



WP3

Pierīga (RR15) – Latvia – Food System Regional Report

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December 2018

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1) Socio-economic and agricultural profile of the reference region



Pieriga region is located in the central part of Latvia, surrounding the capital city Riga, situated along the Gulf of Riga (Baltic Sea) and bordering with Estonia in the north. Pieriga region is a statistical region (NUTS3) created in 2004; it does not have a joint historical socio-cultural identity or socio-economic integrity. It partly overlaps with Riga Planning region, an administrative unit, also created recently, in 2006.

One of the key factors of the region's development is the presence of the capital city Riga. Riga is a hub of entrepreneurship, innovation and education, and is the biggest city in Latvia. Strong interaction between Riga and surrounding Pieriga region territories – in terms of flows of people and human resources, goods including food products, capital – forms the backbone of Pieriga's business environment. The region has a vital entrepreneurial activity with 29 thousand holdings (or 84 enterprises per 1000 inhabitants). The share of GDP is the second largest (15%) in Latvia and GDP per capita is 9 843 EUR. However, there are internal differences of socio-economic development in the region. Municipalities closer to the capital city show positive development trends – the average income level is among the highest in Latvia, the population is increasing, and the age structure is better balanced. On the other hand, municipalities located in more remote territories are in a reverse situation - the income level is quite low, the unemployment level is high, and the number of inhabitants is decreasing due to low birth rates and significant emigration.

Agriculture plays a comparatively small role in the regional economy. It contributes 3.3 % to the gross value added and provides jobs to 5.5% (9.7 th) of the total regional labour force. The total number of farms is 9037, with an average size of 29.5 ha. Small farms (<5 ha¹) compose 37%, and in Pieriga region their number decreases faster than in other Latvian regions (LVAEI 2013). The main branches in the regional agriculture are cereals (32% of UAA with wheat (47.6 th ha), barley (12.2 th ha), and rape (11.41 th ha) being the principal (cash) crops) and dairy farming (23.2 th LSU of dairy cows) and pig breeding (26 th LSU of pigs). The region is internally heterogeneous in terms or agro-environmental conditions. In the western part of the region, the quality of agricultural land

¹ In accordance with the joint SALSA definition we consider as small farms those with up to 5 ha or 8 economic size units (ESU). Research suggests that a more nuanced approach is needed. Farm size is sector-dependent: while a 5 ha-farm in wheat production is extremely small, 5 ha is a lot for an apple farm is. The size of a farm could be considered also in terms of a farm's ability to ensure 'sufficient' livelihood for a farming family. In this regard, for instance, 5 ha can be a meaningful threshold in the apple sector and vegetable, especially greenhouse vegetable, sector in Latvia. Otherwise, farms up to 50 ha can be considered small.



is one of the highest in Latvia, therefore the production of cereals is well developed there. The eastern part of the region is more suitable for dairy farming and pig-breeding. In general, the agricultural production in Pierīga region is more market-oriented – farms are bigger and more modernised – than in the other reference region of Latvia (Latgale).

Table 1: Basic data for the region

Indicators	Data per Region - Nuts 3
Land size (km ²)	10,135
Population (thousands of people)	368
Density (people/km ²)	36
GDP (thousand USD/inhabitant)	10.7
Total labour force in agriculture in AWU	9,800
Total number of agricultural holdings	9,037
Total Agricultural area (ha)	266,600
Total Utilized Agricultural Area (ha)	253,300
Agricultural Area in Mountain Area	n.a.
% of UAA in the RR	25
Average Farm size	29.5
Number of farms by UAA farm size:	
0-5 ha	3,368
5-20 ha	3,694
20-50 ha	1,138
>50ha	772
Average size of farms < 5ha of UAA	1.89
Area of main crops (ha):	
Cereals	82,959
Wheat	52,467
Barley	12,237
Rye	5,499
Pulses	4,217
Open field vegetables	2,126
Potatoes	4,951
Rape	13,096
Area of main crops (ha) in farms < 5ha of UAA (NUTS 2 level data)	Potatoes, open area vegetables
Livestock (LSU) per type	
Cattle	45,985
Dairy cows	22,949
Pigs	25,691
Sheep	2,030
Goat	215
Poultry	15,497
Rabbits	490
Livestock (LSU) per type in farms < 5ha of UAA (NUTS 2 level data)	Sheep, goats, cattle, dairy cows
Annual work units (AWU) by UAA farm size:	
0-5 ha	2,300
5-10 ha	1,700
10-50 ha	3,000
>50ha	2,800
Total family labour per farm size: 0-5, 5-20,20-50,>50ha	No public data available

Source: Central Statistical Bureau of Latvia



There are several events which have influenced the situation of small holders, and agricultural production in general, in Pierīga and the country as a whole. Firstly, the agricultural reform in the beginning of the 1990s (decollectivisation) resulted in a very fragmented agricultural production structure. Farming performed a very crucial function of socio-economic safety net in rural areas but its production efficiency was often low. Rural policies failed to create social and economic alternatives or improve the situation of small farmers (Slee 2000). Integration in, and accession to the EU, from 2004 onwards provided many new opportunities to farmers, including small ones (with some specific target support programmes to subsistence farms and small farms). In the meantime, public agricultural support has not been well-balanced among various goals and farms, and small farms have not been among the principal beneficiaries: the biggest share has been devoted to modernisation goals and absorbed by a limited number of large farms (Vēveris and Kālis 2011).

2) Key products and regional food balance sheet

a. Key products produced and consumed in the region

Considering the available statistics and experts' opinions on food production and consumption, the following key products were selected for the in-depth analysis of the food system in the Pierīga region: wheat, cow milk, vegetables and apples². All these products are typical agricultural and food products in Latvia. Wheat and cow milk are produced and consumed in significant quantities in the region. Wheat is by far the most produced crop in Pierīga (52 th ha and 238 th t). Both wheat and cow milk are industrial and export (wheat being the principal export crop) products, although smaller-scale and artisanal production is also widespread (in particular in the dairy sector). From the perspective of the production-consumption balance, more vegetables are produced than consumed in the region. Pierīga is one of the two principal vegetable production regions in Latvia, mainly due to the proximity of markets in the capital city Riga and some other bigger towns. Finally, apples were selected as a typical regional product: it is widely grown for self-consumption, but also for commercial purposes. Latvian commercial fruit production is concentrated in the Western part of Pierīga region where several fruit processing companies and research organisations are also located.

There are slight variations in the production and consumption of these key products in SF. Table 3 summarises production and consumption of the key products at the regional level (X), and more specifically in SF (SF). The relevance of the products at SF was estimated on the basis of their relative importance in SFs' production and consumption structure, as estimated in SF interviews³. Whereas milk, apple and especially vegetables were found to be typical products in small farms, wheat was less typical. We deduce this from the fact that it was difficult to identify small farms producing wheat, which, at the regional level, is primarily an industrial export product. Milk and

² According to the joint SALSA methodology, four regional key products had to be selected: two that are much produced and consumed, one - with high production, but low consumption, and one with social or cultural relevance in the region.

³ Some share of these products, especially those produced for self-consumption and with irregular sells to individual clients, may not be included in the official statistics.



vegetables were more often marketed in SF, while apples and wheat were often produced for self-consumption (including for forage). Most of the SF interviewed produced several regional key products.

Table 2. Production and consumption of the key products in Pierīga.

Product	Approximate amount produced in the region (ton/year)	Approximate amount consumed in the region (ton/year)	Balance (consumed - produced)	% surplus-deficit on total consumption
Wheat	238,872	168,871	70,001	0.41
Cow milk	155,408	84,048	71,360	0.85
Open field vegetable	37,813	12,895	24,918	1.93
Apple	3,417	7,314	-3,897	-0.53

Source: Central Statistical Bureau of Latvia; Data on consumption are calculated on the base of EFSA database “Comprehensive European Food Consumption Database” (<https://www.efsa.europa.eu/en/data/food-consumption-data>); Data on apple are based on an expert’s estimation and the authors’ calculation on the base of the data from Skrivele et al (2008) Fruit and berry growing in Latvia (<http://www.lvai.lv/pdf/Raksti-viss-drukai.pdf>).

Table 3. Production and consumption of the key products in Pierīga region and in small farms in Pierīga

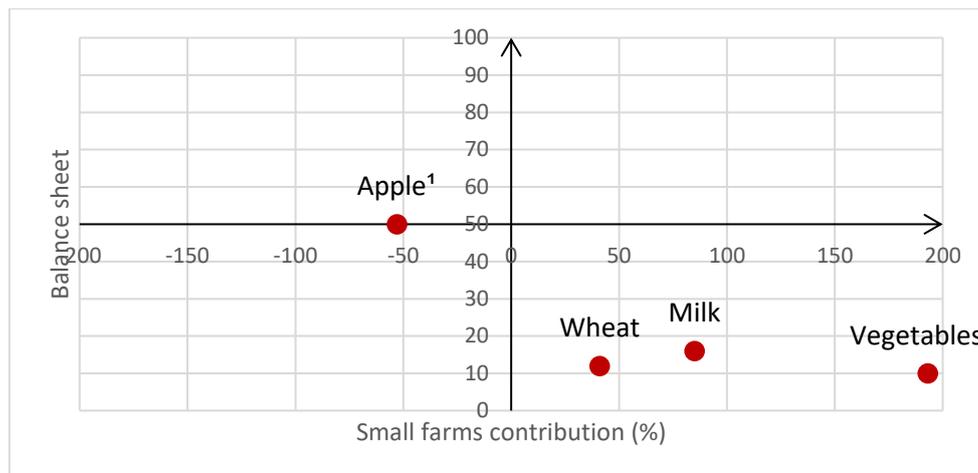
	Production		Consumption	
	High	Low	High	Low
Wheat	X	SF	X SF	
Cow milk	X SF		X SF	
Vegetables	X SF		SF	X
Apples	SF	X		X SF

Source: Central Statistical Bureau; SALSA small farms’ interviews

b. Balance of production and consumption of key products in the region

The balance sheet (Figure 1) characterises each key product accordingly to its regional production - consumption balance (X axis) and to small farms’ contribution to its total production volume (Y axis). There is considerable self-sufficiency in the region regarding three of the four regional key products - wheat, milk and particularly vegetable are produced with a surplus. The share of small farms’ contribution to regional production volumes vary between 10 and 16% for these products. Apples are a distinctive case, as there is a considerable deficit in the regional apple production and small farms’ contribution is higher, reaching half of the total regional apple production volume.



Figure 1: Balance sheet for Pieriga key products⁴

3) Food system: Key nodes and flows and role of small farms and small food businesses

3.1. Key product 1: Wheat

- a. Nodes in the regional food system: production, processing, commercialization and retail

Wheat is a key crop produced in Pieriga and also a key industrial and export product. It is produced for three purposes: human consumption, animal forage and biogas production. As follows, three linked, but separable wheat subsystems exist. When mapping and analysing regional wheat food system, we disregard wheat production for biogas as it is not directly linked to regional food security⁵.



⁴ On the X axis, the value '0' means production is equal to consumption, a negative value means there is a deficit in production, and a positive value means surplus of production.

⁵ Statistics presented in this report show the total wheat production data without distinguishing between different subsystems.



Agro-industrial model is dominant in the wheat food-system in Pieriga. It accounts for 70% of the regional grain (Wheat FG). There is an ongoing concentration in the entire wheat food chain with several big market actors - wholesalers, cooperatives, processors and retailers - playing a major role. A big share of Latvian wheat, including from Pieriga region, is exported. 60% of wheat remains in the region though.

On production side, the average size of grain farms is increasing, and the number of small farms producing wheat has been rapidly declining. Small farms still produce 12% of the regional wheat. In general, grain producers are well-organised in grain marketing cooperatives. There are several cooperatives operating in the region (*Abra, Latraps, VAKS*). However, mostly big and medium farms are involved in the cooperatives. Small farmers are much less often cooperative members; none of the interviewed small grain producers was a cooperative member.

b. Flows connecting the different nodes in the regional food system

Other important wheat buyers in the region are middlemen - agro-businesses (*Elagro trade, Scandagra, Agerona, Litagra etc*) which buy grain for selling in national or international markets. Again, we did not identify any small farms as their suppliers. Regional farmers, including small farms, also deliver wheat to dry-houses, which process and sell it to flourmills and bakeries for processing into consumable wheat products. Finally, big livestock farms (*Baltic Porc*) also buy grain directly from other farmers for animal forage.

Bakeries and other processors are also crucial actors, in particular when considering human consumption. One of the three biggest bakeries in Latvia (*Fazēer*) and numerous smaller ones (*Flora, Lāči, Lestenes maiznīca, Liepkalni, Roga Agro, Siguldas maiznieks*, etc.) are located in Pieriga. There is a high concentration in the Latvian bakery market, and also Pieriga's bakeries experience tough competition. Bakeries tend to buy wheat or flour from wholesale traders which can ensure constant supplies and a stable price, but not from individual regional farms with fluctuating yields. On the other hand, some farmers question the viability of bakeries because consumption of grain products has been steadily decreasing during the last decade in Latvia. Few bakeries (*Liepkalni* being an exception) produce their own grain. It is common for regional bakeries to deliver their products outside the region all across the country; a small part is exported.

Wheat products (flour, bread, pastries, etc.) are distributed to consumers primarily through supermarket chains, smaller shops and catering companies. Some regional bakeries (*Lestenes maiznīca*) also participate in school meal procurement programs and deliver their products to pupils. In addition to the agro-industrial model, two other wheat subsystems - proximity and ecological - are present in the region. They are solid and dynamic, but remain comparatively marginal in market terms. 20% and 10% of the regional wheat turn over in proximity and ecological models respectively (Wheat FG).

c. Importance of household self-provisioning in small farms and small food businesses

The majority of small farms producing wheat are operating within a mixed self-provision/proximity/agro-industrial sub-system. Small farms produce wheat mostly for self-consumption, i.e. for livestock forage (farmers call it 'adding value to grain'). Occasionally they sell some surplus



grain to neighbouring farmers or middlemen operating in the region. The end-products originating from these farms, for which grain is used as input (such as milk, dairy and other livestock products) enter proximity and agro-industrial chains. The proximity sub-system also includes the wheat chain for human consumption. It contains farmers who have developed processing, are milling grain, baking bread and pastry from their own grain (*Zutini*), and artisanal producers of bread, pastry and other processed grain products (*Ilzës darbnica*). These artisanal products are sold primarily to local consumers, in farmer markets, on farms. Non-farm artisanal producers tend to buy flour and other grain products from retailers or wholesalers, which points again to the interlink between agro-industrial and proximity sub-systems.

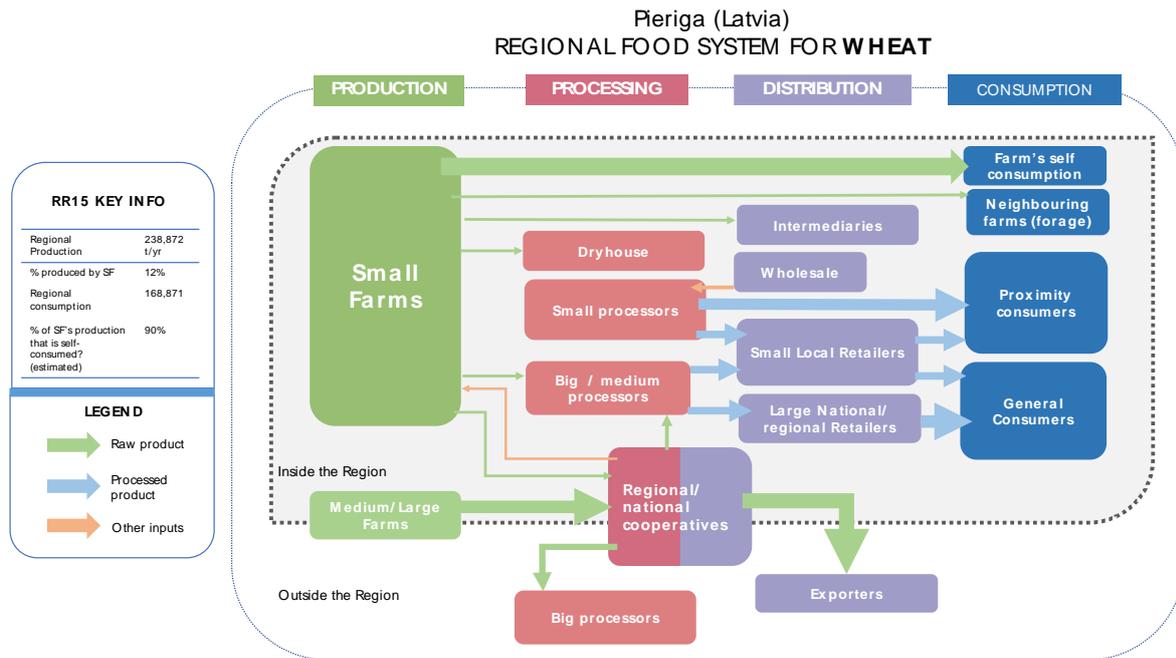
d. Other relevant information

There is also an emerging ecological subsystem that involves producers, processors and consumers of ecological products. According to the focus group discussion, commercial organic wheat production is not profitable yet because of lower yields and low public subsidies for organic wheat that do not cover production costs at a reasonable level. The organic wheat chain infrastructure is also underdeveloped (lack of dry-houses, processors). This lack of regional commercial organic wheat is reflected in the overlap of the ecological subsystem with other regional subsystems. The ecological model is linked to the agro-industrial model because the shortcomings of local ecological raw material, flour and other ingredients makes processors import them from abroad or purchase them from large processing companies; final organic wheat products are also distributed in supermarket chains (pasta of *Austras koksi*). The overlap with the proximity model is evident as there are still some local ingredients used/bought, and end products are sold in local and short food chains (e.g., direct sales, farmers' markets). In addition, many organic livestock farms produce own wheat for forage, which overlaps with domestic and proximity models.

Stakeholders pointed to several factors which will influence future developments in the regional wheat food system. Land market will influence production structure. Wheat farms willing to expand production and new entrants are constrained by little available land in Pieriga and growing land prices. In this situation, better tailored public support to local small and medium farmers for buying land would ensure their better access to land; however, no changes in current support for buying land, sometimes found complicated regarding procedure and expensive, are envisaged. Further concentration in wheat production is expected.

Public agricultural policy and support measures will continue to play decisive role. A suggestion was expressed to link public payments also to output (yields) not only area. The focus group participants admitted that lots of developments in the wheat production system are the matter of financial costs: "it's all about the price" (of inputs, services, grain). In general, no considerable changes were envisaged within and between the regional wheat subsystems. However, the focus group participants saw a good future potential in the ecological model which they linked to growing consumers' awareness on ecological and transparent food production and to growing consumers' purchasing power.





3.2. Key product 2: Cow milk

- Nodes in the regional food system: production, processing, commercialization and retail

Milk production is one of the principal agricultural branches in Pieriga. In total numbers, there are fewer cows in Pieriga than in other Latvian regions, but, on average, the farms are the biggest - 7.8 cows per farm (for comparison, in the other Latvian RR Latgale, the herds are the smallest with 2.6 cows per farm).

Despite the ongoing concentration trend in the dairy sector, it is dominated by small farms. However, the region is not uniform in terms of milk production. Comparatively bigger herds (especially in the western part of the region), several dairy cooperatives (*Piena Ceļš, Pienene, Braslava*), big processors (*Tukuma piens, Limbažu piens, Rīgas piena kombināts, Jaunpils pienotava*), retailers and middlemen who are linked to export/import markets characterise the sector's agro-industrial subsystem in the region. Milk FG's participants estimated that considerable public investments in the agro-industrial production model via subsidies, and support to production development projects, have led to the dominance of the agro-industrial model over other subsystems in the region. Very few of the interviewed small dairy farms operated in the agro-industrial system; those who did were selling milk to big regional processors. According to some stakeholders, direct delivery to processors can even be disadvantageous for small farmers because they tend to receive a lower price.





b. Flows connecting the different nodes in the regional food system

Whereas the agro-industrial model is more prominent in the western part, the north-eastern part is characterised by smaller scale production. The proximity model is represented by smaller processing companies (*Sabiedriba Mārupe*, *Degoles pienotava*), small retailers, niche and artisanal processors (*Soira*, *Edgara siers*), farmers - processors (*Mazļauri*) and farmers who operate in shorter food chains. In particular, the presence of small and medium food businesses in the region was found to be crucial for a lively proximity model linking local small producers to local customers. Small dairy farmers typically operate at a very local level as they sell milk and dairy products almost exclusively to individual customers in their vicinity. The proximity to Riga also allows for direct market exchanges with consumers there - selling in farmers' markets, to direct purchasing groups, delivery to enterprises and other regular customers. Dairy farmers working in places more distant from Riga face far more difficulties to build stable individual market channels due to a lesser number of customers and their lower purchasing power. A remarkable part of direct sells were estimated to be in the informal sector. The public procurement programme 'School milk' that facilitates the consumption of locally produced milk in regional schools is also important for the proximity model. SFs approved of the approach of this public procurement program, but they indicate that they do not experience any direct benefits (financial or moral) from it as bigger milk processors have taken charge of delivering milk to schools.

In addition, we distinguish the ecological dairy subsystem, even though it is linked with the agro-industrial and proximity models. One of the regional big processors (*Tukuma piens*) is also operating an organic processing line (the raw milk and end product are not exclusively local though, as they are imported from, and exported to, other Latvian regions). There are also several organic dairy farms in Pierīga who deliver fresh and processed milk directly or in other short food chains to consumers. Many organic dairy farms sell milk in conventional chains though, due to the organic processing companies being located too far away. In addition, there are many uncertified organic farms. Stakeholders saw good potential in this subsystem in the future, but with two policy and



market conditions: (i) favourable policy measures in terms of public payments for the production of organic milk and (ii) physically accessible organic processors in the region.

It should be noted that the dairy sector has experienced quite a severe crisis during recent years, caused by the Russian embargo, abolishment of EU milk quotas, with consequences for the entire milk food system. Among the interviewed small farmers, dairy farmers were more likely to refer to difficulties and have been considerably reducing their herds and production activities. Some dairy farmers have switched to a different branch of agriculture or have developed on-farm processing of dairy products in order to ensure sufficient income and economic stability of the farm.

c. Role of small farms and small food businesses within the food system

Smaller farms maintain the domestic dairy model as they consume a considerable share of their produced milk either as fresh milk and simple processed milk products, or use it for animal feed. But the number of small farms operating within this model is declining. According to experts' opinion, it is not advantageous for farmers with a couple of cows to sell milk even to individual clients as income does not cover the effort and costs of delivery. High production costs is a reason why very small-scale semi-subsistence dairy farms cease to operate - it becomes cheaper for them to buy milk and dairy products from bigger neighbouring farmers. In addition, increasing land prices makes renting land to other (bigger) farms more profitable than farming.

d. Other relevant information

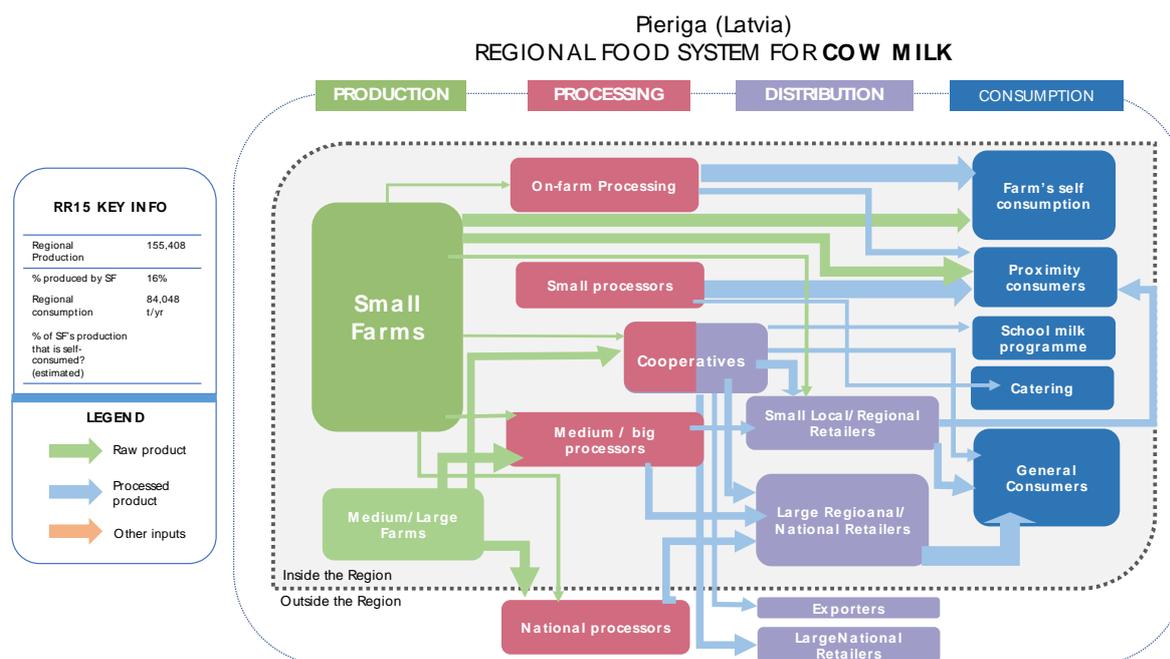
According to the milk FG participants, some key processes and factors that are already influencing dairy farms and will also be key in future developments in the entire milk food system are: structural changes in the farming sector, the associated changes in the production profile of farms, marketing as a key activity, technological development of farms and socio-demographic context and factors influencing farming activity. Table 4 below represents an attempt to classify and rank the codes of key tendencies in dairy farm development in Pieriga (including small dairy farms) developed on the basis of the responses of the participants of the milk focus group discussion.

Table 4. Key processes and factors influencing dairy farms in Pieriga region

Categories / processes	Codes	Count	Rank (count total)
Farm structure	Farm growth, Farm concentration	6	1 (12)
	Disappearance of SF, Farm liquidation	3	
	Medium farms, Family farms	2	
	Stability of SF	1	
Production changes (farm profile, branches, products)	Beef cattle production	4	2 (11)
	Additional income seeking	1	
	Exiting dairy	1	
	Change of production	3	
	Diversification	1	
	Local products	1	
Marketing	Diversified marketing	1	3 (8)
	Direct marketing	3	



	Market integration	2	
	Price dependency	2	
Technology	Organic	2	4/5 (6)
	Investment in technologies	1	
	Technological modernisation	2	
	Precision farming	1	
Socio-demographic	Work satisfaction	1	4/5 (6)
	Labour shortage	1	
	Generational changes in farming	1	
	Ageing	1	
	Farm transmission	1	
	Own labour	1	
Business planning	Risk management	2	6 (4)
	Business planning	1	
	Prudency	1	
Knowledge	Learning, Knowledge	2	7 (3)
	Consumer education	1	
Self-provision	Self-supply	1	8/9 (2)
	Social networks	1	
Policy	Future of CAP	1	8/9 (2)
	Taxes	1	



3.3. Key product 3: Vegetables

- Nodes in the regional food system: production, processing, commercialization and retail





Vegetable production is comparatively developed and popular in the Pierīga region, mainly due to the presence of consumers from Riga. So, a considerable share of vegetables is sold outside the region - in Riga, but it is still geographically very close. Another notable fact is that vegetables are widely produced and consumed in Latvia, but vegetable production is one of the agricultural sectors in which producers face severe competition with cheaper products from countries with more favourable agro-climatic conditions for vegetable growing.

b. Flows connecting the different nodes in the regional food system

The agro-industrial model is well established in the region. There are two vegetable cooperatives - *Mūsmāju dārzeni* and *Baltijas dārzeni* - located in Pierīga, which unite several big vegetable growers from all over Latvia, including the Pierīga region. These cooperatives mostly serve supermarkets, but also smaller shops, schools and also export abroad. Several processing companies operate in the region. Smaller ones (*Nīssi, Rosība, Vokons*) buy vegetables from (bigger) Latvian producers, but they can also import when local vegetables are not available. Bigger processors (*Spilva*) import and export a considerable part of the vegetables they process. Wholesale traders import and trade vegetables to bigger and smaller retailers. Catering businesses have different practices of purchasing raw materials, but many of them are operating within this model. In turn, very few small vegetable farmers are serving the agro-industrial model.

c. Role of small farms and small food businesses within the food system

The proximity model is equally very solid and characterised by a range of short distribution chains. This model extends beyond the regional borders though, as many producers use the proximity to the capital city Riga to sell products on farmers' markets, via internet, specialised smaller shops or consumer groups (*Atvases, Kroniši*). Selling at local farmers' markets and on farms is also quite popular. The interviewed small vegetable farms often used these market channels. Comparatively fewer farms (*Gaiķi, Kroniši, Liepsalas S, Silpurmašas, Arāji*) have developed some processing and also



sell processed vegetables. These products are also marketed through various short food chains. In addition, the proximity model is also supported by “the green procurement” which prescribes regional public institutions to buy the closest rather than the cheapest vegetables for their canteens. This measure provides considerable support for regional vegetable growers.

d. Importance of household self-provisioning in small farms and small food businesses

Several subsystems of vegetable production-consumption are present in Pieriga region. The domestic model is characterized by household plots, where vegetables are grown for family needs, as well as by small farms which consume a considerable share of the vegetables produced. All of the interviewed small farmers grew and also processed vegetables at least for self-consumption. These producers also deliver or sell vegetables to their extended families, neighbours, friends or other local consumers. Often these are non-monetary deliveries: products are offered for free or in exchange for some help on farms.

e. Other relevant information

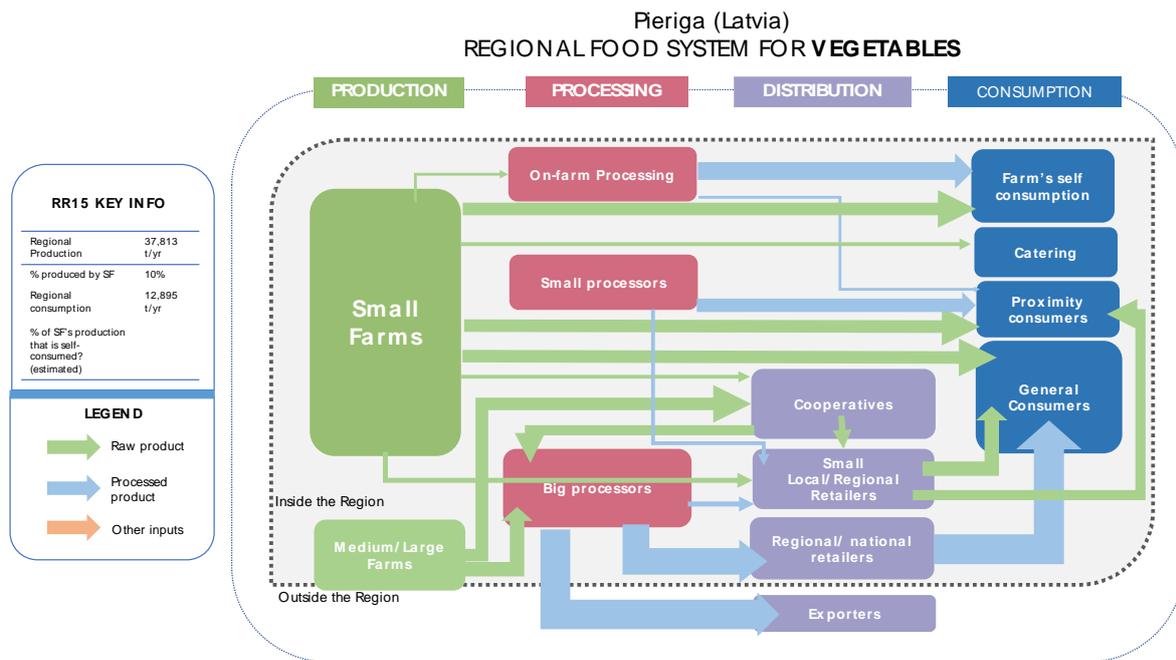
The focus group discussion pointed to the following factors that are likely to influence future of the regional vegetable food system:

Societal opinion: societal expectations towards agriculture and food are changing as more and more consumers demand traceable (preferably of local origin) and secure food. Farmers and other food system actors still have to adopt to this changing attitude.

Public recognition of small farms: the food system in general, and in particular the vegetable sector, will benefit if the contributions of small farms to food security is better recognised. Avoiding classification and ranking of farms accordingly to their size and usefulness would remove negative moral pressure on small farmers that implies underestimation of their work and pressure to increase scale. Such a recognition should also involve public financial support and a regulatory framework (e.g. progressive taxation, simplified book-keeping) better suited to small farms. Such measures would encourage a share of small farms to leave “the grey sector” or “the food system’s underground” in which they are currently operating.

New market solutions: small vegetable producers have big market potential, but they face difficulties in accessing market. Future solutions are seen in: ‘traditional’ cooperation or collaborative market platforms; joint initiatives with consumers (direct buying groups); digital tools (online selling platforms, social media). Support for training (to leaders and brokers) and the development of logistics will be key in order to implement such market solutions. The stakeholders pointed to the role of local municipalities in creating favourable conditions for the development and implementation of new market solutions within the proximity subsystem.





3.4. Key product 4: Apple

- a. Nodes in the regional food system: production, processing, commercialization and retail



In the regional apple food system, we can identify several co-existing subsystems: domestic, proximity, and agro-industrial are the principal ones, and a fraudulent proximity model, which is less visible but clearly present. For the apples produced in the region, the proximity and domestic subsystems are the most important ones. The prevalence of these models is also related to the fact that a considerable share of regional apples (50%) are grown in small farms in small volumes, and the total production volume is too limited to develop industrial production. For regional consumers the agro-industrial model is also very important: (1) in order to meet local consumer demand, a



considerable share of apples is imported, and (2) supermarkets are the principal place for food purchasing.

The domestic model is predominantly informal, but very prominent. Apple trees are typical fruit trees in the so-called domestic non-commercial fruit gardens which primarily serve family needs. Often, apples are processed into simple artisanal apple products (juice, jam, dried fruit and others). Apples and apple products originating in domestic gardens can also be sold to local consumers in very productive years. The domestic model has quite a huge impact on the proximity model: many households producing their own apples turn to the market only when their own apples have been consumed.

The domestic and proximity models are the central apple subsystems in which regional small farms operate. According to the interviewed experts' estimation, small producers sell mostly fresh apples (80%). They sell apples directly to customers on farms, in farmers' markets, or deliver apples to their regular clients, or sell via cooperatives, smaller shops and retailers. On-farm processing of apples is quite popular in small farms. Often, apples are processed into traditional products, like, apple juice (*Eglāji*), sauce, jam (*Bērzglāži*), dried apple, or apple wine (*Jokas, Pilādži*), or in more innovative ones, like apple powder (*Jaunstokas, Liepsalas S*). Similarly, these products are marketed primarily in short and local food chains.

According to experts' estimation, around 10% of regional apples are organic. Moreover, integrated production system is pervasive in apple growing. However, no specific nature-based or ecological food subsystem for apples has been identified so far: a considerable share of these fruit are not separated from conventional ones in the food distribution system.

A common problem for all the subsystems, and for the proximity model in particular, is the modest demand for apples due to general consumption habits with low fruit intake, low purchasing power of customers and depopulation trends in the region.

b. Flows connecting the different nodes in the regional food system

Some apple growers from the Pierīga region have joined fruit growers' cooperatives. Three of the cooperatives - *Angļu nams, Zelta ābele, VTT Dārzi* - are located in Pierīga; but they also include producers from other regions. Cooperatives help small farmers access the market by providing joint infrastructure (e.g. storage is crucial in order to prolong the selling period), joint contracts and supplies to bigger retailers, and market information (e.g. on consumer preferences).

The agro-industrial model in the region consists of a couple of big processing and retailing companies and inter-regional/inter-national apple flows. *PureFood* is a long-standing fruit processing company located in the "heart" of the apple growing region. It buys apples from regional producers, notably cooperatives, but taking into account the insufficient supply of local apples, the company also buys apples from abroad. End products of this company, aimed for consumers and processors, are sold both in the regional and national market and are also exported. Supermarkets also buy regional apples from bigger regional producers as well as from cooperatives. In various retail chains, the share of local apples varies between 10 and 40%. The local supply meets only half of the local demand, and the rest is imported (18 400 t in 2013). Imported apples,



primarily from Poland, Italy, the Netherlands, also Lithuania, reach regional consumer through supermarkets, smaller shops and farmers’ markets (via middlemen). Regional apple producers experience importers as a considerable threat to their businesses as their prices are lower.

c. Role of small farms and small food businesses within the food system

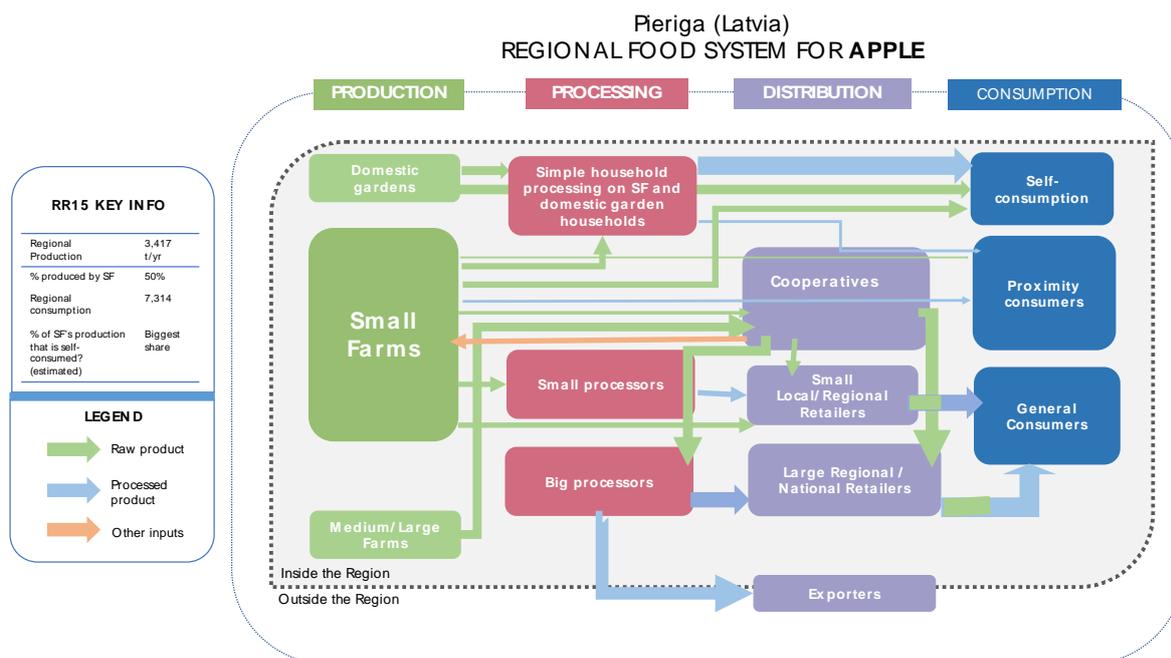
There is an inter-section between proximity and agro-industrial models. Many regional apple producers use the cheaper processing services of companies in neighbouring Lithuania to process their apple into juice, which is afterwards sold to local customers.

d. Importance of household self-provisioning in SF and SFB

In addition to these subsystems, stakeholders, in particular farmers, pointed to the existence of fraudulent apple distribution. According to them, there is a number of farmers or other apple chain actors who, knowing the consumers’ preference for fruit of local origin, buy cheaper apples in Lithuania and sell them in the local market as Latvian apples. This creates unfair competition between local and “local” producers, and reduces consumer confidence in local apple growers.

e. Other relevant information

Stakeholders linked future developments in the apple sector with the strong depopulation trend - a declining number of consumers and a smaller regional and national market. They stressed the importance of cooperation among producers and public support for development projects aimed at improving production and distribution capacities. A general observation regarding small apple farms is that their number is declining. Diversification of on-farm economic activities (processing, tourism), joining cooperatives, and specialisation towards specific quality products (e.g., integrated apple production) were seen as development options for small farms.



4) Typology of small farms in the reference region

a. Small farm types in the region



Following the SALSA Analytical Framework, we base the small farm typology in Pieriga upon two criteria: (1) the level of a farm's market integration calculated as a proportion of production sold and (2) the degree of a farm's self-sufficiency measured as the share of the farms' produce in a household's food basket (See the Table 5). We use the threshold of 50% of sold and self-consumed production, as proposed in the Analytical Framework, to distinguish between the types of small farms.

Table 5. Small farm typology and distribution of the interviewed small farms

		Degree of self-sufficiency	
		< 50%	> 50%
Degree of market integration	< 50%	Type 1: 4 (13%)	Type 2: 11 (37%)
	> 50%	Type 3: 12 (40%)	Type 4: 3 (10%)

1. Low share of self-sufficiency and low degree of market integration are characteristics of hobby farms, recently established farms that are about to scale up and wish to expand and to farms who have recently switched to different agricultural branch. These farms produce some crops, in particular vegetables and fruit, and possibly smaller livestock for self-consumption. Poor market integration is explained by the fact that the principle aim of hobby farms is to produce food for self-consumption, but young farms and those which have switched to another branch do not yet produce enough surplus. Still, these farms occasionally sell some products to individual clients in the neighbourhood, on the internet, farmers' market or use other direct sale's channels.



2. The category of high degree of self-sufficiency and poor or no formal market integration was one of two most represented in the sample. 11 out of 30 farms belong here. These are typically mixed farms growing food or cash crops (vegetables, potatoes, fruit etc), feed crops (cereals, clover etc), and some livestock (poultry, cows, meat cattle, pigs, rabbits etc.). Often these were farms were managed by older farmers: 8 out of 11 farmers in this category were older than 60, and farms which have been reducing their production volumes. But there was also a minority of young farms which are expanding and mature farms, which have stable selling channels but little surplus. Their current production capacity is insufficient to maintain regular supplies to bigger market actors. Occasionally these farms may sell to processors or middlemen (slaughtering houses, dry-houses). Therefore, their principal marketing channels include private customers, also farmers' markets, and also informal sales. Still, these farmers contribute to local food security without using formal market mechanisms as they provide food to a considerable number of consumers, including relatives, friends, neighbours and other private clients. Many farms in this category were among those who offered the highest share of their products for free.
3. Low self-sufficiency but high market integration is characteristic of more specialised small farms. This was another category well represented in the sample. Among these farms there were many vegetable producers, a few specialised dairy farms with on-farm milk processing and a wheat farm. These farms market their products via a range of diverse individual market channels and often short food supply chains: local markets (up to 70-80% of products sold), farms and farm-shops, direct deliveries to clients. But we find here also cases of selling products via public procurement programs, to retailers, processors and catering businesses.
4. Similar to type 3, these highly self-sufficient and highly integrated farms are specialised ones. They still produce a considerable variety of crops, especially vegetables, and keep some livestock to ensure a solid self-provision of food. There were few farms in this category, but two out of three had developed on-farm processing and the third was considering this. Market integration is ensured by similar market channels to those of type 3 – solid individual and/or direct market channels and supplies to caterers and retailers.

b. Role of small farm types in the regional food and nutrition security

For a more complete assessment of contribution of small farms to food and nutrition security it is important to consider two other dimensions of their engagement in regional food systems - social embeddedness and territorial fitting. By social embeddedness we mean small farms' reliance on social relations in the process of food production and consumption. Small farms use and reinvest in local human and social resources (local and farmer knowledge, community ties), which contribute to local food security. By territorial fitting we understand adapting small farms' practices to available local resources, territorial assets, ecological and natural conditions of a place. Both social embeddedness and territorial fitting contribute to SFs and local food system's resilience.



Regarding the small food business typology, the gathered data suggest the following types which are developed on the basis of two characteristics: 1) farm-base: SFB is/is not farm-based and 2) scale/scope and legal status of production: artisanal or small-scale industry:

1. Farm-based artisanal processing is the most common group of SFBs. These are small artisanal producers who process part of their produce and sell it directly on-farm or at farmers' markets.
2. Farm-based small food processing. The difference from the first type is legal and procedural as specific regulations apply to different kinds of processors: artisanal producers are allowed to sell their produce only directly; small-scale processors that have passed additional checks by the Food and Veterinary Service are allowed to sell up to 30% of their products in retail shops. These two types are very similar in terms of their production activities. Both of them involve processing farm products and sometimes buying some raw materials from other farmers.
3. Off-farm artisanal micro-enterprises: very small-scale food businesses which often originate from their owners' hobbies which are transformed into business ideas and projects. These SFB owners do not have a farming background or it has not been relevant for developing their business. They try to source locally and regionally, including from organic growers, and produce special quality and niche foodstuff (e.g. organic baby food).
4. Off-farm food business: 'bigger' and relatively well-established regional food SMEs, some of them with a history dating back to Soviet times. Examples are small processing companies, catering businesses, shops. Off-farm SFBs often buy products from (local) farmers, but not necessarily small farmers.
5. Finally, we can distinguish also the fifth group of the new pop-up type of micro-enterprises established by energetic and mostly young entrepreneurs who seek business opportunities in the food industry. These companies are usually urban-based and claim an environmental product orientation.

5) Governance



a. Main interactions of SF and SFB with governance structures in the region

There is a range of governance structures at different levels with which SF and SFB interact. There is a national framework of formal rules of food production and distribution that farmers and food businesses have to comply with (or rather pan-national, if we consider also EU and WTO regulations, but farmers often refer to these altogether as ‘the state’ or ‘policy’). These formal rules involve agricultural, labour, tax and other relevant policies, regulations and support measures. SF and SFB have different experiences and opinions about these formal rules. Most of the respondents have benefited from public support (subsidies, single area payments, excise tax exemption for fuel, funds for modernisation and other). But they also face difficulties (see the subsection on constraints below).

The food market is highly regulated by the formal regulatory framework, but it is organised also according to its own rules set by private market actors and “market laws”. The globalised open food market is a challenge for SF as they have to compete with much cheaper imports. In particular, supermarkets and retail chains that dominate food chain have set requirements that are not feasible for individual small farmers. Many SF are poorly integrated in formal market activities and conventional food chains. They have difficulties complying with the existing rules: their products might not correspond to certain standards (in terms of quantity, price and/or quality), and participation costs (like, certification or permits of selling) can be too high for them. Despite the poor integration of SFs in the formal market, they remain highly influenced by it.

Consumer habits and preferences represent another market force that influence SFs’ position in the food system. Price is one of the decisive key factors when purchasing food, and it makes consumers prioritise certain products over others. SF and SFB products are often more expensive because of higher production costs, which makes these products less attractive for consumers. In addition, consumers purchase food predominantly in supermarkets. But supermarkets most likely do not distribute small farmers’ products. On the other hand, there is growing demand for local products, healthy products and other distinctive quality products. These consumer preferences affect the decisions of other food chain actors and create new opportunities for SF and SFB market access.

b. Levels of governance and their relative importance for SFs and SFBs

As SF, and to a lesser extent SFB, have difficulties in entering conventional chains, they create and/or use alternative market channels to secure their position in food system. In particular, three market networks were found to be relevant for SF in the region:

- Small farmers’ individual marketing networks: well established, trusted, long-lasting, often informal relations with individual clients. These individual clients being the principle and often only customers for small farmers are crucial for ensuring their market access. For customers, in turn, direct purchasing from farmers broadens their food access by providing access to fresh, local, organic, traditional and other special-quality products which are otherwise less/inaccessible in conventional chains.



- Consumer groups: there is a proliferation of urban consumer groups which for various reasons (healthy eating, tasty eating, environmental impact of food, solidarity with local producers) initiate direct links with local producers in order to purchase food. Most of these groups function on the basis of voluntary work; such a devotedness was found to be necessary, but it is also as a source of risk for consumer initiatives in the long term.
- Local farmers' markets: initiated and organised by NGOs, local municipalities or private actors, local farmer markets have become an important way to access markets for a number of SF and SFB.

These direct links between farmers and consumers allow to develop mutual trust, honesty and openness that make a solid foundation for their long-term relations. They also allow SFs greater flexibility and responsiveness to consumer demand, including new product development that strengthens their market position.

In relation to poor involvement in formal market structures, very few small farmers are involved in cooperatives or other formal collective market organisations. When this was the case, farmers witnessed that participation in cooperatives improved (i) their production capacity (through collaborative learning of good practices, shared equipment) and (ii) their market access by providing joint infrastructure (storage, which is crucial to postpone and prolong selling period), joint contracts and supplies to bigger retailers, and relevant market information (for instance, on consumers' preferences). Most of the research participants agreed that some cooperation in marketing among small farmers and among bigger and smaller farmers is needed in order to improve small farmers' market access and to better use their potential to improve food security. It can be quite challenging for small farmers to establish formal cooperatives on their own because of the considerable initial investments (financial and human) needed. Therefore, a suggestion was made that other food system actors could provide their support for small farmers' cooperation. For instance, supermarkets can open local farmer stands (there are already initiatives at some shopping malls promoting local farmers' products), public support for cooperatives can be reorganised in order to better meet the needs of young and small cooperatives.

Despite weak formal engagement in cooperation, informal cooperation is widespread among small farmers (or more precisely between small farmers and their neighbours, which can also be bigger). They help each other with production inputs, advice, labour, machinery services, marketing products. A particular form of informal economic relation in small farms is barter. Around half of the interviewed small farmers were involved in all kind of non-monetary barter activities with neighbouring farmers and businesses. Examples include leasing farmland to a neighbour who, in turn, helps with machinery to cultivate and harvest the farmer's fields; using a neighbour's help and machinery for baling the grass, and paying back with sheep meat or vegetables; exchanging sheep meat for mash (a by-product in beer production) with a local brewery which is then used as fodder supplement for sheep; using a neighbour's machinery services at ploughing and harvesting periods and in return providing him with wheat for a mutually convenient price. In many cases barter is not accompanied by any kind of symmetrical economic activity - farmers perceive it as an element of local social relations based on approachability, responsiveness and reciprocity: „We are all neighbours here, we have to live together.” „I don't need to be in organisations. I can ask neighbours and get help if I need it - to plough, to saw.”



A kind of transversal governance level is territorial governance. SF and SFB operate within complex of local conditions. They are embedded in, use, maintain, and contribute to a range of local territorial resources: natural (local eco-system), human (knowledge, social relations, social norms, community), infrastructure (roads).

c. Constraints impairing full participation in the food system

We did not identify explicit formal factors that specifically prevent SFs or SFBs from participation in the food system. However, there are indications that agricultural policies and support measures, also dominant market rules are better tailored to the needs of bigger farms. There are some rules and norms which appear to be more difficult for SF and SFB to comply with and which therefore constrain their participation or contribution in the food system.

- Existing public support threshold levels in agricultural development projects are too high for SF and SFB: on average it is 70-150 k EUR per project, while small producers would suffice with 20 k projects.
- SFB which are registered as artisanal food producers have limited access to shops - they are allowed to sell only up to 30% of their products through shops.
- Some certificates (for production or selling) are costly for SF in view of to their turnover and income. In some cases, the high price has prevented farmers from implementing their development plans.
- The level of public support (40%) in SF development projects can be insufficient for small farms.
- Several of the interviewees expressed willingness to develop some on-farm processing but were hampered by the costliness of such business projects (which means that there are no appropriate funding schemes for such development projects or the farmers are not aware of them).
- The regulation of certified slaughterhouses can be less advantageous for small farms as it is costly for them to deliver their livestock to certified slaughterhouses, especially if they are located far away.
- Bureaucracy in food production and distribution and the application procedure for public support is a burden, particularly for small farms.
- Various taxation regulations (VAT, personal income tax, taxable minimum of agricultural salaries) might be better tailored to the situation of small farms and rural areas more generally. WS participants provided several suggestions for improving existing taxation: differentiated personal income tax based on farm size, reduced VAT for all local food products, distribution of revenues from personal income tax between place of residence and place of work (in order to stimulate local municipalities to support business development more actively).



- Informants pointed to a lack of appropriate market infrastructure for SF: too few small processors and retailers, lack of collective collection and storage facilities.
- ‘Market logic’ according to which market actors are not willing to work with small farmers as it is easier to obtain supplies from a few big ones. Comparatively small, irregular production volumes of SF hamper them from establishing regular supply relations with bigger market actors (processors, retailers etc.) which demand a certain amount and quality of supplied products, and prefer to work with fewer bigger suppliers. However, we identified at least one case where the demand for a certain supply volume has urged producers to cooperate.
- Lower prices set by processors for small dairy producers were reported.

WS participants pointed out that there are insufficient policies and support measures specifically targeted at small farms (a support programme for small farms and a support programme for semi-substance farms seem to be the only ones specifically intended for small farms).

d. External policies, decisions and social norms affecting food systems

Food systems and SF are both benefitting and suffering from broader socio-economic processes and social norms. We discovered conflicting and complementary trends of urbanisation and food production in a peri-urban territory of Pieriga. Urbanisation - construction of living houses and expanding urban infrastructure - reduces the space for food production or pushes it away from its traditional place. For instance, a farmer who is living nearby a recently constructed district of houses and whose farm is literally squeezed between and divided by roads pointed to the increasing soil and water pollution, decreasing biological diversity and discouraging attitude of the local municipality, which, according to him, is more interested in urbanisation than agricultural development. On the other hand, urban expansion also brings some benefits. For instance, urban dwellers moving to or regularly residing in the countryside are important customers for local producers; they give value to local food. Development of local farmers' markets in cities and smaller rural towns is another positive example of mutually beneficial rural - urban linkages. These markets have become one of the principal market channels for small farmers and SFB.

Life-style changes and growing expectations regarding the quality of life have diverse impacts on the food system. Some farmers, especially older ones, stated that young people nowadays are not willing to work and they are not attracted to farming because of the comparatively difficult and low-income work. An ageing farming community, rural residents' outward migration to urban and peri-urban regions in search of better life opportunities (in terms of job, education, access to services etc.) confirm this trend. Farmers and food business owners experience rural depopulation as a lack of consumers and labour. But there is also an opposite trend, though much less pronounced, of urban dwellers moving (back) to the countryside and farming. They are attracted by the special quality of life in rural areas (the presence of nature, self-grown food, space, local cultural life). These new- or back-comers engage in food production as hobby farmers and also as commercial producers. In addition to population movement, life-style changes involve also proliferation of different food regimes (healthy, locavore, vegan etc.) that increase demand for specific food products.



There are also divergent agricultural goals, interests and practices that shape food systems. These do not concern small farms specifically, but point to some conflicts between different types of agriculture. Several interviewed farmers witnessed such conflicts between intensive and organic agriculture, or between food and energy production. For instance, a bee farmer was complaining about his neighbours' rape fields surrounding his farm that damage honey, and another bee farmer was happy that there was no rape field nearby and he could produce organic honey. Organic farmers in general expressed some worries about their neighbours' farming practices that are "poisoning and depleting land", a primary resource for producing food.

e. Gender issues intersecting governance issues

Regarding the intersection of gender issues with governance issues, we found there was a good gender balance in small farms, at least in terms of decision-making, farm management, and leadership. There was an equal number of men and women among the formal leaders of farms. Regardless of who was the farm's official manager, the leadership was shared in practice. In few farms there was some division of responsibilities according to each person's interest, skills and capabilities, which indicated to some gender roles: for instance, cows are the wife's responsibility, while the husband takes care "of tractors and fields". But there were no specific jobs that were systematically associated with one of the sexes. Most of the decisions, in particular strategic ones, are made jointly in a farming couple or family. When deciding on a farm's successor, a farming family considers which of their children is willing and interested in farming and has already invested her/himself in the farm, regardless of gender. Several farmers confirmed the opinion of one of the interviewed experts that farming is physically hard and therefore there is a need for a male workforce. But this opinion did not derive from a belief in male superiority.

f. Other actors and processes important for the regional food system

When analysing and mapping regional food systems we have been focusing on market actors, their connections and the food products circulating between them. At the same time, a food system involves a more complex set of actors and processes. Notably there are interlinks between the food market, food policies and regulations, and broader societal issues and processes, as outlined above. There are also financial, agricultural education, environmental and broader socio-economic factors and actors that are directly involved in shaping food systems. In addition to food products, there are other important elements of the food system, such as information, knowledge, inputs, funds, rules and norms, machinery, equipment, infrastructure, which have a big impact on food security. In addition, some processes and elements of the food systems are more subtle, diverse or complex.

For instance:

- although many small farms produce mainstream products, many small farms also differ from other (bigger) producers within food systems by producing special-quality, niche products.
- small farmers' individual market channels in the proximity food sub-system include a great variety of individual selling practices.



- there are two parallel food systems that are interlinked: “formal” and “grey” system, which consists of informal and also illegal activities. Informal practices are particularly widespread among small farmers.

6) Small Farms and rural livelihoods

a. Importance of household labour in SFs

Farm household members form the principal labour force in SF and SFB. Their working hours at farms varied according to the farms’ socio-economic profile (orientation towards market or self-provision), farm specialisation (for instance, livestock farms demand daily work) and between full-time and part-time farms. In one third of the farms at least one family member was working daily full time (365 days a year) on the farm. In a couple of the farms, the reported working hours were even higher (10 hours per day). Working hours were slightly higher on market oriented farms.



Small farmers often use help from family members not living at the farm (e.g. children, grandchildren, brothers, sisters etc.). In some farms this happens on a more or less regular basis (monthly, on weekends), in other farms relatives are mobilised during more intensive periods of work, like seeding or harvesting. Neighbours, friends or other local residents provide occasional help to SF. SF and SFB pointed to the difficulties of recruiting additional workers when they were needed.

b. Farm and non-farm income in the SF’s households

In the majority of farms agricultural production was the only or principal source of income. A couple of farms (2) had some income from non-agricultural activities (machinery renting or other). For farms that owned a forest, selling timber brought additional income. However, these revenues were often irregular. Around half of the SF had some off-farm jobs and several received retirement pensions which were additional or the principal sources of income of the household. The share of



income from the farm varied greatly, between 0 to 100%, with an average of 36%. Public support often composed around half of the farm's income.

In addition to food production, provision of jobs and income to the farming family, the SFs reported many other ways of contributing to rural livelihoods. Maintaining and protecting agricultural and natural resources (soil, air, diverse crops) and rural landscape was one of the most often mentioned SF functions. Organic farmers and those using none or few pesticides and chemicals stressed the “green” or “clean” environment that they help maintain. In general, SF widely produce and/or use farm-based and locally available natural resources (seeds, manure, traditional breeds and varieties etc.) in their less intensive agro-ecological production systems.

SF are strengthening local communities by maintaining community links (in particular in the surrounding area, but also links with other people in the community), local traditions (traditional celebrations like Midsummer festival, Christmas) and social life. Maintaining the practice of farming and farmers' way of life, and the associated knowledge and skills were also seen as SFs' contribution to local traditions. Several farmers expressed great attachment to their farms and life-styles (“I wouldn't move back to the city at any cost”; “I'll leave the place only upon death, “feet first”). For several small farmers their farm serves as a place for regular family gatherings. Many of them are farming with the idea that their children will take the farm or the place over after their retirement. On the other hand, several also reported that keeping the family together is difficult because of high migration, in particular among younger people. Farming can also create some tensions among family members - those living on and off the farm.

c. Shocks and coping mechanisms of SF households

In order to maintain farms and perform their various functions, farming households have to manoeuvre within dynamic contexts. Occasionally more sudden events appear that upset farms. The SF reported shocks caused by broader socio-economic processes: the financial crisis of 2008 and the dairy sector crisis of 2014 that made several farms reduce their farming activities or change their specialisation. Farms regularly suffer damage as a result of severe weather conditions (floods, excessive rainfall), wild animals, and animal diseases. There are various kinds of shocks that individual farms experience. They have affected family members and workers (a car accident, a death), production resources (fires, loss of livestock), market access (e.g. closed market access due to too high analysis for selling on a farmers' market; termination of a contract). In those cases when a shock has considerably undermined a farm's production capacity or profitability, farming activities have been reduced, ceased or the farm's specialisation has been changed. In other cases, the necessary investments are made to repair the damage.

7) Role of Small Food Businesses

a. Main insights and patterns

Recent years have seen a rise in the number and activity of SFB in the Pieriga region. This process has been driven by two key factors: (i) an increasing consumer demand for quality, healthy and



farm based products, and (ii) public support measures and subsidies for the development of small-scale food processing.

The typical products of SFB in the Pieriga region are processed vegetables and fruit (canned vegetables, salads, dried fruit, juices, jams, wines, etc.) and dairy products (cheese, cottage cheese, cream, etc.). Some SFB specialise in baking and some other specialise in honey products. In terms of product specification, many SFB mix the regional food traditions and recipes and simultaneously innovate new products that could appeal to the consumers, in particular the urban middle-class and health-conscious consumers. SFB are open to experimentation regarding production and marketing techniques. There are certain valuable contributions that SFB bring to themselves (e.g. income, employment, entrepreneur satisfaction), and to the regional food systems and consumers (traditional, organic, environmentally sound, local, nutritious products).



The main market channels for SFB are farmers' markets, food fairs, on-farm sales, small retail shops, and, increasingly, internet sales and selling via mobile parcel services. A new trend is selling products in gourmet shops, specialised shops, and to restaurants. Some SFB have had experience of cooperating with direct purchasing groups from cities, though this has been unsuccessful because of logistical difficulties (buying groups often expect the logistical issues to be resolved by SFB). The niche and quality products offered by SFB are demanding in terms of production and marketing, therefore many SFB are involved in intensive learning and networking.

b. Labour in SFB work

Most SFBs are family run businesses (or farms) and most of the daily work (growing, harvesting, sorting, processing, packaging, transporting, selling, book-keeping) is done by family members. On average there are 3 to 5 family members working on a SFB and the owner or the main manager is typically working the longest hours (40 to 90 hours a week). In many cases this has an effect on the health and personal well-being of entrepreneurs and deteriorating health was among the main concerns of interviewees regarding the future of small-scale food businesses. Most of SFB also employ additional or seasonal workers, in particular, during weeding and harvest seasons. However, entrepreneurs regularly complain about the difficulties to find reliable and skilled workers.



c. SFB income

The average income of SFB (in the sample of farm based home-processors and on-farm processors) was relatively modest - 6000 to 20 000 euros per year, including subsidies. Such a level of income does not differ much from the average income observed in the survey of small farms in the Pieriga region (one would expect that on-farm processing should bring more revenues). These figures may suggest that the SFB sector is still at an early phase of business development and incomes are relatively low.

d. Shocks and coping mechanisms of SFB households

The subsidy level among SFB is quite high - 25% to 80% of total income. The highest subsidies were recorded in the group of organically certified processors. SFB use various types of subsidies: project grants for the development of small-scale food processing (grants vary from 4000 to 15 000 euros), single area payments, subsidies for organic agriculture and others. Some SFB have participated in LEADER projects which helped to acquire equipment or build processing facilities. Personal savings and project grants are the main sources of financial investment whereas bank loans are seldom used by the SFB.

8) The Future

a. Main objectives and priorities of SF and SFB for the future

The interviewed small farmers and small food business owners expressed three kinds of future prospects for their farms/businesses:

1. To maintain farming/business at the status quo. Regarding SFs, there were two types of farms among these: (1) farms managed by elder farmers who wish to keep some production for self-consumption or are waiting till some successor takes over; and (2) farms which have reached a kind of optimum in production in terms of the available land and labour, and which generate sufficient income. Typically, the second type of farms were comparatively better integrated in the market. Often these were commercial vegetable farms or mixed vegetable-livestock farms.

SFBs falling within this category hoped to maintain the existing scope and quality of business activities, as they have reached optimum in terms of labour and workload, and in the current conditions they did not see a margin for expansion. Only some major economic crisis in the sector or the country, or a change in their personal situation would urge them to diversify or develop new services.





2. To gradually reduce or stop farming/business activities. These were again farms managed by elder farmers, but the difference was that they did not have specific successors in mind (e.g. their children). There were several dairy farms among these farms – those that suffered from the crisis in the dairy sector in 2014 and from transformations in the food system and rural areas in general (concentration in food chains, competition with cheaper imported products, disappearance of small retailers, lack of consumers in the countryside because of depopulation). These dairy farms have been reducing their herds and considered quitting dairy farming and farming as such. These farms often were poorly integrated in the market. Only one interviewed SFB confirmed that he was considering downscaling his business activities.
3. To expand farming/business, including diversification, or, specifically for SFs, to develop other new on-farm economic activities (processing, tourism) so that the farm generates sufficient income. Often young farmers (both in terms of a farmer's age and/or a farm's age) mentioned expansion or diversification objectives. Some of them were experimenting in order to find the best specialisation for their farms to develop over the coming years. In some cases, the lack of funding, premises, labour were preventing farmers from expanding production or diversifying the farm's economic activities.

b. Main objectives and priorities of SFB for the future

Most of the interviewed SFBs were looking in the near and more distant future with some expansion plans for their businesses. These plans mainly concerned production and marketing. Regarding production, SFB owners considered improvements of the production process by cutting production costs, introducing mechanisation, renovating, expanding or building new premises, purchasing better equipment, as well as undergoing certification that would mean official approval of the production process. Some of them considered new products, like starting the production of ripened goat cheese or more generally diversifying their range of products. Others wished to increase production volumes (“to produce at least 10000 litres of juice”). In terms of marketing, the business people considered developing new sales channels, including export markets. One SFB was planning to start demonstrations, showing people how to make juice.



c. Risk perception by SF and SFB

A set of external and internal (risk) factors influenced the present situation and future prospects of SFs and SFBs. Farmers and entrepreneurs mentioned very similar kinds and sources of risk. As regards internal risks, the interviewees frequently referred to their own age and particular health conditions that influence their work capacity. These were often older farmers or businessmen, but not exclusively so. Health problems have an even more negative impact on the operation of farms located in more remote parts of the region where access to health services is limited. Many farmers and entrepreneurs reported long working days; in particular those SFB owners who produced raw material, processed and sold the end product themselves without employing technical solutions or mechanisation complained about work overload and its impact on their health (insomnia, burn-out). In some cases, the overload made them question the continuation of their business. The (non)existence of a successor in the family that could take over the farm or the business was another internal factor influencing farms' and SFBs' current operation and their future plans.

As regards external risks, small farmers and those SFBs linked to farmers (running own farms or purchasing raw materials directly from farmers) often invoked natural conditions as the most important threat. Severe weather conditions with an increasing number of extreme events (strong winds, cold, heavy rains, violent storms, floods), wild animals and pests ravaging crops and livestock, and soil (wet or clayey soil) were often mentioned among the risk factors which reduce yields, hinder regular supplies of raw material (for SFBs) and production volumes, and result in diminishing income and additional expenses.

Another crucial set of risks is related to market conditions. Small farmers and small businesses in particular (especially those producing niche products) expressed their worries about the lack of customers. They linked this to the depopulation of rural areas, as well as to the dominant purchasing habits - the vast majority of consumers shop in supermarkets, and only a small number of consumers prefer direct purchasing channels which are often used by SFBs and commercial SFs. Small farmers also pointed to the unequal and unfair competition with imported cheaper products which sometimes are fraudulently presented as local products. Both SFs and SFBs invoked unreliable business partners as a market risk: some farmers said there was a lack of businesses willing to buy products from small farms or they had unreliable business partners (delayed payments, unkept promises); some small businessmen in turn were facing difficulties with unpredictable supply of goods from farmers.

The availability and quality of some inputs also expose farming and food business to several risks. In particular, farmers referred to expensive seeds or their bad quality which negatively impacts yield (if there is any). The high price of other inputs (petrol, machinery services) was creating a considerable financial burden. Both farmers and food entrepreneurs complained about the poor availability and poor quality of labour, which is, at least partly, linked to depopulation. (On the other hand, SFs and SFBs often offer irregular and low-paid jobs which are not attractive for potential employees, in particular qualified ones.) Several SFB owners pointed to an unstable supply of raw material (because of fluctuating prices, unstable suppliers) as another risk.

Some interviewees indicated regulations regarding food production and distribution and various control and support institutions as risk factors which hamper the planning and development of



their business. In particular, some SFBs were very critical about various regulations, complicated and expensive certifications (organic, artisanal production), marketing authorisations and controlling bodies. At the same time, most of the farmers and entrepreneurs acknowledged that they have received some state support, and many of them reported constructive relations with control and administrative bodies. In small farms, public financial support was a considerable share of the farms' turnover. Lack of or limited public funding for development projects in farms was considered a risk for farm development in the future.

Finally, some farmers felt that the major risk is linked to the political system in the country, relating this to possible aggression from Russia or a war. Such a scenario would dramatically change the political and economic situation in the country.

d. Food system forecast in 5, 10 and 20 years

The research participants pointed to the following innovations that have occurred recently and that will presumably have an increasing role in food systems and will have an impact on the structure of the food system (including emergence of new and disappearance of actors and relations) and on relationships among food system actors already in the near future:

- Social innovations in organisation of (local) food chains: for example, proliferation of consumer driven initiatives to connect with local producers; opening supermarket chains to local farmers' products; establishing new farmer markets. Many of these innovations can provide opportunities for small farmers and create them new connections to the food market.
- Growing use of social media (blogs, YouTube, Facebook) among farmers to communicate with consumers, provide information, educate consumers and market their products. Especially younger small farmers are already quite active in using these. These new ICT may increase the number of farmers selling directly to consumers and facilitate emergence of new digital market actors.
- New products, such as new special quality and niche products, added value products to manage food waste. In particular, the participants pointed to the potential of organic products and specific local products. These again were seen as new market opportunities for small farmers.
- Technological innovations, increasing mechanisation, robotisation of agricultural production. Small farms, however, were not seen as introducers of these innovations due their costliness. These processes seem to rather go in hand with increasing intensification and concentration in food production.

In addition to these more recent phenomena, there is a number of persisting trends, societal and agricultural, that will influence food system, food security and also small farms' situation:

- Concentration is expected to continue in all agricultural sectors. This involves reducing number of small farms and along that reduction of food, food production, selling and consumption practices characteristic to SF. Bigger farms are keener to engage in agro-



industrial food system, including entering export markets, and this subsystem can be even more consolidated.

- Ongoing competition in food market, in particular in fruit and vegetable sector, with much cheaper imported products. Small farmers are less competitive as far as it regards price, and this makes their presence in the food system more vulnerable.
- Depopulation and decreasing number of customers will demand flexibility, adaptivity on the production side and the entire food chain.
- Rural depopulation and shortage of labour. Small farms are already experiencing difficulties in recruiting employees, which hampers their production capacity. Migrant labour or increased mechanisation were seen as solutions by some participants, but only in the long term.

(For specific future developments in the key products' food systems see the subchapters on the key products above).

9) Annex: List of resources

Several information sources were used to generate this report. Existing information and knowledge (statistical data, reports, literature, online materials, previous research) was combined with original information gathered from interviews and focus group discussions with various stakeholders – small farmers, small food businesses and other experts of regional food system and small farms. The source of the presented statistical data is Central Statistical Bureau of Latvia, if not mentioned otherwise. The tables below provide an overview of the participants in the expert interviews, SF and SFB interviews and the focus group discussions.

a. List of key experts interviewed

No.	Key stakeholder's affiliation
1.	Cooperative
2.	Farmer NGO
3.	Farmer NGO
4.	Farmer NGO
5.	Farmer NGO Local government
6.	Research institute
7.	Research institute
8.	Research institute
9.	Research institute
10.	Agricultural advisory



b. SF and SFB interviews and focus groups information

Stakeholder typology*	N° of participants						How were they contacted?
	Interviews			Focus Groups			
	Men	Women	Total	Men	Women	Total	
Farmers	15	15	30	14	11	25	For individual interviews, the respondents were contacted by phone to arrange an interview, followed by face-to-face meeting for the interview. For focus group discussions, the participants were contacted either directly by phone or indirectly, addressed by a known respondents' peer.
Producers' cooperatives		2	2	4	2	6	
Slaughtering facilities							
Processors (small/large)	4	4	8		1	1	
Wholesalers							
Retailers	1	1	2				
Caterers							
Other small food business							
Exporters							
Importers							
Farm inputs suppliers / service providers					3	3	
Advisory services		1	1	2	13	14	
Researchers	3	1	4	1		1	
Agricultural administration/ Ministry of Agriculture					2	2	
Consumers' groups/ organizations							
Local administrators and policy makers				1		1	
Political leaders and PMs							
Other programs/initiatives							
Nutritionist							
NGOs (including farmers)	3	1	4	1	7	8	
Traditional and religious leaders (for Africa)							
Total	51			61			

