, leading to food insecurity and the underutilization of the industry as a motor for development. In developing countries that suffer from an investment gap in agriculture, public spending has been low and declining as has foreign financial support in the form of ODA. Consequently these countries face difficulties in meeting objectives such as the MDG target of halving hunger and poverty by 2015.

This chapter has found that FDI and TNC involvement may be one possible channel for meeting the investment needs of agriculture. However, considering the mixed historical record of foreign investors in the industry and the policy challenges that agriculture raises, TNC participation is far from being the only channel; and this participation needs to be followed closely by policy makers, in order to maximize the potential benefits and minimize the potential negative impact (chapters IV and V).

FDI in agriculture is unevenly spread within and between countries. In most countries of the world, agriculture accounts for a very small share of inward FDI (typically less than 1%). There are, however, some developing countries (such as China, Malaysia, Peru, Swaziland and Viet Nam), and LDCs (such as Cambodia, Ethiopia, the Lao People's Democratic Republic and the United Republic of Tanzania) where the share of agriculture in inward FDI exceeds this level by a substantial margin. Data also indicate that Asia is the developing region that has attracted the most FDI in agriculture. Moreover, its share in the total of developing economies increased in the 2000s. A caveat to this finding is data scarcity that could result in underreporting of FDI in agriculture in some countries and regions.

TNC involvement in agricultural production goes beyond FDI; it also encompasses a wide range of non-equity, short- and long-term contractual arrangements. Of these latter arrangements, much TNC participation in agricultural production appears to be in the form of contract farming. Indeed, the post-war withdrawal of TNCs from investment in developing countries' agricultural production did not necessarily rollback their involvement in agriculture. Among others, they continued to play an important role through segments of the agribusiness value chain,

for example as suppliers of inputs or in the form of contractual agreements between traders, processors and retailers with farmers in developing countries. This chapter has found that contract farming is a key channel for linkages between TNCs located at various stages of the agribusiness value chain – both upstream and downstream of agriculture – and in agriculture itself. Hence, the impact of TNCs on agriculture should be evaluated by considering the full extent of their participation, whether direct or indirect; and, within direct participation, whether it is in equity (FDI) or non-equity (non-FDI) forms.

After a long period of relative decline, since the 1990s there have been signs of increased TNC participation in agricultural production in developing countries. Foreign investors are evincing renewed interest in agriculture, as indicated for example by a rising number of deals aimed at securing access to arable land in host countries. However, most of these deals are so far at an early stage of negotiations. There are also "new" investors emerging in agriculture, including not only TNCs, but also investors such as sovereign wealth funds, private equity funds and, sometimes, farmers themselves going abroad. Many of these new investors originate in developing countries, and there are indications that South-South investment in agricultural production, both FDI and non-equity forms, is on the rise. Cross-border M&As undertaken by investors from developing countries have started to exceed those from developed countries, and are targeted mostly at other developing countries.

Despite the rise of new investors, the universe of large TNCs in the agribusiness value chain is still dominated by developed-country TNCs – with one exception: agricultural production itself. The list of the largest agriculture-based TNCs contains a relatively large number of developing-country firms (12 out of the 25 firms), including the largest agricultural TNC, Sime Darby (Malaysia). In contrast, TNCs participating in agricultural production from the upstream (suppliers) or downstream (processors, retailers, traders) segments of agribusiness value chains are primarily based in developed countries. This is particularly true of suppliers of inputs.

TNCs usually target specific crops in individual host countries and regions. These preferred crops may vary by region, subregion and country. In general, however, apart from some new investors, TNCs target staple crops less frequently than cash crops. According to the findings of this chapter, TNCs have invested mostly in cash crops (e.g. fruits, vegetables and flowers), and in animal products (e.g. meat, poultry and dairy) in developed countries. In some developing regions, such as South America and some African countries, TNCs also target staple crops such as rice and wheat. Nevertheless, they focus mostly on export commodities such as flowers, fruits, oil crops, soya beans and sugar cane, to mention a few.

The home-country drivers of FDI and other forms of TNC involvement in agriculture include a number of factors, which are not mutually exclusive, and which have evolved over time. New push drivers include, rapid rates of growth, especially in emerging economies, leading to higher incomes and expenditures on foodstuffs and imports of some food items; the rising use of agricultural produce for biofuels; and policy changes favouring overseas investment by developing home countries with scarce water and land resources. TNC participation in agriculture has been further spurred by economic and political factors, such as the rise in food prices and shortages – resulting in some export bans – in certain commodities over the past few years. These drivers have also encouraged some speculative international investments in agriculture. In the wake of the food crisis, the push for food security has become a major driver of new investment in agriculture. Looking to host countries, the availability of underutilized agricultural land, increasingly coupled by the availability of water resources to irrigate the land, as well as more open policies towards land ownership and lease, have been the most important pull factors of investment in agriculture.

Although TNC involvement in agriculture varies considerably by host region and country, in those host countries, especially LDCs, where TNCs play a major role, they can have a wide range of economic, environmental, social and political impacts. Given the social and political sensitivity of agriculture, these effects need to be examined carefully, including implications for food security in host and home countries (chapter IV). FDI and other forms of TNC involvement in agriculture pose a major challenge, as well as an opportunity, for policymakers in both home and host countries, especially in managing the impact of such investment (chapter V). As mentioned above, a new salient issue of particular relevance to host country policymakers is the acquisition of large areas of land by foreign investors. This and other issues will be analysed in the following two chapters.

Notes

1 Also known as "agrofuels".

2 This aspect has led some water scarce countries to invest in major agriculture producing locations to address their food security concerns (section D.3). Instead of using scarce water resources at home for food production, water-scarce countries can import food farmed in water-rich countries.

3 Steady genetic improvements and generation of new plant varieties in a number of crops as a result of R&D have contributed to continuing gains in yield (World Bank, 2007: 160–163).

4 For instance, the number of countries planting GM crops increased to 25 in 2008, from 6 in 1996. The number of farmers who use GM crops increased by 1.3 million in 2008 to 13.3 million, and more than 90% of farmers who use GM crops in developing countries are small and resource-poor (James, 2008).

5 Four types of companies – mostly TNCs – have had an impact on the development and adoption of GM technology. These are agriculture seed and biotechnology companies, chemical pesticide companies, food and feed companies, and major retailers such as supermarkets and fast food chains. Seeds and biotech TNCs, such as Monsanto, DuPont/Pioneer and Syngenta, developed most of the GM crops currently on the market, and remain dominant players (Paarlberg and Pray, 2007).

6 Excluding deforestation.

7 According to data collected by UNCTAD and summarized in table III.3.

8 Bangladesh, Cambodia, Cameroon, China, Indonesia, Ethiopia, Madagascar, Mali, Mongolia, Nicaragua, Nepal, Pakistan, Papua New Guinea, Sierra Leone, the United Republic of Tanzania, Thailand, Uganda, Viet Nam and Zambia, according to data collected by UNCTAD and summarized in table III.3.

9 For instance, more than 70% of employment in East Africa during 2002–2006 was in agriculture, compared with only 32% in North Africa.

10 MDG-1: refers to "Eradicate Extreme Hunger and Poverty" by halving, between 1990 and 2015, the proportion of people whose income is less than $1 a day and the proportion of people who suffer from hunger.

11 Gross capital formation is measured by the total value of the gross fixed capital formation, changes in inventories and acquisitions less disposals of valuables.

12 For instance, Africa and South, East and South-East Asia have a relatively high share of agriculture in total investments, which suggests the greater importance of agriculture for economies in these regions.

13 The term *food crisis* refers to a situation of food shortages arising from the imbalance between the basic needs of a society in terms of the supply of food and the means of providing for the population's dietary needs and food preferences. A food crisis is always context-specific in time and cause. Thus the 2007–2008 food crisis was associated with a major increase in world food (and fuel) prices (FAO, 2008b), fuelled by changing patterns in global food (and energy) consumption and trade.

14 With the exception of coffee and palm oil.

15 See "Soaring food prices: Facts, perspectives, impacts and actions required", document HLC/08/INF/1 of the "High-level conference on world food security: the challenges of climate change and bioenergy", Rome, 3–5 June 2008.

16 Food security refers to the availability of sufficient quantities of food of appropriate quality and a given society's access to as well as utilization of it (FAO, 2006a). The supply of food is secure if all people of the given society, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 2008a). Conversely, "the two most basic causes of food insecurity" are "inadequate food availability at national level and inadequate access to food due to poverty" (Smith, El Obeid and Jensen, 2000: 205).

17 The energy crisis and high fuel prices have encouraged the growth in biofuel crop production (III.B.3.c), putting additional pressure on the global food supply. Speculative activities to take advantage of high food prices have further worsened the food supply situation and pushed prices up even further (FAO, 2008b).

18 One third of this amount relates to financing immediate requirements for food assistance, agricultural inputs and budgetary as well as balance-of-payments support.

19 See also Maputo Declaration on Agriculture and Food Security: "10 percent national budget allocation for agriculture development", African Union, July 2003 (www.africa-union.org/root/UA/Conferences/2008/avril/REA/01avr/Pamphlet_rev6.pdf).

20 See also Declaration of the High-level Conference on World Food Security: The Challenges of Climate Change and Bioenergy, 5 June 2008, Rome. Available at: www.fao.org/fileadmin/user_upload/foodclimate/HLCdocs/declaration-E.pdf.

21 For instance, ZTE International (China), Flora EcoPower (Germany), Sun Biofuels (United Kingdom) and CAMS Group (United Kingdom) have signed land deals with African countries for production of biofuel crops. Similarly, Sinopec (China) and Chinese National Overseas Oil Corporation (China) have interests in Indonesia to grow maize for biofuel production ("Sinopec reportedly to invest $5 billion in biofuels in Indonesia, *Biopact*, 28 January 2008, at: http://news.mongabay.com/bioenergy/2008/01/sinopec-reportedly-to-invest-5-billion.html, and "CNOOC to build 3 biodiesel plants in West Kalimantan", *Biopact*, 7 May 2007, at: http://news.mongabay.com/bioenergy/2007/05/cnooc-to-build-3-biodiesel-plants-in.html).

22 See, the Declaration of the High-level Conference on World Food Security: The Challenge of Climate Change and Bioenergy, 5 June 2008, Rome.

23 However there are variations of this situation. For example, until the 1980s, a number of foreign investors in Latin America's food industry integrated vertically into primary production, controlling vast areas of land and engaging in local processing, as well as the exports of goods such as sugar, bananas or meat to Europe and the United States (Dinham and Hines, 1983; Striffler and Moberg, 2003).

24 This can be a point of concern. It has been argued, for instance, in a critical analysis of the nature of intellectual property as applied to plants, that there are significant commercial and political pressures towards classifying, say, new plant varieties as 'inventions' (patentable) rather than 'discoveries' (not patentable) (Van Dooren, 2008).

25 Such changes can have a large influence on farmers — among others — in developing countries. Fold and Gough (2008) show how EU consumers' tastes have changed for a new variety of pineapple 'MD2' (marketed by plantation TNCs via supermarkets) over another variety also grown in Ghana, 'smooth cayenne'. Local smallholders growing smooth cayenne have seen a large fall for their produce, without being able to switch to 'MD2'.

26 For instance, there are likely to be four principle transaction costs incurred by TNCs (or other companies) in contract farming, especially smallholders: (a) costs of drafting, negotiating and enforcing contracts; (b) maladoption costs when contract specifications are not met; (c) set-up and running costs associated with governance; and (d) bonding costs of implementing secure commitments. These costs can be reduced to mutual advantage, as in the case of contract farming in seed maize involving a TNC and smallholders in Indonesia (Irianto, Yuniarti and Santoso, 2006).

27 Because of the critical role of breeding and propagation in the floriculture (and horticulture) value chain, a number of suppliers of other inputs have recently acquired companies

in this segment. In a number of cases, these acquisitions have resulted in participation in agricultural production. For example, Syngenta AG (Switzerland) has bought a number of breeders/propagators, including Fischer (Germany) in 2007 and Goldsmith Seeds (United States) in 2008. These two companies, now part of Syngenta, are producing/farming flower seeds and bedding plants, among others, in developing countries as far afield as Guatemala and Kenya.

28 For TNCs, operating their own production sites (for example, plantations) abroad may be an efficient way of influencing the quantity, price and quality of the commodity produced. However, it might also entail high costs. One of the main costs is that of supervision, reflecting a relatively high cost of monitoring labour (because, despite mechanization, certain parts of agricultural production are still labour-intensive). This applies to complex crops, in particular, which require specific technologies or management. Other costs are associated with land and labour, such as the establishment of infrastructure, costs of permanent staff and costs arising from political opportunism (e.g. taxation or extortion) (Simmons, 2003: 5).

29 These results may be due to differences in statistical accounting, but also to only partial availability of FDI data (box III.5), compared to a relatively comprehensive coverage of M&As.

30 In 2008, the breakdown remained similar, with agriculture accounting for 2% of the total and food production for 97% (figure III.7).

31 This low level may be partly due to a lack of adequate statistical information.

32 Examples of TNCs from developing countries active in cross-border M&A purchases include Guthrie Group and Sime Darby Group (both Malaysian) in primary production (section E).

33 For example, J&F Participacoes SA (a cattle company in Brazil) acquired Smithfield Beef Group in the United States; Los Grobo (an Argentinian wheat company) acquired majority interest in Sementes Selecta (a Brazilian soybean company); JBS SA (a Brazilian cattle company) acquired majority interest in Inalca (an Italian sausage and meat producer); and the same company acquired Tasman Group Services (a meat packing company in Australia).

34 7,500 in India, 5,800 in Uganda, 2,685 in Zambia, 686 in the United Republic of Tanzania and 158 in South Africa (SAB Miller, 2009).

35 www.carrefour.com/docroot/groupe/C4com/Pieces_jointes/RA/Part3_ra_2004_GB.pdf.

36 "Contract farming offers fresh hope for Africa's declining agriculture", East Africa Policy Brief, No. 2. NEPAD, 2005.

37 "Nestlé opens new milk factory in Pakistan, its largest milk reception plant in the world", Nestlé Press Release, 16 March 2007.

38 In the latter case, contracts were concluded with the agents (Birthal et al., 2008).

39 www.nouminren.ne.jp/dat/200107/1001070902.htm (accessed on 18 February 2009).

40 "Malaysian investors take over Guthrie as Ellen signs $800 mn deal", *Informer Newspaper,* Liberia, 1 May 2009. Interestingly, Sime Darby has taken over most of the rubber plantations previously owned and operated by Guthrie, another Malaysian TNC, which were overrun and looted by rebels during the Liberian civil war.

41 Zambeef Annual Report, 2008, and company website at: www.zambeef.com.

42 Grupo Bimbo Annual Report, 2008, and company website at: www.grupobimbo.com.

43 For instance, in the 1970s, GCC countries also engaged in FDI in agricultural production, mostly in Arab League countries, prompted by threats of a boycott in food delivery to the region during the oil crisis. Later this investment thrust was diluted – though not fully abandoned – as their international relations stabilized. Similarly, in the 1960s and 1970s the Republic of Korea tried to develop overseas food production centres in South America, mainly in Argentina, Brazil, Chile and Paraguay.

44 For example, the IJM Group (Malaysia), a TNC with core assets in construction, property and infrastructure operations, created an affiliate, IJM Plantations, in 1985. IJM Plantations has expanded its oil palm operations to Indonesia and, through a joint venture, to India. It is involved in oil palm cultivation, plantation, processing and downstream activities including trading of agrochemicals and fertilizers, agro-management services and R&D.

45 For example, in 2006, Mitsui (Japan) invested $76 million in a joint venture with CHS (a diversified energy, grains and food company in the United States) called Multigrain (headquartered in Switzerland), which grows soya beans, maize, and cotton, produces flour, gins cotton, sells fertilizers, exports soya beans, markets and exports cotton and sugar, and imports wheat, all in Brazil. In 2008, Mitsui agreed to increase its original investment by $124 million (www.mitsui.co.jp/en/release/2008/1188983_2849.html).

46 In the case of the latter two, this is due to a lack of detailed statistics on certain large co-operatives and product boards.

47 In 1999, SAB Miller, originally established in South Africa, moved its headquarters to the United Kingdom, and hence can no longer be considered a developing-country TNC. If it had remained South African, it would have been the largest developing-country food and beverages processor in 2007.

48 Evidence of migrant farmers as international investors is very limited. However, the phenomenon exists and can be important locally. For example, with the help of local investment promotion agencies, a relatively significant number of farmers have been moving from India to arid lands in Kenya and Uganda to grow cotton, sugarcane, groundnuts, paddy, bananas and citrus fruit and flowers ("Kenya woos Andhra farmers", *IST Financial Express*, 20 October 2004; "Debt-ridden Andhra Pradesh farmers eye Uganda for new start", *IST Financial Express*, 8 November 2004; "1,000 Indian Farmers Coming to EA", *The Nation* (Nairobi), 29 October 2004). These migrants cultivate 50,000 acres of land, leased to them for 99 years ("Kenya: Indian Farmers to Receive 99-Year Arid Land Lease", *The East African Standard*, 13 November 2004).

49 For example, the Kuwait Investment Authority has organized the visit of its high-level delegations to countries such as Cambodia, the Lao People's Democratic Republic and Myanmar, aimed at exploring investment opportunities in agriculture and manufacturing (*Gulf News*, 16 Aug 2008; *Asia Times*, 26 Sept 2008).