Regoverning Markets

Small-scale producers in modern agrifood markets

Innovative Practice

Russia
Innovative practices connecting smallholder producers with dynamic supply chains: A case study of small-scale tomato producers in the Astrakhan region of Russia

Eugenia Serova

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Regoverning Markets

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Contents

1 Executive summary

Since the start of the economic reforms, fruits and vegetables in Russia have mostly been produced on smallholder farms (85–95 per cent of the gross output of these products). These smallholder producers are the heirs to the Soviet subsistence household farms: workers on the collective and state farms used to cultivate small plots of land to supply their family's everyday food needs as well as some income from selling the surplus output of these plots. With the start of the reforms in the early 1990s, these small farms were given a great deal of freedom and, owing to the tremendous fall in production of the large-scale farms, smallholders produced more than half of Russia's gross agricultural output. However, in the majority of cases smallholders' produce is for household consumption only, and fruit and vegetable imports have increased dramatically. Fresh fruits and vegetables require a very particular supply chain: refrigerator vehicles, special warehouses, and special handling facilities. All these are seriously lacking in modern Russia, where dynamic supply chains are oriented to large producers and importers. Thus, smallholders – the major fruit and vegetable producers in Russia – are almost completely excluded from the main food chain and participate only in local traditional markets.

On the other hand, poverty in rural areas has grown since the start of the reforms and there is no reliable safety-net policy in the country to tackle this growing problem. Household plots are the main source of income for a vast number of the rural population, although they are excluded from the food chains. In post-communist countries such as Russia, with a dual farm structure, small producers lose out in the competition with large producers for access to food chains.

This report presents a case study of a reactive private business initiative in the tomato (vegetable) sector of the Astrakhan region. Astrakhan tomatoes have a strong reputation in the Russian domestic market and consumers prefer to buy them fresh and unprocessed.

The Astrakhan region is located in the delta of the Volga River and is a unique area for the open-ground production of early vegetables and melons. Astrakhan tomatoes and watermelons are a widely known brand and are well appreciated in Russian markets. Nevertheless, almost all the production of these products is currently concentrated on smallholder plots. Geographically the region is difficult to access because the Volga and Ahktuba rivers have numerous tributaries and the fields are located on hundreds of islands. As a result, Astrakhan producers found themselves excluded from Russian markets for a long time and many fields were abandoned. The major competing tomato-producing regions are located more conveniently for the major markets. Astrakhan's one big advantage is that the ripening period for tomatoes begins here two to three weeks ahead of other regions, which gives the growers a price premium. Therefore, speedy delivery to the centre of Russia is a basic necessity for tomato growers in the Astrakhan area. In response to this need, local (later outside) truck drivers organised in a kind of 'truck stand' union with a shared dispatch system. The dispatchers receive requests from the smallholder producers to deliver their produce to other regions and they allocate these requests to the drivers. The drivers pick up the products at a prearranged venue and time, get advance payment and go to the markets. The representative of the contractor (producer) meets the truck at the market and conducts the final financial settlement.

The system works quite efficiently and provides a remarkably good net return for both the smallholder producers and the drivers. However, the whole system operates in the shadow economy and is not only ignored but partially suppressed by the regional authorities. Nonetheless, there is the potential for further development of the initiative in order to meet the demands of the modern dynamic food chains. The case study allowed some recommendations to be elaborated for both regional and federal governments in order to use the dispatch system to incorporate smallholder producers in the food chains.

2 Background: The macro and meso context

2.1 Smallholders – the main vegetable producers in Russia

Since the start of the economic reforms, vegetables in Russia have mostly been produced on smallholder farms (up to 80 per cent of gross output). These smallholder producers are heirs to the Soviet subsistence household farms: workers on the collective and state farms used to cultivate small plots of land to supply their family's everyday food needs as well as some income from selling the surplus output of these plots. With the start of the reforms in the early 1990s, these small farms were given a great deal of freedom from state regulation and their production increased. Owing to the tremendous fall in production of the large-scale farms, smallholders produced more than half of Russia's gross agricultural output (see Box). However, in the majority of cases smallholders' produce is for household consumption only.

Box 2.1: Farm structure in Russia

The Russian land reform and farm restructuring in the early 1990s was based on the procedure of so-called land-sharing. Workers as well as pensioners and social service officers of the kolkhozes and sovkhozes were given equal conditional shares in the land operation of the parent farms. The conditional shares were not marked on the ground and can be considered as a kind of option: they gave the holder the right to withdraw with a physical plot at any time without the permission of the other land share owners; only the location of the plot had to be agreed. These land shares were transferable in all types of legal transaction and were inheritable. A person accumulating a certain number of land shares could request from the parent farm a plot(s) of land equal to the total nominal size indicated in shares.

In the reform of 1992–1994, around 12 million such shares were allotted to rural dwellers. The average size of land share varied significantly from region to region owing to the varying population density in different parts of Russia, but across the country it was equal to some six hectares. Owing to the competent system of land share transactions, the average size of a family farm was larger than one share – around 40 hectares per farm. About 300,000 households utilised their right to withdraw from the farm enterprises and set up their own family farms.

At the same time, with the start of the reforms household plots were radically emancipated: they enjoy tax concessions and all production restrictions were lifted. Land shares can be used for the expansion of household plots. In the period of social and economic crisis at the beginning of the reforms, these plots were a safety-net for the millions of rural dwellers who produced food for home consumption and also sold surplus agricultural produce at town markets. For some products, such as fresh vegetables and potatoes, household plots became the main producers. And they provide almost half of the national output of cattle and hog meat and milk. Yet, in terms of overall sales of agricultural products, the share of households as a whole is still insignificant. However, during the transitional period, some household farms, especially in the south of Russia, which is favourable for agriculture, transformed into market-oriented production units and can be very intensive producers.

Thus, Russia's agriculture since the transformation period is based on three types of production unit: (1) large-scale farm enterprises (the successors of kolkhozes and sovkhozes) and various derivative farming companies; (2) individual farms, which are usually run and owned by one family and (3) household plots of the rural population and, to a minor extent, the suburban and urban population (tiny plots of land mostly used for subsistence food production and with some sales of surpluses over family needs).

2.2 Russia’s tomato food chain

2.2.1 Production and imports

Russian national statistics on tomato output are not available. However, estimates by various experts indicate that annual tomato output in Russia is around 2 million tonnes, to which hothouse tomato output contributes from 210,000 to 240,000 tonnes. (Vazhdaeva and Lychev, 2006) Imports of fresh tomato have grown constantly since 2002 and exceed 350,000 tonnes. Besides fresh tomatoes, Russia imports a large volume of tomato paste and tomato concentrate. The paste is used for most canned vegetables and fish, and tomato concentrate (mainly from China) is used for juice production.

Domestic hothouse tomato production is located mostly on large-scale greenhouse farms. The most advanced farms belong to the vertically integrated agri-business holdings, coordinated by processors or retailers. These farms use highly industrialised technologies and are oriented to the processors or supermarkets, which demand products with a long shelf-life. Open-ground tomatoes can also be produced on large-scale farms, but such farms normally are included in vertically integrated or coordinated chains. Their products are mostly committed to the food packaging industry and for processing into tomato paste.

The major actors in the processing sector – Baltimor, Russian Field and PomidorProm – are developing their own farming businesses in order to have secure supplies of raw materials. To a certain extent these companies contract smallholder producers, providing them with seeds, technology and credit. However, owing to the widespread opportunistic behaviour of these smallholder producers, such contracting is limited. A notable proportion of processed tomato products are manufactured not with fresh tomatoes but with tomato paste, some of which is imported. Most tomatoes for fresh consumption or for home preserving are produced on the tiny rural household plots and delivered to town markets. (Vazhdaeva and Lychev, 2006; Baltimor website; Webagro website; 4p website)

2.2.2 The wholesale sector

The wholesale sector for tomatoes is the same as for all other vegetables and fruits.

In the Soviet era, the collection, storage and distribution of fresh vegetables to the retail networks were the function of the state wholesale operators, which had the warehouses, transport and other infrastructure. In the early 1990s this infrastructure was privatised and for a long time was used exclusively delivering imported vegetables. Some of these units remained in municipal ownership and were used for supplying vegetables to social institutions such as hospitals, kindergartens, schools and orphanages. After the crisis in 1998, some of these units were transformed to serve domestic companies, but the wholesale segment is still underdeveloped within the vegetable food chain.

Wholesale markets for smallholders are also very underdeveloped in Russia. There have been several attempts to set up such markets with the assistance of the World Bank and the European Bank for Reconstruction and Development. However, these projects cannot be considered successful. Smallholder producers still sell their products in the town markets, either themselves or via middlemen.

Very often smallholders or transporters delivering their products to the biggest cities are forced to sell their shipments to middlemen on the outskirts of the cities. Theoretically, these semi-criminal middlemen play the role of the wholesale segment of the vegetable chain between smallholder producers and retail outlets (town markets).

2.2.3 The packing industry

The processing of vegetables was seriously affected by the transition period, when the packing industry experienced a dramatic fall and has still not fully recovered. At the same time, new technologies are appearing in the country: for example, the frozen vegetable industry is growing faster than traditional packing.

2.2.4 Quality assurance

Quality and sanitary standards for vegetables, and for tomatoes in particular, are not as important as those for such products as milk and meat. Consumers are mostly concerned with the freshness and taste of these products rather than with contamination. Nevertheless, the packing industry imposes certain standards on raw supplies. As stated above, processors tend to develop their own farms to ensure raw supplies, not least in order to provide the required quality. When the processors collect tomatoes from independent tomato growers there are sometimes conflicts over the quality. Thus, in the Astrakhan region in 2005 the corporate farm Jubilejnaja was not able to fulfil a contract with a processor because the latter insisted on tomatoes not less than 5cm in diameter. (Askatran website)

Smallholders' fresh tomatoes are sold mainly in the town markets. By law, all town markets have to have veterinary, sanitary and radiological laboratories to check samples of each shipment of products delivered to the market. But periodic inspections of markets conducted by the authorities in various regions and towns of Russia demonstrate low implementation compliance: inspectors discovered products sold without the appropriate certification.[1]

2.2.5 Consumption

The Russian domestic vegetable market is still not fully saturated: per capita annual consumption of vegetables is 90kg whereas in the USA, for example, the figure is 194kg. (Yarmarka website)

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[1] For example, for two weeks in October 2006 in the Perm region more than 32 tons of vegetables were banned from sale owing to a lack of certificates. In 2004 in the Vologda region, extensive inspection of retail outlets also uncovered non-certified vegetables (http://www.vn.vic35.ru/piece_of_news.php?fID=59). Inspections in Oryel city in 2006 revealed that not all town markets had the appropriate labs (http://www.orel-adm.ru/index.php?id=3-6-2).

The majority of Russian consumers prefer fresh vegetables, which they buy in town markets in season and in supermarkets out of season. Russian and Ukrainian markets are similar in this respect. A survey of fresh vegetable demand, conducted in eight regions of Ukraine in 2004, showed that 52 per cent of consumers bought vegetables in the supermarkets from November to May and 55 per cent of them bought in town markets from June to October (LND website). (This is consistent with our survey of the tomato market in Moscow; see below). The same survey in Ukraine revealed the major criteria for individual consumers' choice of vegetables: more than 88 per cent of consumers are willing to pay for guaranteed quality and sorted product, although consumers prefer fresh vegetables to canned and frozen. (Ibid)

2.2.6 Prices

Farm-gate prices for tomatoes fluctuate in line with general agricultural prices. However, since the crisis of 1998, farm-gate prices for all agricultural products and crops have increased by 5.3, vegetable prices increased by 8.4, and tomato prices jumped by almost ten times. So tomatoes seem to be a profitable crop in Russian agriculture.

National statistics for tomato retail prices are not available, but in the following section we consider a case study showing net returns for tomatoes in the sampled region in 2006.

2.3 Problems for smallholders

Smallholder producers – the main vegetable producers in Russia – are almost completely excluded from mainstream food chains and participate mostly in the local traditional markets. There are several reasons for this.

Firstly, fresh vegetables require a very particular supply chain: refrigerator vehicles, special warehouses, and special handling facilities. The entire infrastructure in dynamic supply chains is oriented to large producers and importers and small producers have very limited access to it. In post-communist countries such as Russia, with a dual farm structure, smallholder producers lose out in the competition with large producers for access to food chains. The high cost of compliance with standards also hampers smallholders' participation in the mainstream food chain.

Secondly, the entire tomato market in Russia is very strongly repressed by imports. This represents an additional factor of exclusion for smallholders.

On the other hand, consumers in the major Russian megalopolises look for non-industrialised fresh vegetables and fruits, produced on individual plots and sold in town markets. This is the traditional market chain, which is quite highly trusted by buyers. Consumers are accustomed to enjoy deliveries of fresh products to their town markets from early in the season, which is possible owing to the south and north extension of Russia. This provides an opportunity for smallholders in the vegetable market, and in tomatoes in particular.

At the same time, the production of fresh vegetables and fruits by rural households is a major safety-net in the countryside, especially in the main agricultural areas. Even in such marginal areas as the Perm and Ivanovo regions, household plots provide about 17 per cent of overall household incomes; in southern areas this share can reach 50 to 60 per cent. (Kuznetsov et al., 1998) The inclusion of smallholders in market chains is an important element in the elimination of rural poverty. Current Russian agricultural policy has set as one of its major objectives the facilitation of smallholders' access to the markets.

2.4 State policy of support for smallholder producers

At the beginning of the agricultural reforms in the early 1990s, federal agricultural policy accorded individual farmers differentiated treatment. Thus, in 1992 individual farmers enjoyed a soft credit programme that provided them with governmental credit at 8 per cent interest, compared with 28 per cent interest on governmental credit for large-scale farms and from 180 to 200 per cent interest on average on loans from banks at that time. Later this privilege was lifted, but in almost all input subsidy programmes individual farmers received a fixed quota of the overall sum of subsidies, which gave them easier access to these subsidies. Towards the end of the decade this concession too was terminated; and since that time individual farmers have been treated the same as all other agricultural producers. However, tax concessions for individual farmers are still in place (for example, individual farmers are exempt from major taxes for the first five years after acquiring land).

Household producers did not have such access to federal government subsidies. In 2003, a special federal law on household agricultural production was adopted which legitimated governmental support to household producers. But there were no special programmes at the federal level until 2006, when a National Priority Project was adopted.

At the same time, in many regions, especially those where household producers dominated the farm structure, a number of special policy measures were implemented. The most notable of these programmes dealt with soft credit and the establishment of cooperatives for smallholder producers. In Mordovia there is an ambitious programme of support for milk production by smallholder producers.

The National Priority Project for Development of the Agri-food Sector is one of four national priority projects launched at the beginning of 2006. The Project was scheduled to last for two years and its total budget was 30 billion roubles (some US$2 billion), about 20 per cent of the federal budget for agricultural expenditure per year. The Project consists of three major subprojects: (1) accelerated development of livestock breeding; (2) support for smallholder farms; and (3) providing accessible housing for interns and their families in rural areas.

In order to facilitate the development of smallholder producers, the Project envisages the following measures:

- Subsidising of 95 per cent interest on bank loans for small family farms and households. These loans are to be used only for agricultural purposes. Eligible recipients of this subsidy are selected by the municipal administrations. The total cost of this measure was 2.9 billion roubles in 2006 and 3.67 billion roubles in 2007. The budget for this subsidy was allocated as a lump sum to the Rosselkhozbank (Russia's state-controlled agricultural bank) prior to actual lending to smallholders.
- Support for small farm and household cooperatives (marketing, supply and credit cooperatives). Rosselkhozbank was to invest in the equity of these cooperatives and provide technical assistance in their setting up and functioning. For these purposes, Rosselkhozbank received 3.6 billion roubles in 2006 and 4.5 billion roubles in 2007.
- Development of the land mortgage system in rural areas. Rosselkhozbank was to implement several pilot projects, for which it received 100 million roubles in 2006 and 1,200 million roubles in 2007.

In 2006, 130,000 loans to smallholder producers were issued, with a value of more than 40 million roubles (US$1.6 million) – in comparison with 2005, when smallholders received 2,400 loans with a value of 3.4 million roubles. In one year, 2000 new smallholders' marketing cooperatives were set up across Russia.[2]

These cooperatives are intended to increase the inclusion of smallholder producers in dynamic food chains. In addition, the federal government envisages providing soft credit for private businesses that establish small-scale slaughterhouses and for milk collectors dedicated to collecting and facilitating the initial processing of the raw product from smallholder producers.

[2] 'Draft Programme on Social and Economic Development of Astrakhan Region in 2005–2007', mimeo.

2.5 Basis for selecting the Astrakhan region

The Astrakhan region is located in the south-east of the European part of Russia in the delta of the Volga River; its distributary is the Akhtuba River where it discharges into the Caspian Sea. The eastern part of the region borders Kazakhstan. The region is a major transport hub connecting Russia to four other Caspian states. The capital of the region is Astrakhan city, which is located more than 1,500km from Moscow.

The region is situated in a sharply continental climate and in two natural zones – semi-desert and desert zones with long and hot summers. The precipitation rate is around 16mm per month; annual precipitation is five times below the annual evaporability of ground waters. At the same time, the region benefits from unsalinated ground water, which facilitates irrigated farming in the area, especially for vegetable and melon growing.

On the other hand, irrigated vegetable growing, widely developed in the Astrakhan area in the Soviet era, became a trap for local farming in the transition period: the vast irrigation system was faced with under-financing and fell into disrepair, and large-scale vegetable growing was ruined. Currently only one-third of irrigated land is used. (Spbvedomost website; Skavkaz website) Under these conditions, the provision of water for irrigation at almost no charge led to the wide expansion of irrigated vegetable production on the household plots of rural dwellers who had lost their jobs on the large-scale farms. The proximity of overpopulated North Caucasus territories led to notable immigration to the region. Migrants also tend to produce vegetables (as individual entrepreneurs or as employees of local smallholders). In recent years, tomato production in the region has grown steadily, mostly from increasing yields (Table 2.1). Up to 85 per cent of this output comes from household and individual smallholders.

Table 2.1: Tomato production in the Astrakhan region

Area (ha)				Yield (t/ha)				Output (thousand tons)			
2003	2004	2005	2006	2003	2004	2005	2006	2003	2004	2005	2006
9,757.7	8,891.1	10,119.9	9,866.3	17.8	19.3	22.2	24.7	1,568.2	1,674.4	2,191.7	2,347.4

Source: Data from Astrakhan regional administration.

Restoration of the irrigation system requires huge investments as well as water tenure reform, which was not implemented together with land reform in the early 1990s in Russia. Thus, property rights over the elements of the irrigation system and legislation for the regulation of access and use are complex and unclear.

The rural population of the Astrakhan region accounts for one-third of the total population, which is slightly above the national average (27 per cent). The region has a monocentric settlement structure: the regional capital, Astrakhan, has 300,000 inhabitants, two other towns have 30,000 to 40,000 residents each, and the rest of the region's towns and settlements have fewer than 20,000 inhabitants. This means that most of the urban population lives in small towns, where household farming is similar to that in the villages. Thus, household vegetable production determines the living standards of 70 per cent of the total regional population.

The regional administration has a solid policy of support for smallholders. From 2002 to 2005 there was a special programme providing soft credit to smallholder producers (the programme was then continued). (Later this measure was extended to the whole of Russia by the federal government within the framework of the National Project launched in 2006.) However, the mechanisms for getting these loans is extremely complicated, and out of 125,000 households only 2,000 to 3,000 per annum are able to get soft credit. The regional administration also supports smallholder marketing and credit cooperatives – the region is known as the territory with the most widely developed cooperatives.

Large-scale farming collapsed in the region almost at the very start of the transition: in the Soviet period household smallholders provided 35 per cent of gross agricultural output; in 1993 this share had jumped to 60 per cent. Nowadays the region has one of the biggest proportions of agricultural smallholders among the Russian territories – around 85 per cent. In 2003 vegetable production was almost completely located in the smallholder sector. Although in recent years the major actors in Russia's tomato market have begun to invest in large tomato farms in the Astrakhan region (e.g. Baltimor agreed to set up 37 hectares of greenhouse farms in the area), smallholders still dominate tomato production in absolute terms.

These constraints on agriculture imposed specific limitations on product collection and quality control. They also restrict the application of intensive technologies.

The geographical location of the region also creates marketing problems. The main consumers of regional vegetables and melons are Russia's major cities – Moscow, St Petersburg and some other industrial centres in Siberia and the Urals. But the Astrakhan region is more remote from these cities than its closest competitor regions, such as Volgograd, Krasnodar and Dagestan. In addition, the region is difficult to access because the numerous tributaries of the Volga and the Akhtuba mean that the fields are located on hundreds of islands. Because Astrakhan producers found themselves excluded from Russian markets for a long period, some fields were abandoned. Cheap rail and water transport is difficult to utilise because of the small-scale nature of the farming: the shipments are not sufficiently large for bulk transport.

This situation led to the loss of Astrakhan's position in the all-Russia vegetable market: in 2004, regional vegetable production amounted to only 75 per cent of the Soviet era level. However, the region's geographical position has a favourable aspect. Its extreme southern location allows local growers to produce early vegetables (especially tomatoes) two to three weeks before the major Russian producers and because of that they earn a price premium in the major fresh vegetable markets. The prices for early tomatoes are five to seven times higher than the annual average price. The climate allows for two crops of vegetables in the area, which is rare for Russia's regions. Under such conditions, the tomato yield from a plot of less than 1 hectare provides a family of four (two working-age members and two dependants) with enough income for a decent standard of living.

Smallholder producers use polyethylene film and greenhouses heated with natural gas or, in rare cases, firewood in order to start tomato production in March. On small plots, capital-intensive technologies are not applicable, so smallholder producers use a lot of person power – household members and sometimes hired workers (migrants, students, and other seasonal labourers). In recent years, however, smallholders have begun to apply high technology to vegetable production. As the free supply of water for irrigation is becoming more widespread producers are beginning to use drip irrigation, which allows for a 250 to 300 per cent annual net return.

Thus, inclusion in the national market chain is a challenge for Astrakhan vegetable growers. There are several initiatives in the region targeted at solving this problem. The regional administration has a special programme of support for smallholders, which includes soft credit, providing an information system and help with marketing. For example, the weekly town market for smallholders is organised in Astrakhan city with support from the administration. Market pitches are allotted without charge, phytosanitary certificates are issued at the venue, and special transportation is organised for potential customers in the town. In addition, the regional administration promotes the selling of regional produce by concluding medium-term contracts with the administrations of Moscow and St Petersburg for vegetable and melon supplies. (Spbvedomosti website; Skavkaz website) The Astrakhan region is also known for its development of smallholders' marketing (as well as credit) cooperatives. The formation of the cooperative system was backed by the regional administration, which provides soft credit and practical support.

Another innovation facilitating the inclusion of small producers in the supply chain has come from businesses outside the agrifood industry. With the privatisation of haulage transport, a dispatch network was set up in Russia. This involves individual private traffic superintendents located in various towns and cities and linked with each other and private truck drivers. Thus, when they get information regarding lorries and refrigerator lorries going to the Astrakhan region, they inform local producers when and where the vehicles will park for picking up their products.

Local producers deliver their vegetables, fruits, and melons to the announced collection point and contact their representatives in Moscow or other big markets to tell them when and where the load will be delivered.

This model in the Astrakhan region works without any governmental intervention.

3 Methods

In order to conduct the case study, a field trip to the Astrakhan region was undertaken. During this trip the tomato food chain was traced from the smallholder producers to intermediaries and transporters. The study was conducted through several interviews (the list of interviews is in Appendix 2). The interviews revealed the major elements of the chain and the mechanism of including smallholders in it, as well as the most acute production and marketing problems. The interviews with policy makers also provide an understanding of the overall situation in the region, the regional policy regarding smallholders and the tomato sector, and the meso and macro context of the tomato chain.

The final stage of the food chain was studied in Moscow – the major market for Astrakhan tomatoes. Here a small poll of consumers was conducted regarding their preferences in relation to the tomato market (the questionnaire is in Appendix 1).

The entire study was done in March to June 2007.

4 Results

4.1 The supply chain and its links

4.1.1 Producers

In the Astrakhan region there are 125,000 household farms (the average farm has less than 1 hectare of arable land, although there are households with 25 hectares but still not registered as individual farmers) and 1,900 individual farms (with more than ten hectares per farm). Households have their own plots around the house. Individual farmers have their own plots but they also rent additional land. In most cases the owners of these small plots are land shareholders (which give them the right to a plot of up to 5 to 8 hectares of arable land). However, the land withdrawal procedure is extremely costly. (Shagaida, 2005) Therefore, in order to expand production, both households and individual farmers prefer to rent land from the municipality. At the same time, vast areas in sight of the villages lie abandoned and overgrown with scrub.

Almost all these smallholders grow tomatoes and, in addition, two–three other crops (eggplant, squash, pepper). The majority of smallholder producers have heated greenhouses covered with polyethylene film[3] or hotbeds. In the recent past, the greenhouses were heated by firewood, but natural gas is now used widely.

On household plots mainly family labour is employed, and very little machinery or other purchased inputs is used for tomato production. Individual farmers not only rent additional land but also employ permanent and seasonal workers, use tractors and, in some cases, harvesters and other machinery, and apply drip irrigation.

Household production in this region has a very long tradition. Even in the Soviet era, when private entrepreneurship was not supported, a huge number of local households grew tomatoes and shipped them to Moscow and to the extreme north of the country by Volga fleet (very often illegally).

The early tomatoes are usually ripe by around the 10 to 15 June, and the harvest lasts until July. After July, the harvesting of open-ground tomatoes begins. June to July is when the tomato growers get the highest prices, and demand at that time is very high. Prices can exceed the seasonal average by five to seven times. By the end of the summer the prices fall to their lowest level. In 2006, 1kg of tomatoes cost 3 roubles (11–12 US cents) at farm level and 5 roubles in town markets.

[3] In the Astrakhan region a technology has been developed to recycle this film. The residual film is a major ingredient in the bricks used for paving footpaths, especially in villages.

Despite the high profitability of early tomatoes, most greenhouse and hotbed tomatoes are sold within the Astrakhan region and only one-quarter are delivered to other regions of Russia. (Skavkaz website) Open-ground tomatoes are sold outside the region to a greater extent.

4.1.2 Intermediaries

The output of smallholder producers is mostly delivered to final consumers in fresh form. So processors are not included in this food chain. Moreover, the processors prefer to run their own farms because of the opportunistic behaviour of the suppliers (see Box 4.1). Owing to the weak system of law enforcement in Russia, processors tend to avoid long-term contracts with producers, advance payments, and commodity loans.

Box 4.1: Processing companies: raw material strategy

The Chinese company Chalkis, one of the biggest ketchup producers, is to establish a plant in the Volgograd region (which borders the Astrakhan area) with the capacity to process 1 million tons of tomatoes per annum. A representative of Chalkis announced that it would rent land from local producers and organise its own tomato-growing business. (http://www.novostivolgograda.ru/ekonomika/8618.html)

Baltimor is one of the biggest tomato-processing companies in Russia. It has announced that it will establish a plant in the Astrakhan region in the near future. However, the Astrakhan branch of the company already has 400 hectares of rented land in the region and is going to build an additional 37 hectares of greenhouses for the new plant. (http://www.baltimor.ru/index.phtml?id_page=10)

The second-biggest tomato processor in Russia, Russian Field, rents 400 hectares in the Krasnodar area to secure raw supplies. The third-biggest processor, PomidorProm, also has its own tomato farm. (Vazhdaeva and Lychev, 2006).

AstrakhanEcoProduct Ltd. tends to buy tomatoes and other vegetables from local growers. However, its experience shows that usually the producers actually deliver only 20 per cent of the contracted volume, preferring to sell in the town markets at higher prices. (Interview with a general manager)

Therefore, the second stage in the tomato food chain is the intermediaries, who collect tomatoes from smallholder producers and deliver them to the wholesale or retail outlets. There are several ways of collecting smallholders' products: middlemen who purchase tomatoes from the farm; smallholders' marketing cooperatives; some smallholder producers sell their packaged products at the side of the road to passing middlemen. In our case study, we learned of a distribution initiative (see below).

Farmer T. produces vegetables, including tomatoes and melons. He does not have his own transport and mostly sells his output at the roadside to passing middlemen. In the last few *years he has received three roubles per kilo of tomatoes. He does not consider his business to be very successful. (Interview with an individual farmer)*

Traditionally, since Soviet times, the population has viewed middlemen very negatively and considered the commission income of middlemen as 'speculative and unearned'.[4] However, the development of the market chain has brought people to an understanding that middlemen play an important role.

'I tried to market my tomatoes myself, but it is better if everybody engages in his own business. My business is to grow.' (Farmer in Volodarsky county who produces 400 to 500kg of tomatoes annually)

'In the early 2000s the local administration of one of the counties of Astrakhan region decided to prohibit any intermediary activity in the vegetable chain. In that season, sales by local producers almost halved. The next season the ban was lifted.' (Interview with representative of regional administration)

Nowadays, most produce from smallholder plots (local experts estimate the share at 50 per cent) reaches the market through the intermediation of private middlemen. The middleman business is organised in various ways. This case study concerns one of the ways in which speculators are excluded from the chain.

4.1.3 Consumers

In order to estimate consumer preferences in the major external market for Astrakhan's smallholder tomato producers, a poll of Moscow residents was conducted in June 2006 (the questionnaire is presented in Appendix 2). We selected 150 respondents by random sampling. The sample was deliberately slightly biased towards women, because they undertake most purchases for the family. The surveyed group comprised 63 per cent women and 37 per cent men; 36 per cent of respondents were young people aged below 30 and 11 per cent were above 60 (the pension age in Russia); 76 per cent lived with their family and 11 per cent indicated that they were single. Interviews were done by phone or email.

The analysis showed that consumer preferences statistically do not depend on the sex, age, or family status of the respondents. More than 95 per cent of respondents eat tomatoes, and more than 96 per cent prefer fresh to preserved and processed tomatoes. In contrast to the widespread tradition of the Soviet era, only 13.3 per cent of respondents preserve tomatoes at home, and these are mostly respondents over 30

[4] In response to such attitudes, in spring 2007 the federal government issued a regulation specifying that only 40 per cent of market pitches in town markets in Russia can be taken by middlemen (non-Russian citizens).

years old.

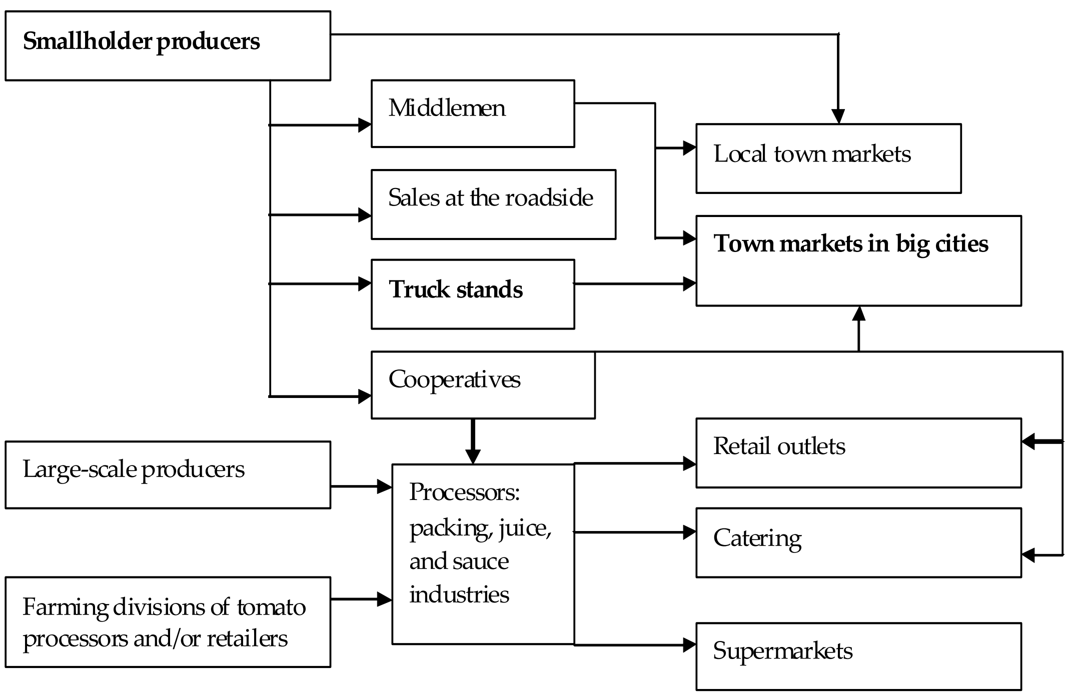
More than two-thirds of the respondents favour domestically produced tomatoes (although in some cases Azerbaijani and Crimean tomatoes were included in that category), but 22 per cent do not care about the origin of the tomatoes. What is extremely important for our case study is that almost half of those who prefer domestically produced tomatoes indicated that they favour tomatoes from Astrakhan or from the south of Russia (which includes the Astrakhan area); 20 per cent indicated a clear preference for Astrakhan tomatoes. At least two-thirds of respondents pointed out that they prefer to purchase tomatoes in town markets rather than to buy them in shops or supermarkets or to grow them themselves.

The results of this survey demonstrate the very good market prospects for smallholder tomato growers in Astrakhan: they produce mostly fresh tomatoes and sell them in town markets. The Astrakhan 'trade mark' is well recognised and appreciated by buyers.

The tomato chain in the Astrakhan region is as shown in

Figure 4.1. Most tomatoes are sold in the town markets because of consumer preferences. These fresh tomatoes are supplied predominantly from the smallholder growers via the three major channels described above and depicted in the figure. In our case study we deal with one of these channels – the truck stand. The modern food chain outlets – supermarkets and restaurants – as well as the processors get tomatoes from the large-scale producers.

Figure 4.1: Principal tomato chain in the Astrakhan region.



Note: bold type indicates the case-study chain.

4.2 Innovation

The prices for fresh tomatoes in the Central and Siberian territories of Russia are notably higher than in the Astrakhan region, so growers tend to market their produce outside the region. In the innovation we are considering, they do not use middlemen services. Within the region there is an informal union of truck drivers with its own dispatch system – the so-called 'truck stand'. There are truck stands in several places in the region. We describe the best-known and the biggest, which is located in Narymanovsky *rajon* (county).

From 15 to 20 per cent of the smallholder producers of three neighbouring *rajons* use the services of this truck stand. The local people also use the services of the truck stand for deliveries of other goods (furniture, household equipment, etc.). Taking these kinds of shipment into consideration, about 40 to 45 per cent of the local population use the truck stand services.

This truck stand unites the owners of the different kinds of haulage vehicles – around 200 vehicles all together. Vehicles from Astrakhan and other territories of Russia come to this truck stand in the tomato season. The smallholder growers send their orders for transport to the centralised dispatcher of the truck stand. The dispatcher allocates these requests among the available drivers. The drivers of *MAZ* trucks normally go to the mountain areas of the Urals; *KAMAZ* and other trucks usually go to the Central region of the country. The dispatcher just informs the truck drivers about orders that have come in, and the drivers pick these orders on a 'first come, first served' principle. Also they can have preferred destinations because of better local knowledge. Sometimes customers request a particular driver because they know him from previous deals. Some smallholder producers and truck drivers have long-term agreements, but they still conduct their contracts via the truck stand.

Once a truck driver receives a request, he goes to the meeting point (normally in the village or at the closest motorway) and picks up the pre-packaged tomatoes. The producer gives the driver an advance cash payment (50 per cent of the transport cost) and specifies the destination. At the destination, the representative of the producer (very often a member of the family of the producer or a hired labourer) meets the truck, approves the shipment, and makes the final payment. Sometimes the final settlements are made when the truck returns to the Astrakhan region.

In some cases a representative of the smallholder producers accompanies the shipment of tomatoes to the destination market. In the majority of cases, however, shipments are not accompanied. All risks of tomatoes suffering any damage during the trip – for example, if the truck breaks down – are borne by the consignor of the goods. The main guarantee is the reputation of the driver. Tomatoes shipped in this way may be unloaded at the destination or the truck may be used for storage during the period of sale of the tomatoes in the market. In either case, the owner of the tomatoes (the smallholder producer) has to pay for entrance to the market, parking fees, and security services in the market.

The truck stand evolved from earlier relations between tomato producers and the truck drivers. The drivers found it rational to organise a dispatch service in the same way that taxi drivers organise in big cities.

The truck stand was in existence until June 2007, when the municipal authorities did not sell the site to a greenfield investor. The truck stand then used the site without a legal arrangement (relying on an ad hoc use right) and the first buyer for the site who offered an acceptable price to the municipality got the site. It was not a political decision motivated by antagonistic relations between middlemen and the government. Currently the truck stand has stopped operating and the drivers have relocated to other truck stands in the region. The short period of time since the closing down of the surveyed truck stand does not allow us to estimate the effect on local smallholder producers. Most probably they will use the services of other truck stands (though this might be coupled with higher costs because of greater distances).

4.3 Forms and costs/benefits of inclusion

The forms and cost/benefits of inclusion will be considered using the example of a typical household producer of tomatoes.

L has a household plot in the village of Solyanka. The total arable land in use by L. is 6 hectares, of which 3 hectares are used for tomato growing. L's family consists of three people, two of whom are of working age. In addition to the family labour force, L employs five to ten seasonal workers. In 2006, the tomato yield was 4.5 to 5.0 tons per hectare, but the marketable output from the 3 hectares was only 100 tons.

The tomatoes produced were sold through three major channels: (1) sale in the town market in Astrakhan (40 per cent in 2006), (2) sale to middlemen from the field (10 per cent), and (3) sale in Moscow, St Petersburg and other large cities via the truck stand (50 per cent). To deliver to nearby cities (Samara and Saratov), L used his own vehicle (a minivan with a capacity of 3 tons), whereas for the deliveries to Moscow and St Petersburg the services of the truck stand were used.

C has a plot in the village and produces tomatoes for sale. His family consists of four members all of whom work on the household farm. Half of the produce he delivers to Penza city with his own minivan and the other half via the truck stand. They consider themselves to be a wealthy family, mainly owing to the tomato business. C indicated that the major problems of his business were the cost of irrigation, bribes to traffic police on the motorways (50 roubles each stop), and the difficulties of getting a loan. (Interview with the owner of a household plot)

The approximate margin on vegetable sales (L cannot distinguish the margin on just tomato sales) in 2006 was 250,000 roubles (about US$10,000).

For tomato production, L buys Dutch seeds from specialist companies in Astrakhan and other regions of Russia. The total cost of seeds in 2006 was 30,000 roubles (USD$1,200). These seeds are used for growing seedlings (60,000 for 3 hectares). Some of the seedlings are for L's household, and the rest are sold to other smallholder producers specialising in that type of activity (at 2 roubles per seedling).

To cover 3 hectares of tomatoes takes around 1 ton of polyethylene film, which cost 67,000 roubles (USD$2,680). For hotbeds for tomatoes, special metal hoops are required at an overall cost of 22,300 roubles (USD$900). L purchased several kinds of mineral fertiliser and chemicals at an overall cost of 41,500 roubles (USD$1,660). Irrigation costs were 25,000 roubles (USD$1,000). Land rent (from the municipality) cost 33,000 roubles (USD$1,320). The daily wage for seasonal workers was 200 roubles per person.

Tomatoes for sale have to be packed into special wooden boxes with a capacity of 18kg. Although these boxes are durable, L uses them only once: the boxes go to the purchaser (at the marketplace) on delivery. The boxes are produced in the local penitentiary unit and they cost from 32 to 35 roubles each.

Summarising the listed costs, one can calculate the cost of tomato production at the farm level as 8 roubles per kilo.

Transportation costs from the Astrakhan region to Moscow add 4 roubles per kilo. In 2006, L used the services of the truck stand located near his village. Hiring a truck (a *KAMAZ*, which carries from 10 to 20 tons of tomatoes) to Moscow cost from 40 to 50 roubles. This sum includes diesel (from 16 to 17 roubles per ton), bribes to traffic police (around 5,000 roubles on the route from Astrakhan to Moscow), and meals for the driver (from 3,000 to 4,000 roubles per week).

P is a farmer in Kamyzyaki county, which is considered be the tomato capital of the Astrakhan region. He grows tomatoes, other vegetables, and melons. In the marketing season he has a son in one of the Moscow markets. After harvesting a portion of the tomatoes, he calls the truck stand to hire a truck for 35,000 to 40,000 roubles (the cost of diesel and bribes to traffic police). The truck comes to a field to pick up the produce. P also has his own vehicles, which he uses for delivering his products within region. (Interview with an individual farmer)

In the Moscow market, L has to pay for the vehicle's entry to the market (10,000 roubles for a *KAMAZ* truck and 1,500 roubles for a minivan – which are shadow payments for market management). Parking the vehicles costs from 300 to 400 roubles per day. Security costs 60 roubles per day and hire of scales 50 roubles per day.

In the end, transport and connected costs add an additional 4 roubles per kilo of tomatoes, which means that in the Moscow markets the cost of tomatoes increased to 12 roubles per kilo. The retail price for tomatoes in the Moscow markets in summer 2006 was around 30 to 60 roubles, depending on the month. At the same time, the prices in Astrakhan town markets in August fell to 5 roubles per kilo. So the net return on one minivan of tomatoes shipped to Moscow is from 5,000 to 20,000 roubles (from USD$200 to 800). Selling in the local markets is extremely unprofitable.

'At Astrakhan markets prices are negligible, and vegetables and fruits are sold by the sack. But in the villages the situation is even worse: after market day, tomatoes and melons rot on the ground because it is impossible to keep them until the next market day. (D-Pils website)

A truck driver earns from 15,000 to 20,000 roubles (from USD$600 to 800) per trip. However, this is tough business with high risks and rather high costs.

The distance from Astrakhan to Moscow is 1,534 km. It is a very difficult route: the road quality is bad and there are 20 traffic police checkpoints. The formal reason for police checking of trucks is to control the overloading of vehicles. However, the real weight of the truck was never checked in the experience of the respondent. The highest rate of bribe is 500 roubles. The trucks of tomato and melon carriers are normally rented and therefore drivers do not take care of them: the trucks are severely ill-used and after a rapid depreciation they are replaced by the next truck. (Interview with a truck driver)

Nonetheless, it is quite a good wage in comparison with the national average wage, which is equivalent to USD$396, or the average wage in the transport industry, which is equivalent to USD$532. (Russian Statistics Agency)

4.4 The potential for scaling-up or replication

The truck stand described above for the shipment of fresh vegetables and melons from the major producing regions to the main consumption regions paves the way towards specialist transport companies in the vegetable food chain. It is a fully private initiative and could be easily replicated in other places.

In the meantime, however, this is a completely shadow business: neither the truck stand nor the drivers pay taxes on their activities. On the one hand, it gives them some income benefits, but on the other hand they do not have any legal protection. In the case described, the local authorities had deprived the truck stand of the site it was using and undone the work of the system for at least one tomato season.

In Russia, such initiatives may face another type of difficulty. Since the Soviet era, intermediate activities in the vegetable and fruit chains were traditionally carried out by Caucasian citizens. The negative attitude towards middlemen was extended to the citizens of the nationalities engaged in intermediate activities. In recent years this situation has led to some openly nationalistic conflicts in a number of Russian regions. In response to these conflicts, in 2007 the federal government of the Russian Federation made a decision to restrict the activities of non-Russian citizens in town markets. This decision also has the objective of increasing direct marketing by producers in the markets. These circumstances could hamper the scaling-up and replication of the described initiative in Russia. However, experience of this initiative could be useful for other countries with a significant share of smallholders involved in the production of fresh vegetables and fruits.

5 Conclusions and recommendations

Because of consumer preferences in Russia, tomatoes are mostly marketed fresh in town markets. The most appropriate type of production for such tomatoes is by smallholders, who are capable of producing non-industrialised tomatoes and of maintaining the traditional varieties of tomatoes appreciated by consumers. However, owing to geographical factors the major tomato-producing areas are remote from the major consuming centres such as Moscow and St Petersburg. Therefore there is a minimum necessity for a link in the food chain to connect the smallholder producers with the markets. The modern dynamic food chain also requires that this link facilitates the high quality of the product at the end of the chain but also speedy transmission of consumer preferences to the producers. Moreover, vegetable growing is one of the major sources of income in many rural areas, which faced severe unemployment after the collapse of the kolkhoz/sovkhoz system.

The case study described in this report deals with the most remote and also the most well-known tomato-producing area in Russia – the Astrakhan region. Smallholder producers completely dominate tomato production in this region. The major markets for these tomatoes traditionally are located in the centre of the European part of Russia and in the northern territories. Local markets are limited and do not provide sustainable incomes for smallholder producers.

There are several initiatives by the regional administration and local producers for facilitating the sale of fresh tomatoes and other vegetables and melons outside the region. In our case study we concentrated on a reactive private business model that allows both smallholder tomato producers as well as private truck drivers to be incorporated into the tomato food chain.

A spontaneously organised dispatch system of truck drivers and the related truck stand allow fresh Astrakhan tomatoes to be delivered to the major consumer markets in Russia. The initiative has the potential for development: in the future, the ordinary trucks could be replaced by refrigerator trucks, and dispatch services will be able to deal not only with the allocation of shipment orders but also with the controversial allocation of production orders and with directly contracting smallholder producers (the similar development of the taxi dispatch system after the collapse of the state-owned taxi business in the cities of Russia allow one to hope that the tomato dispatch system will develop in this direction). The relatively high net return for both producers and drivers provides them with capital for further investments and improvements to their business.

The major obstacle to such development lies in administrative actions. Meanwhile, this is undoubtedly a shadow economy activity. As well as avoiding taxation, this dispatch system escapes sanitary inspection. Together with traditional prejudices against intermediate businesses in Russia, the regional administration is inclined to halt this business. Our recommendation would be not to stop the initiative but to bring it into the legal economy. In our view, the regional government should do the following:

- provide land for truck stands;
- share local information on the production of tomatoes, collected by municipal administrations, with dispatchers;
- help smallholder producers with the means of communication to contact dispatchers (for instance, be providing relevant information on the website of the regional agricultural administration);
- simplify the certification of products shipped outside the region and inspect trucks and provide appropriate certificates on exit from the region to reduce the 'traffic police tax' on the way to the markets;
- simplify the allocation of land shares to smallholders so they can expand their production area (this is a task not only for the regional authorities but also for the federal government);
- in order to motivate truck drivers to register (for taxation and other purposes), provide some of the support for small businesses implemented in the regions (for instance, include these trick drivers in the soft credit programme for small businesses);
- last but not least, overcome prejudices in relation to middlemen and the dispatch system in particular (positive information in the official media and websites on the activity of private middlemen could change people's attitudes and motivate middlemen to leave the shadow sector).

6 Appendices

1: Consumer questionnaire

Your age?	<30
	30–60
	>69
Sex?	F
	M
Where do you live?	With family
	Separately
Do you eat tomatoes?	Yes
	No
Do you prefer fresh or processed tomatoes?	Fresh
	Processed
Do you preserve tomatoes yourself?	Yes
	No
Do you prefer domestic or imported tomatoes?	Domestic
	Imported
	Does not matter
Among domestic tomatoes, which do you prefer?	(Name a region)
	Does not matter from where
Where do you prefer to purchase fresh tomatoes?	Shop outlet
	Town market
	Home-grown

2: List of interviews

Regional administration

<u>Ministry of economy</u>
A. Nevredinov, deputy minister
V. Feldman, head of department for real policy
F. Mamontov, head of department for credit cooperatives

<u>Ministry of agriculture</u>
V. Shlyakhov, deputy minister
V. Magomedov, head of department for agrifood markets
A. Kufaev, head of department for crop production
F. Garynin, head of department for smallholders

Municipalities
T. Vdovina, head of Kamyzyaki county (*rayon*) administration

Processing business
L. Godux, general manager of AstrakhanEcoProduct Ltd processing plant

Smallholders
Five individual farmers (anonymous)
Six household producers (anonymous)

Middlemen and transportation
One truck driver (anonymous)
Three middlemen (anonymous)

Consumers
Five purchasers in Astrakhan town market (anonymous)

All-Russian Research Institute for Irrigated Vegetable and Melon Production
Meeting with major experts

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Webagro website http://www.webagro.ru/printnews.php?id=27415 (accessed 10 June, 2007)

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Regoverning Markets

Regoverning Markets is a multi-partner collaborative research programme analysing the growing concentration in the processing and retail sectors of national and regional agrifood systems and its impacts on rural livelihoods and communities in middle- and low-income countries. The aim of the programme is to provide strategic advice and guidance to the public sector, agrifood chain actors, civil society organizations and development agencies on approaches that can anticipate and manage the impacts of the dynamic changes in local and regional markets. The programme is funded by the UK Department for International Development (DFID), the International Development Research Centre (IDRC), ICCO, Cordaid, the Canadian International Development Agency (CIDA), and the US Agency for International Development (USAID).

Innovative Practice

Innovative Practice is a series of case studies from the Regoverning Markets programme providing examples of specific innovation in connecting small-scale producers with dynamic markets at local or regional level. Based on significant fieldwork activities, the studies focus on four drivers of innovation: public policy principles, private business models, collective action strategies by small-scale farmers, and intervention strategies and methods of development agencies. The studies highlight policy lessons and suggest working methods to guide public and private actors.

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