



GLAMUR

Global and local food assessment: a MUItidimensional performance-based approach



Global and Local Wild Blueberry Supply Chains in Latvia

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2015

GLAMUR is a EU FP7 project that aims at integrating advancement in scientific knowledge about the impact of food chains to practice, to increase food chains sustainability through public policies and private strategies. This general objective will be pursued through the following specific objectives:

- To develop and validate a performance criteria matrix for assessment and comparison of food chains operating at a range of geographical scales through analysis of how food chain impacts are communicated in different spheres of society.
- To build a database of quantifiable indicators of impact and a set of 20 case studies aimed at understanding how impacts are generated within specific food chains.
- To advance knowledge on methodological problems and trade-offs arising when measuring and comparing the impact of food chains within and between sectors.
- To assess how performance is perceived by stakeholders in different national contexts through participatory assessment and multi-criteria analysis of the different typologies of food chains.
- To assess the actual and potential role of public and private policies addressing food chains and to turn assessment into policy recommendations.
- To build a network that turns the advancement of scientific knowledge into decision making tools for domestic and public consumers, producers, citizens, scientists, policy makers, civil society organizations.

Report to be quoted as:

Grivins, M., Tisenkopfs, T. 2014. *Global and Local Wild Blueberry Supply Chains in Latvia*. Riga: Baltic Studies Centre

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Abbreviations

BSC – Baltic Studies Centre

FAO – Food and Agriculture Organization of the United Nations

GFSC – Global food supply chains

GLAMUR - “Global and Local food chain Assessment: a MULTIdimensional
performance-based approach”

LFSC – Local food supply chains

NTFP – Non-timber forest products

RQ – Research question

SFSC – Short food supply chains

WBSC – Wild blueberry supply chains

1. Introduction

This report is a part of GLAMUR Project (Global and Local food chain Assessment: a MULTIdimensional performance-based approach) work package 3 (WP3) aimed at analysis and comparison of the performance of global and local food supply chains. The report analyses and compares wild blueberry (*vaccinium myrtillus*) supply chains (WBSC) in Latvia and presents the Latvian national case study. The report focusses on berries product group and together with the Serbian report on global and local raspberry supply chains (research conducted by BEL) will form a basis for cross-national comparison of pairs of both local and global supply chains in two countries: Latvia and Serbia.

This study follows the overall research questions of GLAMUR project: What are the key food chain performance issues with regards to a global-local comparison? What is the methodological strength and weakness of overall applied pairwise comparative analysis? What are the specific interactions of the food chains under study and the policy settings?

For the purpose of pairwise investigation and comparison of food chains in berries product group, basing on preliminary case profiles and consultations among the Latvian, Serbian and Belgian teams we agreed on the following five specific research questions to be addressed in the berries case studies:

- What are the main differences in organization between the local and global chains?
- How are governance and control enforced in the local and global fruit supply chains?
- How do the analysed LFSC and GFSC influence national and regional economies?
- Are costs and benefits distributed in a fair way among actors in the chain? How does this differ for the local and global chain?
- What aspects describe labour market and common employment practices within sector?

These research questions have been also explored in the Belgium local and global apple supply chain analysis (research conducted by KU Leuven), however, it was decided to keep the two product categories (berries and apple) separate.

The objectives and questions of this case study are strongly informed by the common WP3 methodology and the outcomes of WP2 in terms of the main attributes that characterize food chains in Latvia and Serbia as countries, which undergo socio-economic and structural development (Kirwan et al. 2014). The choice of specific attributes related to research questions and the development of concrete indicators that measure chain performance along these attributes was a reiterative process of consultation among the fruit research teams and in the GLAMUR consortium as a whole.

The following four main attributes are selected to compare the performance of global and local berries chains: creation and distribution of added value, contribution to economic development, governance and labour relations. A set of 18 concrete indicators was developed to collect data and measure performance. The overall objective of this case study is to analyse and compare economic, social, ecological, ethical and health performance and contributions (or lack of thereof) of global and local blueberry chains. We used embedded case study approach trying to understand the wild blueberry chain performance in historical, economic, socio-cultural and changing market context.

For the analysis we have chosen three wild blueberry chain cases - global legal chain, global grey chain (the intermediary case) and local chain. The selected cases represent differences between actors and actor systems operating in wild blueberry sector. First, the cases illustrate different scale of operations – the global legal chain is fully global case while the local chain is extremely local case. The global grey chain represents an intermediary example connecting both other cases. Second, the cases illustrate the chronological development of the wild blueberry chains – from culturally based local chain, through centralization characteristic to global grey chain, to full global integration characteristic to global legal chains. Third, the cases represent different levels of modernization. Despite these differences, the cases are strongly tied together supplementing each other.

The report is structured in seven chapters. Chapter 2 (the one following Introduction) describes the case study context, characterizes the wild blueberry

sector in Latvia, its economic relevance, cultural aspects and recent transformations. The chapter gives an overview of the national value-chain and flow-charts in wild berries sector, describes the structure and organization of global and local chains, the actors involved and their relations. The chapter also identifies typologies of enterprises operating at each stage of the value-chain and their supported business models. Arguments are provided for classification of chain typologies not only in 'global – local', but also along the axis 'cultivated – wild', 'grey – legal', 'food – pharmaceutical'. Chapter 3 describes the case study research design, substantiates the attributes and indicators selected for analysis and comparison. Chapter 4 characterizes the methods of data collection and analysis. Chapter 5 presents the main research findings and contains a detailed description and comparison of three distinctive types of wild blueberry chains: global legal chain, global grey chain, and local chain, based on examples of specific enterprises (or micro-cases). The final two chapters: Chapter 5 (Discussion) and Chapter 6 (Conclusions) draws preliminary conclusions about economic, social, ethical, ecological and health impacts of global and local blueberries chains with particular emphasis on chain governance, transparency and socio-cultural impacts.

2. Case study context

2.1. Multiple aspects of wild blueberry industry in Latvia

Non-timber forest product: In this study we concentrate on wild blueberry industry in Latvia and compare local and global wild blueberry supply chains (WBSC). Wild blueberries are one of the non-timber forest products (NTFP) – a group of products that until recently have been overlooked (have not been recognized neither as an important source of food nor as an important source of income). Food and Agriculture Organization of the United Nations (FAO) in its report “Non-wood forest products for rural income and sustainable forestry” summarizes that the NTFP has not attracted attention of actors involved in food industry because: (1) most of the harvested products go for rural subsistence or local markets; (2) the statistics of produce harvested in forests is incomplete - it has been split between conventional economic sectors (as agriculture, forestry, horticulture) and it is therefore impossible to grasp the true importance of NTFP; (3) modern forestry favours large-scale and has associated NTFP with something incidental (FAO, 1995).

Culturally embedded economic practice: In literature NTFP are more often associated with developing countries (see for example illustrations given by FAO (FAO, 1995), or examples given to illustrate NTFP governance (Laird et al. (ed). 2010)). However, there is a considerable interest in NTFP in developed countries as well – in some cases gathering of NTFP is perceived as a recreational activity, in some others – as a cultural activity representing certain lifestyles, or even an activity that secures local identity (Pouta et al. 2006; Tomićević et al. 2011). Gathering of wild forest products is seen as an activity of food sourcing for self-consumption (e.g. hunting and chanterelles gathering example given by Pollan (2006, pp.277-415)) and/or as acquisition of highly valuable products – as it is in case of certain mushroom types (especially truffles), cork or berries (products that might be expensive in certain niche markets). Wild blueberries (*Vaccinium myrtillus*) is one of such products – its biological compound as well as historical heritage of picking berries ensures that there is a growing market for wild berries (see, for example, Paasilta et al. 2009; Turtiainen et al. 2011).

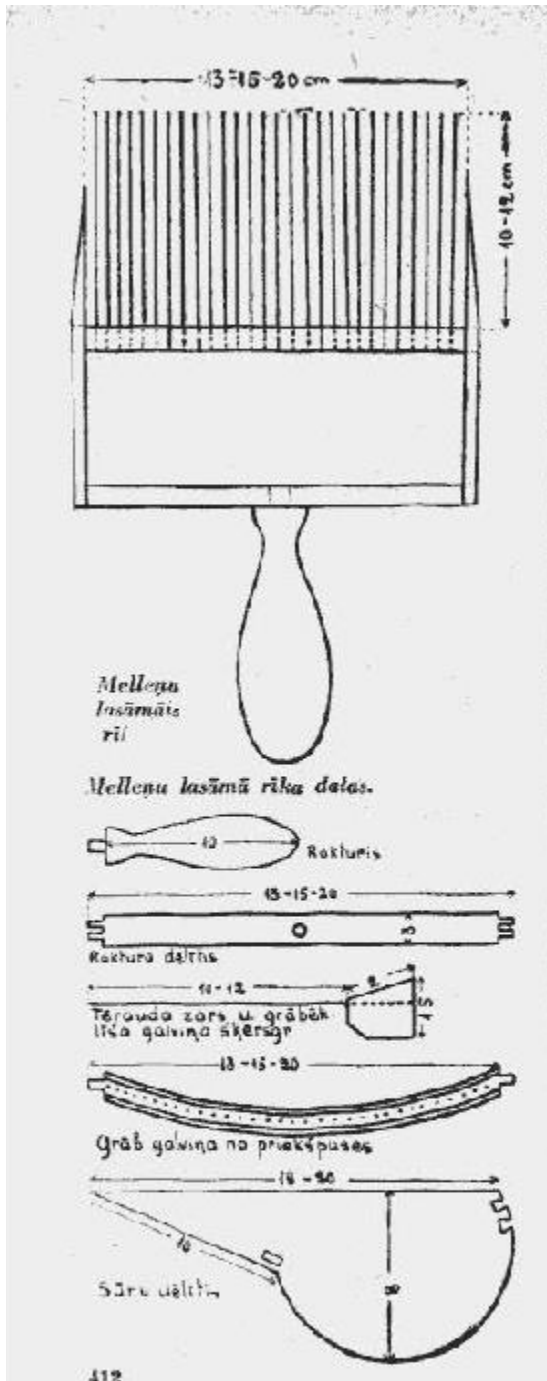
Historically NTFP and wild blueberries has offered households a possibility to diversify the daily menu. However, picking wild blueberries for household consumption has never been an important financial foothold (similar conclusion has been made elsewhere (see Pouta et al. 2006) (the commercial picking (and global blueberry chains) is relatively recent phenomenon). Besides the historical practice to use berries for self-provisioning, there has also been an ever-present possibility to sell small amounts of berries directly to consumer. Despite the fact that blueberry picking for self-provisioning cannot be interpreted as an important source of income for most of the population, gathering of wild blueberries and other NTFP are common recreational and cultural activity in Latvia. Recent quantitative study concluded that nowadays most popular non-timber forest product in Latvia is mushrooms that are picked by 67.6% of Latvia's inhabitants. Wild berries are picked by 35.4% of Latvia's inhabitants and that makes berries the second most popular NTFP (share of pickers representing more developed WBSC (that can be a source of income) is ~5% (more information about pickers are given in page 26)) (Donis & Straupe 2011). The high number of pickers gives a clear illustration of the importance of the activity in contemporary society.

Geographical origin and nutritional and pharmaceutical value of the product: Wild blueberry is common plant across the North and Eastern Europe. For centuries blueberries has been known as a source of nutrition and for its medical uses. *“The most significant characteristic of blueberries is their high content of beneficial nutrients and bioactive phytochemicals. Nutritional compounds comprise carbohydrates and organic acids, which mainly contribute to the taste impression, accompanied by aroma volatiles”* (Nestby et al. 2010, p.9). In the last decades, mainly due to the fact that *vaccinium myrtillus* contains a high level of anthocyanosides (also called anthocyanins) (Bagchi et al. 2004; Burdulis et al. 2007; Latti et al. 2008), blueberries have also attracted market interest for its pharmacological properties (see Puupponen-Pimiä et al. 2004, Zafra-Stone et al. 2007; Cravotto et al. 2010). Wild blueberries have much higher level of anthocyanins than almost any other products (Carlsen et al. 2010, Halvorsen et al. 2002; Skrede et al., 2004). It is suggested that *“light intensity, photoperiod and temperature influence the biosynthesis of many secondary metabolites”* (Jovančević et al. 2011). This according to some researchers means that Northern conditions are more favourable to secure high levels of anthocyanin in wild blueberries (Hohtola 2010, p.101; Nestby et al. 2010, p.9).

Resource for food and pharmaceutical industry: Anthocyanin is highly valued substance for producing various medicines in pharmacological industry. This makes wild blueberries a lucrative product for both food and pharmaceutical industries which compete for this resource globally. Both markets influence the way how wild blueberry supply chains are organised and what traceability level is required from the product – thus the competition of the markets materialize in aligning the demands posed on supply chains.

The recent decades have brought an important change in NTFP and wild blueberry picking in particular. With the development of the wild blueberry industry, the evolution of long supply chains and inclusion of blueberries in food and pharmaceutical production systems worldwide, berry picking has become an important activity granting income for the most vulnerable part of population. Industries discovery of the possibilities wild blueberries can offer has resulted in quickly established wild blueberry collecting network that introduced the possibility to sell high amounts of picked blueberries thus transforming once narrow cultural practice to an advantageous activity that promises high income. The emerging sector ensured the possibility to sell berries in bulk and thus provided an access to significant (extra) income for diligent picker. Furthermore, wild blueberry industry has given an opportunity to the territories with a greatest need for opportunities – distant rural areas.

Global, local and mixed chains: The given context illustrates that in the wild blueberry sector we can distinguish two types of food supply chains. On the one hand, historical practice of blueberry picking (or – picking of NTFP in general) should be associated with short chains – a situation when picker is often simultaneously a consumer, or when the pickers and consumers are connected through direct sales; or slightly more complex chains where picker groups and/or families organize to ensure constant flow of the product, which is sold through an intermediary in local markets. Presumably, significant share of the berries in these short chains are passed among social circles (as for example among extended families or among colleagues) where the transaction does not hold any economic benefits – these transactions are purely strengthening social ties within the group. Some share of the berries originating in these chains is sold. However even when the berries are sold the chains retain many traits of informal exchange and social relationship – close and personal relations between seller and buyer and transactions of only small amounts of goods. They are marked



Picture 1. Blueberry picking machine. Instructions how to build an instrument for blueberry picking. Drawing published in journal in year 1940. (Brīvā Zeme, 1940, 9.jūlijs)

also by absence of formal regulation (or only weak regulation) and presence of the whole set of informal knowledge and tacit rules that permeate collecting and selling wild fruit in Latvia.

On the other hand, in the opposition of previously described local wild berry chains, the 'long' blueberry chains are located. These chains have emerged just recently and typically include much more actors – as for example, these chains would typically include collecting points, dealers, primary processors, food producers and pharmaceutical companies, as well as transportation enterprises (and other companies organizing logistics) and in some cases retailers (see Figure 1). Long chains can be regionalised by the fact that the end client is food processor, which is located in the same region where berries has been picked (in this case – Latvia) or, indeed, globalised (some of the final clients of Latvia's wild blueberry industry are food or pharmaceutical processor companies located in Western Europe or Asia).

The global wild blueberry chains have expanded significantly in Latvia during the last years. According to EUROSTAT Latvia is 9th biggest exporter of frozen blueberries in Europe exporting 3000t in the year 2013. Experts suggest that official blueberry export documentation

might be unreliable and in reality exported amount could be much higher.

Meanwhile, significant share of produce remains with the local secondary processors while another, unknown share of produce never reaches the market – it is consumed in households. Thus it might be difficult to estimate the true size of blueberry market (despite this we give some estimations of the market in further chapters).

The multiple meanings of wild blueberry sector have been well known in Latvia. Sector is simultaneously perceived as cultural and economic activity; it represents short as well as long supply chains, regulated and un-regulated markets, publicly recognized and un-recognised sector, formal and informal economy. Every autumn media publishes stories explaining the importance of this income source in rural communities, introducing berry cooking/serving recipes, drawing public attention to unfair competition between companies operating legally and those hiding their supply networks from state authorities, illustrating the importance of this income source to rural inhabitants, etc. Yet overall, media does not offer a clear interpretation what should be done with this controversial economic activity. The field is under-researched which has led to speculations and inability to make informed sector related decisions.

2.2. Wild blueberry industry: a multiple market emerging from cultural practice

In this section we raise a question – under what circumstances wild blueberry sector can grow from culturally widespread yet decentralized practice to an organized and sophisticated economic activity with an outreach in local and global markets, complex distribution, diverse target customers and connections to various sectors of economy (from forestry to a food production, pharmaceutical and cosmetics industry). However, before that we first briefly discuss how blueberry chains are related to two dominant agro-food system discourses in Latvia: the ‘intensification’ and ‘alternative’ discourses.

Elsewhere we have illustrated (Grivins et al. 2013; Grivins and Tisenkopfs 2014) that overall food system interpretation in Latvia is formed by two opposing agro-food system discourses. The dominant – intensification discourse (the discourse of globalization and development) is a basis of the most food related interpretations. It presupposes the markets need to develop – to become

economically more efficient and competitive in the global scale. Therefore, most of the ideas that are related to agro-food systems at least to some extent suggest the ways how to ensure faster development. Thus the concepts inviting to diversify the characteristics we associate with (related to ecology, sustainability, resilience, etc.) are subordinated to general terms of economic growth. Food is just a part of economy (only secondary representing other GLAMUR dimensions).

On the other hand there is an interpretation, which has started to develop just recently inviting actors involved in food systems to accept more elaborated food interpretation – the alternative discourse. It is a circle of ideas that is still consolidating in unified interpretational regime which re-localizes the food chains. Compared to intensification discourse alternative approach adds several new ways on how food systems should be perceived – through aspects of ecology, ethics, support to local community and support to anti-GMO ideas etc.

Both of these discourses have claimed their support both to local and to global food chains. However, the overall interpretation of what does it mean to be local or global for both discourses differs. For intensification discourse both local and global are interconnected markets where former can assist penetrating the later and ensuring that generated income serves overall economic development and strengthens enterprises position in global market. Alternative approach redefines local combining the idea with other meaningful characteristics of food chains. Local in this interpretation can be perceived as just a possibility to buy from local farmer. However, in cases of more elaborated interpretation it also signifies more sophisticated understanding of localness – reduction of actors participating in food chains, supporting ecological agriculture, protecting local values, following the seasonality, etc. In the same vein – global can be a part of conventional food system (and representing intensification discourse), yet it may be appreciated by the alternative perspective if it offers ecological products.

Global and local wild blueberry chains can be easily associated with the extremes of both mentioned discourses. However, the task to combine distinction describing conventional food systems with networks emerging from NTFP picking can be very difficult as well. At least two reasons can be given to explain the difficulties:

First, collecting NTFP has long been associated with cultural heritage and with the time when most of the produce collected went in short and very local food chains. Even nowadays wild blueberries are not distributed through retail chains – this is a sphere where cultivated blueberries dominate. Non-processed wild blueberries are either passed in extended families, bought from street vendors or in open-markets. Thus - significant part of the actors involved in wild blueberry chains is organized informally and act sporadically (even in cases when market activities of these pickers require specific licenses – these are free or cheap, relatively easy to obtain (depending on municipal regulations) and give a possibility to sell wide variety of goods (along with other NTFP and self-grown, self-prepared products, etc.)). Thus even when the local chains are officially regulated – the regulations are light and leave significant space for improvisation.

Additionally, it is quite safe to state that wild blueberry chains (and most likely other NTFP chains as well) significantly differs from what is usually perceived as food chains (with clearly pronounced involved actors). In case of systems typically associated with food production a lot of critique is directed towards agricultural practices – in case of wild forest products these practices are absent (or invisible) – thus the products are represented as more natural and, therefore, strongly linked to alternative discourse.

Secondly, due to a specific structure of the chains some parts of them remain invisible to governing actors. A modern state (such as Latvia) does not have the instruments and arguments that would allow it to limit the consumption of historically significant dishes originating in local flora (especially if the cultural practices are not causing any health or environment problems). Meanwhile, the cultural rootedness becomes the basis on which the global food chains are built upon. This does not mean that the relations between state and NTFP are problematic. It rather means that the cultural practices have become the main source of legitimacy where global food chains emerge (the source that provides global chains with possibility to take the shape they do) – both have melted at the very roots: thus in case of blueberries it may be much more difficult to separate the both discursive interpretations.

2.3. Governance issues and controversies

The whole situation has created a fruitful soil where grey business structures can emerge. On the one hand – it seems impossible to find a way how to control the global without harming the local. On the other hand, due to the difficulties to separate culture rooted and business oriented picking it is almost impossible to collect data and portraying the situation with various NTFP correctly. However, these are just a few problems, which can be associated with NTFP. We should pay attention to some other as well:

- 1) Traceability. The uncultivated nature of product causes problems with traceability. The traceability issues are only reinforced by the stakeholder inability (and unwillingness) to identify the berry pickers (mainly this is a result of close links between local and global. However, the practical cause is much more trivial – unwillingness of the commercial berry pickers to admit to the state (and municipality) that they have this source of income (they are selling berries without official contracts and by doing this avoiding possible taxes)). This is the reason, why significant amount of berries do not have identifiable origins. As we will show in next bulletins, we believe that lack of traceability is most pronounced symptom for lack of appropriate governing instruments.
- 2) Greyness. The most visible issue of wild blueberry supply chains from national perspective is the greyness of transactions. This issue is strongly related to traceability – wild blueberries with unknown origin (or non-registered, officially nonexistent blueberries) can be sold and exported without accounting for economic transactions. Thus this market sector becomes a place for speculations and frauds.
However, the final statement should be approached with caution. From local perspective market greyness might be an enabling aspect of the NTFP chains granting local actors the possibility to self-organize the chains. The dual nature of greyness should be kept in mind in order to develop deeper understanding of the supply chains.
- 3) Lack of formal regulation. There have been attempts to regulate the wild berry picking sector, however, all attempts so far have failed. To put it in in other words – state is not ready to overlook a sector that has significant cultural roots and does not have one clear entrance actor (for example – farm). Inexperience to govern NTFP (as we can observe in case of blueberries) lead to greyness. Most of the initiatives introduced to formally

- regulate the market have backstabbed reducing in some stakeholders trust in states good intentions.
- 4) Influence of labour. While conventional industries are complaining about the lack of fitting labour (no matter how they interpret it) wild blueberry sector has offered people a possibility to earn extra income without posing any requirements. Furthermore these possibilities are created just where they are needed the most. Because of the greyness sector's labour does not have any warranties, security or tax payments. However, they have access to quick income without any restrictions, large degree of flexibility and self-reliance.

Aside from the regulatory aspects, global wild blueberry chains have unwillingly promoted the emergence of conflict between the two main wild blueberry markets – food processing industry and pharmaceutical market for which forest blueberries is an extremely lucrative product. According to experts, in Latvia case approximately 20% of blueberries are sold to food industry; the rest is sold to pharmaceutical companies. The huge share of berries sold to pharmaceutical industry is a recent phenomenon that currently puts a pressure on the food industry and its ability to secure the needed amount of blueberries.

The recent growth of the overall wild blueberry market has been based only on a discovery of lucrative foreign market (namely – China) (see Picture 1). However, it is difficult to predict how sustainable the newly discovered pharmaceutical market is – first of all, foreign markets might lose their interest in the product (possibility to chemically synthesize compounds found in berries could be one reason why this could happen); second, there are states that can supply the product either cheaper (for example – Belorussia, Ukraine, Russia) or have bigger amounts of the product which presumably is of higher quality.

Furthermore, the analysed product is seasonal. Typical berry picking season lasts for around two month – July and August. Enterprises are searching for possibilities to overcome the seasonality. So far tapping into picking of other NTFP has been a common answer. Although activities like these have prolonged the season, it has not given a solution on how to extend a season all year round. Currently, the access to income from NTFP ends just when the rural communities might need extra income the most – the winter (during the most expensive season in Latvia). Furthermore, the pickers who relays on the NTFP are typically

the most vulnerable inhabitants. They are looking forward for the next year with hope that it will bring vast blueberry harvests allowing everybody to save some money for their future needs. At least partly, this belief in future harvests lives through all the industry – actors in all wild produce supply chains lives from year to year with the hope that next year will bring bigger yields. At the end this factor just adds to unpredictability of the industry.

Finally, there have been some discussions arguing that overexploitation of NTFP may cause significant changes in local flora. In general, this is under-researched field where most of the arguments (with some exceptions, as for example Strazds et al. (2010) claiming that over harvesting of blueberries may cause reduction of woodgrouse population) do not have a scientific proof.¹

2.4. Boundaries of local and global WBSC

To understand the peculiarities of the wild blueberry chains (and some of the aspects characteristic to NTFP in general) and in order to be able to assess food chain performance we need to discuss the differences between local and global blueberry chains. The distinction will provide a better understanding of the difficulties the sector faces. Yet it might be an uneasy task – to give an integrated assessment of how we should perceive the both chain types. This is especially true if we try to analyse both macro (enterprises operating in national or global markets) and micro (separate actors picking their berries) level together – all the studies has addressed blueberries as just one of the NTFP market level and even then it is common that the issues of the chains have been analysed only superficially.

Furthermore, it is worth noting, that although we stress here the distinction two opposites - global and local supply chains, due to characteristics of NTFP sector, in the final analysis we will address three chain cases: global legal, global grey (intermediary case) and local.

¹ The overall interpretation suggests that over-harvesting of wild blueberries may reduce their natural ability to reproduce. However, to substantiate such claims state would need a more elaborate knowledge about the share of harvested berries. Our estimations (explained in detail later in the text) suggest that the harvested share is too low to cause significant effects on wild blueberries. However, as suggested by Strazds et al. (2010), it could be that the main effect associated with blueberry picking is not the share of berries picked, but the continuous human presence in the forest.

There are several ways how we can approach the distinction of what is local and what is global:

Historical versus new structures

As we have stated beforehand - blueberries and blueberry picking is deeply rooted cultural activity in Latvia. Evidence for this can be found both in currently published articles as well as articles published in the beginning of the 20th century - we can observe interest of Latvia's media in blueberries. Media illustrates the healthiness of blueberries, recipes of blueberries² and gives overall accounts of berry picking. Furthermore, blueberries and blueberry picking is a significant symbolic object – a theme, which is represented in poetry and fiction stories, as well as used to signify a specific period of the year – a blueberry time³.

The fact that forests promises rich blueberry yields explains the rich pool of culturally artefacts related to blueberries. NTFP picking is one of such meaningful elements. Furthermore, there is a line of various blueberry related products - as blueberry jam, syrups, dried berries, berry picking instruments (see Picture 1), etc. and by-products (as, for example, blueberry mint tea). All this indicates that cultural characteristics of wild blueberry consumption should be strongly associated with localness of the product. Yet references as “blueberry season” (“*melleņu laiks*”) illustrates the strong ties these practices have with seasonality and perception of time. Therefore, it is essential to consider local NTFP as a part of cultural heritage. Namely, in these chains berries reach household unprocessed; they are mostly picked by household members or close relatives and only afterwards are used according to household's intentions. These

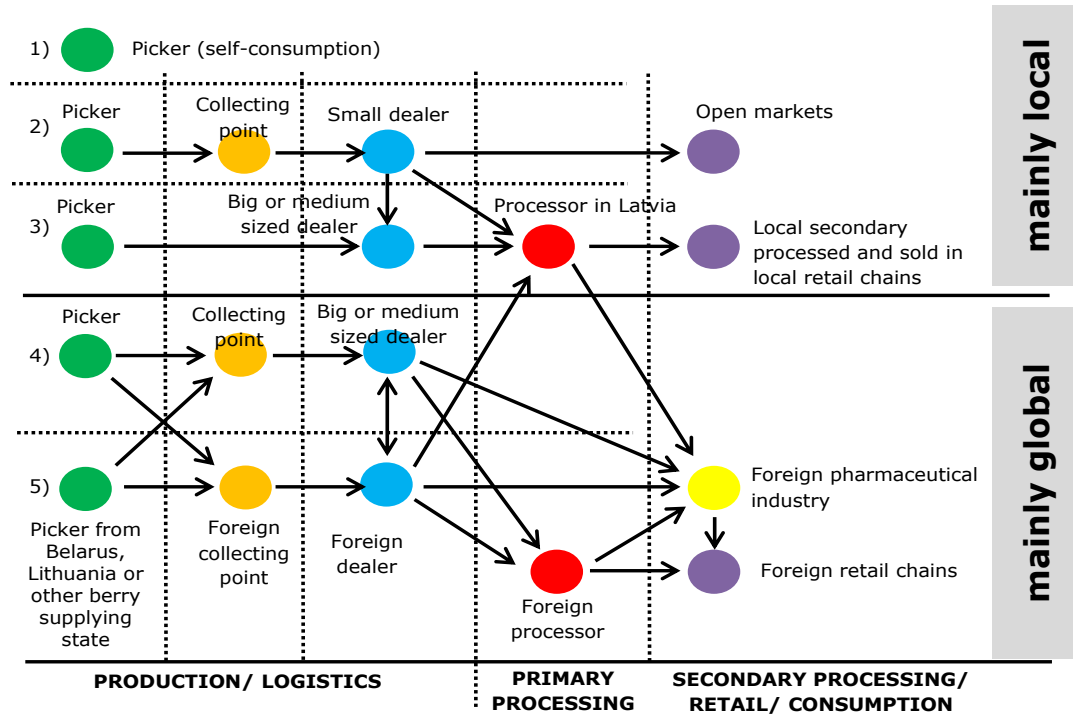
² The blueberries cover wide range of issues and have a significant historical presence in national newspapers. Just to give some examples: there are articles stating that Health department has run out of blueberry mint (Latviešu Avīze, 1932, 3rd of April); some other articles invites people to pick berries more and to preserve them and informing how to preserve them (Zeltene, 1937, 15th of August; Dzelzceļnieks, 1939, 1st of August); also articles inform about healthiness of blueberries; or just informs that blueberry season has started and what are predictions how good it will be (Smiltēnes Ziņas 1935,). Despite the long period of time the main themes here have remained the same.

³ Illustrating cultural significance political article from thirties starts its critique with stating that some of just made political decisions are so scandalous that even the fact that it is blueberry season cannot mask them (Sociāldemokrāts, 1930, 13th of July). Blueberries are also the central theme in several of poetries (for example Māris Čaklais “Mellenēs”, Jana More “Mellenēs” etc.) and short stories.



products (as for example blueberry jam) can be passed among the members of the some group.

Figure 1. Examples of blueberry chains.



Although the berry picking is a historically relevant cultural activity – the global industry built around this cultural phenomenon is relatively new. There are some evidences of opportunities to sell wild berries in high quantities just before the WW2⁴ (Pēdējā Brīdī, 1930, 4th july). Also there are evidences of organized berry picking in Soviet Union. However, it seems that true possibilities of wild berry market were realized only after regaining independency when several local newspapers informs about local enterprises buying blueberries from individual berry pickers in order to export them (Lauku Avīze 1991, nr.61; 1994, nr.59; 1995, nr.59; Latvijas Jaunatne 1992). The new industry was escorted by new

⁴ An article from 1930 (Pēdējā Brīdī, 1930, 4th july) suggests that people from economically vulnerable groups were able to earn 6-15 lats or pick up to 50 litres of berries per day. However, we have not found any other evidence of existence of longer wild blueberry chains at that time. Therefore, we can conclude that the possibilities to earn with blueberry picking were ensured by short food supply chains – selling your berries in the open market or by selling them directly to urban households.

blueberry products and technologies (for instance, freezers and other instruments for logistics). Meanwhile it also brings along conflicts and the first acknowledgment about the governance's lack of instruments to control the industry (see Lauku Avīze 1996, nr.59). Namely, already at this early stage in global blueberry chain development there are reports of people crossing the borders with significant amounts of forest goods with a goal to sell them for a higher price in neighbor countries (this problem will become much more pronounced in the next decades). However, if we compare the exported and imported amounts of berries then and now, we can easily conclude that the industry was still just developing and we can suggest that up to the most recent past (last 5 years) there is an absence of global blueberry supply chains.

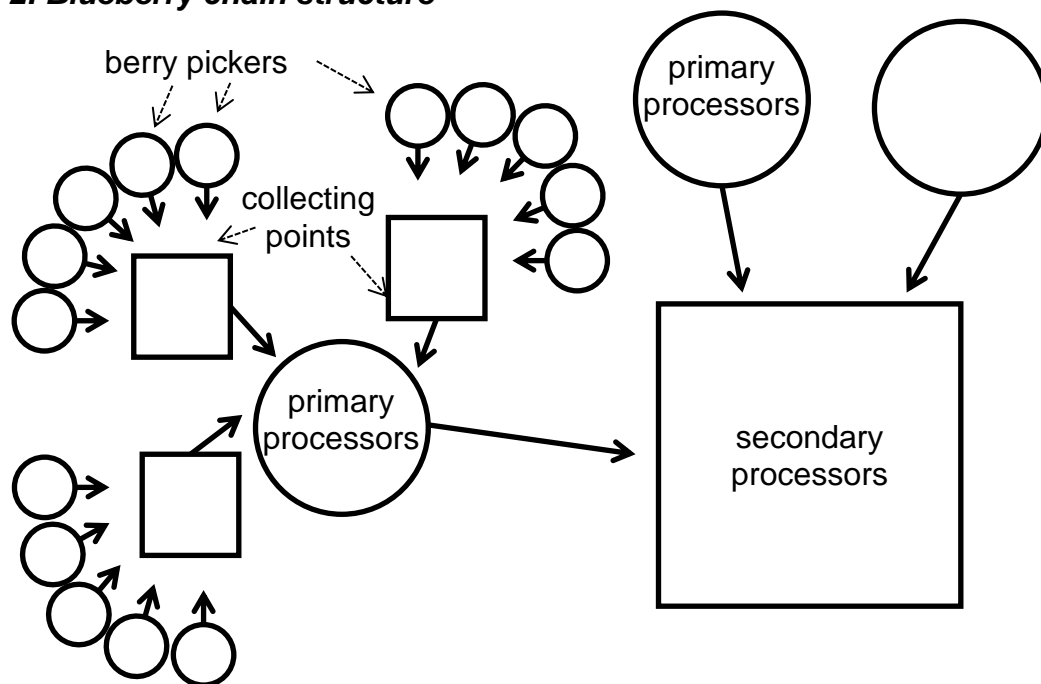
Currently blueberry market is split between historical and new food chain structures: new structures are deeply integrated within the old practices thus in some of the food chain levels it almost impossible to distinct them from each other. Meanwhile, the historical berry picking heritage is reinforced by the global food chains. Therefore the relations between the two are symbiotic.

Geographical length of the chain

Clearly it is possible to distinct the chain length development from perspective of the geographical distance: the length blueberries travel has become much longer – nowadays – blueberries are exported all across the Europe and even to some parts of China and Japan (see Table 1). Meanwhile berries are imported from all northern states (Ukraine, Belarus, Russia, Lithuania, Sweden, Estonia (see Table 2). Apart from the development of more sophisticated logistics that global chains have developed, the distance is one of the most important aspects to underline the differences between local and global. Modern global blueberry chains cross national borders while short chains remain within small geographical territories (or even never leave the household). However, distinction of local food chains is more complicated than that – to start we should indicate the flexibility of scale of local chains (flexibility of household operations): household members can pick berries in territories distant from their home; they might pick berries next to their country holiday house yet process and consume them in the city. Thus the abstract term household might enclose significant geographical movement. In this level there are people, who pick berries in their near-by forest and then use them to build jam or syrup (or consume these berries in some other ways).

Geographically this might be a very short chain; or, in fact, the picked berries could travel significant distances and finally – cross the national borders and end up in one of the neighbor states. The illustrations shows that there is a ground to suggest that term *local* describes blueberries picked, passed and processed within the territory of Latvia (yet, the reference to the state is used rather vaguely. It may be oversimplification to relate local to geography – here we should mainly indicate on the networks of interconnected people which in most cases are located in one state). Even more accurate it would be to interpret local as a signifier describing local communities that sometimes can cross greater geographical distances.

Figure 2. Blueberry chain structure



Source: Jonsson & Uddstal 2002.

In case of local (all transactions are located within (or “*more or less*” within) the territory of the state) – we mainly talk about micro transactions and there are just a few bigger enterprises that work only in the territory of Latvia. Most of the bigge actors manage to combine operating within Latvia and supplying to or obtaining from the global market as well. For these market members tapping into the global is a way how to overcome variations in yields, prices, raise income, attract new markets and reduce effects posed by seasonality.

Chain management and number of intermediaries

To fully grasp the differences (and diversity) between local and global chains we have to consider chain length from the perspective of intermediaries operating within the chain. In its shortest form pickers are the consumers, or vendors that sell their product to the consumers. The next step in chain complexity is when the picker sells his blueberries to a collecting point. Network of collecting points represents berry collecting enterprise that freezes the berries and sells them to a secondary processor. This, according to several interviewed experts should be considered a short blueberry supply chain and this structure resembles blueberry food chain structure as it is drawn by Jonsson & Uddstal (2002) (see Figure 2). Experts suggested that in the case of long food supply chains additional intermediaries emerge between these major chain actors – berries change owners several times between collecting points and primary production as well as later on – between primary processing and secondary processing. Thus for interviewed actors geographical distance blueberry chain covered was of secondary importance and while number of intermediaries emerged as more important. This interpretation highlights significant nuance of berry chains – the small amount of intermediaries are typical aspect characteristic to legal part of the industry that registers all blueberry transactions right after berries enters the food chain. From this point of view interviewed actors indirectly suggests that legal chains should be perceived as more local. In case of partly hidden chains that operate in grey part of the sector – in these chains the tendency is that the number of intermediaries grows. In these chains berries change their owners more often – lack of infrastructure forces these actors selling their product quickly. However, actors are not in a business for a long term opportunities but to benefit from short term price fluctuations and speculations. This chain then, according to interviewed experts, could be called a global chain. Overall, this argument may seem counter-intuitive because actors that operate in grey chains are mostly local, well known to local people while legal chains are more abstract and typically foreign enterprises. Furthermore, the argument offers interesting discussion if confronted with chain governance as an aspect allowing to draw the lines between local and global. Global legal chains comply with national regulations and global food system requirements – its comparatively small number of intermediaries is a result of compliance with top-down structuring. Thus, the aspect actors describe as a sign of local originates from global structures. Meanwhile global grey chains are structured and managed in compliance with local situation – these chains originate in local social networks

and are based on mutual understanding of rules which for some solutions or in some situations might be more enabling and could be a source of resilience (however, we have to keep in mind that there is a lot of possible negative side effects grey governance might have). In this sense grey global chain seems to be much more locally based.

Final destination of the product and resource use

Finally, we should notice two other types of interaction chains could have to the surrounding lieu. First, there are differences in the markets, where berries are sold. For the local chains – berries exclusively end up in local food chains. Meanwhile, pharmaceutical industry has become major consumer in global supply chains. The interest of pharmaceutical industry in wild blueberries creates tough competition for local (and global) food processors and is main aspect fueling the strengthening of global chains currently.

Second, the question should also ask what resources are used to secure functioning of the chain? Grey and purely local chains rely on resources already existing in the community – collectors use their personal houses to store berries, dealers use personal vans to collect berries, etc. Thus, the blueberry industry is a side way to efficiently use resources at hand.

This is different for global legal chains. To start with, these enterprises import some share of blueberries. However, these enterprises are also dependent on technologies provided by global actors – such as freezers, blueberry sorting machines, instruments measuring blueberry content, etc. Because of the involvement in global chains enterprises rely more on the instruments provided by global market.

2.4. Wild blueberry supply chain actors

Wild blueberry chains are formed by a number of interlinked actors. At the basis of these chains are the berry pickers. Recreational pickers are connected to social they share the berries with. Commercial pickers are connected with the collecting points that could be interpreted as a center of pickers' network. These are followed by dealers organizing networks of collecting points. Dealers are followed by primary processors, which then are followed by secondary

processors. Graphical representation of these relations is presented in Figure 1 and Figure 2. Here we will give more detailed insight into each level of the chain.

Berry pickers

Blueberry chain starts with blueberry pickers. According to the survey conducted in 2009, 35.4% of Latvia's inhabitants pick wild-blueberries (Donis & Straupe 2011). Donis & Straupe summarizes their findings by stating: *"35.2 ± 1.5% of the respondents have picked wild berries for their own-consumption, on average 8.34 ± 0.64 kg. On the whole 5.0 ± 0.9 thousand tons of wild berries were in the households. 4.1 ± 0.6% of the respondents have gathered berries for selling purposes, on average 16.33 ± 3.73kg. Relating this information to the inhabitants of Latvia - they are 69.4 ± 20.8 thousand people. On the whole, 1.1 ± 0.6 thousand tons of wild berries were in the market (sold or transferred to other households)"* (ibid). Very little information is available about the methods used for data gathering and therefore it is hard to say about the data reliability. However, the calculations based on these numbers results in overall amount of berries that is relatively close to wild blueberry export level in the same year. Yet, there are reasons to doubt these calculations and to suggest, that in reality overall amount might be even higher than given in the described research.

In the group, where berry picking mainly serves households needs picking should be mainly associated with cultural and social purposes (it is a recreational activity). Significantly smaller group is berry pickers involved in commercial picking. For this group berry picking has an important impact on household economy, employment and income. In several interviews it was reported that a diligent commercial picker would collect more than 50 euro⁵ per day which is considered a good earning in Latvia's rural territories.⁶ If there are several

⁵ Two remarks should be made here. First of all – berry season last only two months and thus can serve only as temporal income source. Yet for many involved in picking blueberries are just one of the products picked and these pickers move along the changes of flora from blueberries, to mushrooms, to cranberries, etc. Second, the average salary after taxes in Latvia in 2013 was 516 EUR (CSB 2013), thus significantly lower than the income one could make from picking blueberries.

⁶ Our personal estimations (based on our overall market estimations and data on picking prevalence by Donis & Straupe (2011)) allows us suggesting that season middle income from picking could vary somewhere between 77 EUR and 186 EUR. We suggest that the estimation of average income from berry picking should be interpreted as an indication that for most pickers the income is relatively small and there is only a small group of pickers with significant income from berry picking.

persons in family employed in this activity, it might give the household a considerable income (whatsoever, we should point out that data from Donis & Straupe allows concluding that only small group of berry pickers earns significant income from the berry picking. Meanwhile, blueberry exports have increased in recent years allowing suggesting that overall share of income generated by this market has increased as well). Furthermore, blueberries for many have become a possibility to make some side income. Interviewed experts indicate that in some groups people choose to have holidays during blueberry season in order to ensure extra income from blueberry picking and thus benefit from NTFP. Thus forest have transformed into an actor combating poverty and inequality in countryside. We can conclude that NTFP has a positive impact on countryside's less developed labour market – berry picking in summer is an important source of employment, although working conditions and social security are undermined.

In some cases pickers can become vendors. Selling the berries in local chain can secure higher profits per kg. However, in these cases income is not guaranteed and the overall amount of berries one can sell in this way is typically much lower. There are several reasons for this – first, for quality requirements differ for directly sold berries (thus either picking or cleaning might require significantly more work); second, search of the consumer might be difficult (there are some established vendors who sell blueberries as one of their product (for example in open market), yet a new vendor would have to search for a way how to access consumers (which typically concentrate far from the places where berries are picked) thus a lot of movement would be required; third, because of mentioned aspects, the final product is comparatively expensive (which is even more damaging for the product that is publicly accessible for free).

Collecting points

Interviewed experts point out running a collecting point is a job for people, which have a lot of leisure time and access to premises where berries could be stored. It is characterized as a job for rural elderly retired people, preferably with their own house in a particular region, close to a forest. However, the position holds a promise of high income thus attracting other groups as well.

Typically collecting point is initiated by dealers – before every season they are introducing small marketing campaign in order to attract new collecting points.

From the perspective of collector – it is easier to be part of dealers network because it secures that there will always be someone buying berries as well as secure information exchange. Also – dealers ensure that collecting points have their initial inventory – such as boxes, weights and cash. Despite the benefits of network there are also collecting points, which have emerged independently. Being an independent collector is a more risky enterprise, yet it may provide higher profits. It is also possible that collectors leave his initial dealer (due to whatever reason – lack of trust, search for higher profits, etc.). So there are several possibilities how relations with dealers may be shaped. During our study we have spoken with several collecting points that do not have any bounding contract to any of other actors within the supply chain. This indicates that such practice is not rare.

In order to extent NTFP gathering season these points usually work with other products as well. Still, blueberries remain the core product around which all the other activities are built.

It is difficult to estimate overall number of collecting points in Latvia, however, it could be somewhere between 500 and 800 collecting points. Their involvement in berry collecting differs and so does the collected amount of berries. Very profitable collecting point in a good season can collect up to 1000 kg berries per day. However, it is more common that the collected amount is significantly smaller (often the collected amount can be significantly smaller than 100 kg per day).

The salary of the collecting points' representatives differs as well. Most of these points receive some small fee for every bought kg. This fee differs and thus illustrates that collectors can at least partly influence the salary they receive by negotiating it with dealers⁷. On average collecting point representative receive 10 to 25 euro cents per kilo⁸. There are also cases when collectors receive their salary per worked hours. The salary calculated for hours will be smaller yet it also means closer collaboration between berry collectors and the dealer.

⁷ Some arguments that help to negotiate higher fee seems to be lack of competition, high amount of collected berries, ability to negotiate with competing berry collecting points, etc.

⁸ Our raw estimations suggest middle income of collecting points could vary between 417 EUR and 542 EUR per season. This is more than an average picker receives. However, the overall salary of collecting point could be lower than the salary of diligent picker.

Picture 2. Berry collecting point



Berries are delivered to collecting point. This amount was brought in by two pickers who during the blueberry season squat in near-by house. Typically they can get this amount of berries if they work for four hours. They prefer to work in picking shifts – one early in the morning and other in the evening. Each of them will receive for their mornings work a little bit more than 25 EUR.

Finally we have to mention that it is difficult to predict the actions of collectors – they switch dealers, collaborate to each other, collaborate with several dealers simultaneously or choose other strategies to improve their income. Thus, in many cases they feel like entrepreneurs who are in a constant search for highest profits.

Dealers

The commercial berry industry is built around dealers – enterprises that centralize berries to sell them either to primary or to secondary processors. Many

of the dealers have installed freezers and some – even more sophisticated technologies. Experts in interviews report that those dealers, who still lack infrastructure often rent it. There are around five major blueberry dealers and ten smaller ones in Latvia. The difference between a major and a smaller dealer is in the number of collection points and infrastructure accessible to a dealer. A typical big dealer might have up to 100 collection points spread over vast geographic areas with collection point located in villages, small towns and at country side homes.

Table 1. Amount of exported berries (t) and main export markets.

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Overall	271.8	155.9	266.8	543.1	1054.0	1384.4	1393.1	2091.0	3034.3
CN – China	50.0	0.0	175.0	150.0	173.0	966.3	649.4	900.3	2463.3
JP – Japan	75.0	125.0	0.0	0.0	300.0	100.0	100.0	350.0	250.0
PL – Poland	0.0	0.0	0.0	22.0	11.0	138.6	487.9	186.3	21.0
LT – Lithuania	27.9	1.0	0.3	43.3	0.8	0.8	81.3	265.0	129.7
EE – Estonia	13.4	9.9	0.1	23.2	38.8	100.1	0.1	346.6	0.1
IT – Italy	22.1	0.0	42.0	63.0	100.0	78.5	74.5	42.0	54.0

Source: EUROSTAT

Small share of dealers operates only in Latvia. These enterprises supply blueberries to just a few local processing enterprises. Other dealers resell the products to intermediary companies (for example to Polarica (<http://www.polarica.com>) or berry processing enterprises from neighbour countries). Finally, few enterprises have established direct contact to the final food processing enterprises (mainly located in Europe) or enterprises in China or Japan (pharmaceutical companies). Some of these bigger dealers are blueberry importers as well – thus they have found a way to overcome bad blueberry yields and to raise the amount of produce they are working with.

The smaller dealers typically would have a much smaller collection area, produce volume and supply network (approximately 25 to 30 buying points). Their sales outlets are similar to those of bigger dealers yet they almost always lack supporting facilities that would allow them to be more efficient in the market. Recently there has been a case when several small dealers have merged their collecting networks and with that raised their competitiveness. This has allowed the small enterprises to gain additional competitive edge and gain extra power in ever more globalized market.

Table 2. Amount of imported berries (t) and main export markets.

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Overall	24.6	217.6	107.7	586.1	557.7	550.9	623.1	600.6	857.3
BY – Belorussia	0	0	19.5	286.8	175.9	247.5	243.0	226.3	515.2
LT – Lithuania	8.7	3.5	29.8	137.6	123.0	14.5	112.2	242.7	181.2
UA – Ukraine	0	110.9	5.3	119	109.1	100	20	20	0
RU – Russia	0	96.6	40.3	0	0	0	192.5	55.8	38
EE – Estonia	15	1	0	40.4	143.4	0.1	0.1	0.1	0.0
NL – Netherlands	0	0	0	0	0	184.4	13.7	0.1	1.2
CL – Chile	0	0	0	0	5.0	0	0	24.0	48.0
PL – Poland	0.9	3.2	1.8	0.6	0.1	3.9	25.8	28.9	2.5
SE – Sweden	0	0	11	0	0	0	0	0	38.5
IT – Italy	0	0	0	0	0	0	0	0	21.3
DE - Germany	0	2.5	0.0	1.6	0.3	0	0.8	0.0	10.1

Source: EUROSTAT

Secondary processors

There are just some secondary processors of wild blueberries in Latvia (for example food companies Puratos or Spilva which produce jams and juices mostly for industrial customers and a part of production also for end consumers. Majority of the food processors which buy frozen blueberries from dealers are located abroad.

3. Research design

Wild, NTFP products (including wild blueberries), unlike cultivated fruits, do not have institutionalized food chain actor responsible for products growth. Wild blueberries grow in the forests and according to law is a public property in Latvia (with some exceptions, this is the case even in private forests). Thus, before the berries have been picked they belong to everybody. This aspect of the product imposes specific food chain structure and therefore – specific chain problems as well (for example - how to organize labour when one actually cannot control where and when someone is working; how to monitor where product originates or how it has grown; etc.). There will be somewhat similar problems in conventional food chains as well. However, the fact that enterprises operating in NTFP chains in Latvia are able (have found the ways) to document the transactions occurring within the chains only long after the product has entered the chain deepens these issues.

In this chapter we name the main research questions underlying the study. We will continue by describing the attributes from the list of GLAMUR attributes used for this study. We will conclude this chapter with the description of indicators used for the study.

3.1. Research questions

GLAMUR project have three overall research questions (RQ) that are addressed in this case study:

1. What are the key food chain performance issues with regards to a global-local comparison?
2. What is the methodological strength and weakness of overall applied pairwise comparative analysis?
3. What are the specific interactions of the food chains under study and the policy settings?

For the purpose of this case study collaboratively with other teams analyzing fruit sector we have nominated several other RQ as well. The additional questions are:

- What are the main differences in organization between the local and global chains?
- How are governance and control enforced in the local and global fruit supply chains?
- How do the analysed LFSC and GFSC influence national and regional economies?
- Are costs and benefits distributed in a fair way among actors in the chain? How does this differ for the local and global chain?
- What aspects describe labour market and common employment practices within sector?

3.2. Attribute selection process

Significant part of the GLAMUR project relies on measuring the performance attributes. In GLAMUR project attributes are “*defined as “a quality or feature regarded as a characteristic or inherent part of something”, they are specifically NOT indicators.*” (Kirwan et al. 2014, 2). The common list of attributes has been defined in GLAMUR project Work Package 2. During the comparative study attributes have been defined and normalized basing on evidence from national contexts. Thus currently attributes are fine-tuned methodological instrument that serve as an optional tool for food chain performance assessment and comparison.

The common list of attributes has been shortened for the purposes of this study. List of attributes used in the study have been developed in several steps. First step was based on quick scan report – interviews with chain actors and analysis of secondary data were used to identify initial list of attributes. This list was then discussed with project partners studying Raspberries in Serbia and Apples in Belgium. During the discussion the list of common attributes were defined. Afterwards second circle of interviews were conducted during which attributes were continuously tuned. Finally, we once more discussed the attributes with our partners from Serbia studying Raspberries. Final list of attributes are illustrated in Table 3.

Table 3. List of attributes and attributes selected for the case.

Attributes (the list from WP2 Synthesis Report)	Latvia Blueberry case
1. Affordability.	
2. Creation and distribution of added value.	X
3. Contribution to economic development.	X
4. Technological innovation.	
5. Governance.	X
6. Efficiency.	
7. Profitability/competitiveness.	
8. Connection.	
9. Resilience.	
10. Food waste.	
11. Information and communication	
12. Food security.	
13. Consumer behaviour.	
14. Territoriality.	
15. Labour relations.	X
16. Resource use	
17. Pollution.	
18. Biodiversity.	
19. Nutrition.	
20. Food safety.	
21. Traceability.	
22. Animal welfare.	
23. Responsibility.	
24. Fair trade.	

The attributes selected catch the main problems identified in blueberry food chains. First, selected attributes allows responding research questions posed for this study. Second, the selected attributes corresponds the issues defined in description of the context. And finally, selected attributes allows illustrating the possibilities and difficulties NTFP can face in relations to local economy.

Attribute “Creation and distribution of added value” illustrates the equity income distribution in the supply chains and its effect on various participants of NTFP chains. The attribute corresponds following RQ “*Are costs and benefits distributed in a fair way among actors in the chain? How does this differ for the local and global chain?*” and allows grasping more elaborated interpretation how local (or culturally bounded chains) differ from global food supply chains.

Attribute “Contribution to economic development” underlines the NTFP chain influence on local economies. The attribute allows responding following RQ: *“How do the analysed LFSC and GFSC influence national and regional economies?”* Finally, it allows stressing the links between NTFP regulation and chains’ significance in local economies.

Attribute “Governance” allows illustrating (and separate) chains operating in grey sector and those operating legally. The attribute illustrates specific business practices that allow to avoid regulations set by government and to introduce specific business models. Here it is important to stress, that we do not consider legal or grey chains as better per se – our target here is to illustrate the gains and losses caused by both ways how chain can be organized (taking into account the interests of both - local community and main actors of global markets). The attribute corresponds following RQ: *“How are governance and control enforced in the local and global fruit supply chains?”*

Additionally, governance (interpreted as a control over a chain) is a way how we tackle the traceability issues in this study. We have not chosen attribute “Traceability” (attribute from common list of attributes) because in this case traceability represents conflict between top-down legal (control of government) and bottom-up grey (self-emerging) food chains. Thus the analysis of conflict between two approaches (legal and grey) allows developing more elaborated interpretation of real causes reducing traceability.

Attribute “Labour relations” shows the involvement, quality, flexibility and remuneration of involved labour. The attribute is crucial to illustrate the emergence of grey chains and enterprise’s need to comply with the regulations. Yet it is also important to grasp the specific characteristics that are associated with NTFP chains. The attribute corresponds following RQ: *“What aspects describe labour market and common employment practices within sector?”*

3.2. Selected indicators

We use indicators to measure the performance of the attributes. For each attribute we have defined a list of indicators. The selected list of indicators is illustrated in Table 4. A more elaborated description of indicators used is attached in Appendix 1.

Table 4. Table of indicators

Dimension	Attribute	Brief attribute description (cf. Comparative Report)	Used indicators	Research questions	Data collection methods
Economic/ Social	Creation and distribution of added value*	<i>The attribute represents both – how added value is created and how it is distributed in FC.</i>	Value added calculation	Are costs and benefits distributed in a fair way among actors in the chain? How does this differ for the local and global chain? (BRA)	<ul style="list-style-type: none"> Interviews with representatives of the enterprises Statistical data Enterprise tax and development reports
			Price for the picker / final price of the product		
Economic/ Social	Contribution to economic development	<i>Attribute that signifies the contribution that FSC can bring to national, regional and local economies.</i>	Net Income	What are the main differences in organization between the local and global chains?	<ul style="list-style-type: none"> analysis of policy documents interviews enterprise tax and development reports
			Regional workforce		
Ethical/ Economic	Governance	<i>Attribute covers regulation and governance structure as well as power and presence of democracy in food chains.</i>	Grievance procedures	What are the main differences in organization between the local and global chains? How are governance and control enforced in the local and global fruit supply chains? What aspects describe labour market and common employment practices within sector?	<ul style="list-style-type: none"> analysis of policy documents secondary data analysis interviews with actors representing food chains interviews with actors representing governance
			Conflict resolution		
			Legitimacy		
			Civic Responsibility		
			Free, Prior and Informed Consent		
			Sustainability Management Plan		
			Full-Cost Accounting		
			Platform for decision making		
Social/ Ethical	Labour relations	<i>Attribute identifies socio-economic welfare and recognition of workers as well as considers risks these workers are exposed to and analyses availability of qualified labour.</i>	Right to Quality of Life	What aspects describe labour market and common employment practices within sector?	<ul style="list-style-type: none"> policy document analysis secondary data analysis interviews with representatives of food chains observations in enterprises and collecting points observation of documentation of relations
			Wage Level		
			Employment Relations		
			Freedom of Association and Right to Bargaining		
			Health Coverage and Access to Medical care		
			Capacity Development		

4. Methods

The study “Global and Local Wild Blueberry Supply Chains in Latvia” assesses the efficiency of local and global wild blueberry chains. This chapter illustrates the methods used and the data gathered for comparison as well as describes in detail data used to measure indicators selected.

4.1. Data sources

For this case study we have used broad range of data gathering methods. The variety of data gave us an opportunity to approach studied issues from several perspectives thus giving us an opportunity to elaborate even deeper interpretation of the studied issues. Apart from the possibility to illustrate diversity of view-points present to interpret the studied questions, multiple data sources also were a practical necessity to improve trustworthiness of conclusions and to overcome un-systematical character of the accessible data (lack of research and systematic studies). Furthermore, in order to compare the food chains we had to address wide variety of food chain aspects. Thus using only one source of data would have been insufficient to gather data corresponding all analytical needs.

We will now list the methods used in the study:

- Literature analysis

Significant amount of secondary literature has been analysed. The major problem that we can associate with this method is difficulties to access materials (many of the studies have been either marginal or the rights of research material ownership has not been well defined). Also, one of the problems we have faced regularly is a dilemma, which of the results from other studies can be attributed to the wild blueberry sector (and which conclusions from foreign studies can be attributed to Latvia’s context).

However, in overall, our analysis gave us a clear evidence of main perspectives used to interpret wild blueberries and gave us a pool of sources that we could verify our conclusions with.

- In-depth interviews

In-depth interviews constitute a significant share of data used for this study. All interviews were conducted in 2014. Most of interviews conducted within this

study were around 1 hour long. In overall we conducted (1) 4 interviews with major dealer company representatives and one follow-up interview with major blueberry dealer; (2) 4 interviews with collecting points of different size and experience and one additional follow-up interview with a collecting point; (3) 2 people selling berries in the short food supply chains (market); (4) 1 major secondary processor; (5) 1 interview with blueberry picker; (6) 3 interviews with representatives of various governing institutions. (7) Additionally several shorter interviews with blueberry pickers, municipality representatives, representatives of NGOs were conducted.

However, we have faced several limitations that do not reduce trustworthiness of the data, yet which help to understand difficulties emerging when (1) researching a matter that holds significant share of grey activities and when (2) whole food chain is studied simultaneously. For example, some of the biggest actors were not willing to participate in the study – we believe that in some cases enterprises just did not see the value in participation, in some other cases actors did not want to share the sensitive data about their activities while in some other cases potential participants were scared of potential legal consequences. Unwillingness to participate was mainly pronounced among the biggest actors located higher in food chains (mainly dealers) while lower level actors were open to share their experience (and sometimes even book keeping). The interviewees that did participate were mainly convinced of researchers' good intentions through recommendations of other actors.

Additional problem with the method was unwillingness of some stakeholders surrounding the food chains to participate (for example some forest owners, ecology experts, government representatives refused to participate). The rejection reasons differed – some perceived participation as somewhat threatening to their expertise (as one expert put it – the object studied is too controversial to talk about it). In some other cases actors invited to participate perceived themselves as unrelated to the studied issue (as for example local forestry authority, who claimed that forest berries are public property and state is concerned only with timber products. Thus they do not have anything to tell about the issue). Rejections clearly illustrated narrow interpretation forest and low interest in NTFP. In these cases we relayed extensively on secondary data.

- Observations

Three observations in berry collecting points have been conducted. During these observations we received important information about the bookkeeping practices

(which documenting practices are used), about the relations between pickers and persons operating in collecting points, about relations between collecting points and dealers, about practical issues related to berry logistics. In these cases recommendations from other dealers played an important role and collectors were open to fully illustrate their practices (and in some cases even share their accounting notes from previous years). The observations were also a great opportunity to meet berry pickers and to conduct short interviews with them to discuss their problems, motivations, experiences, etc. Countless mini interviews have been conducted during these observations.

- First discussion of the results

The first results, in order to facilitate discussion, have been presented to governing actors. The results were presented in official meeting of municipal leaders organized by Latvian Association of Local and Regional Governments. Unfortunately the discussion after the presentation was poor.

- Analysis of secondary data

For the purpose of our study we have used statistical data. However, we have also relied on quantitative data gathered for studies estimating the total amount of forest flora and fauna as well as consumption of these resources.

- Newspaper article analysis

Newspaper article analysis has been used in several stages of the study – to identify relevant issues related to the field of study; to document major discussions; to identify major interpretations dominating the field. The method also has been used to identify historical trends related to wild blueberries.

- Analysis of economic reports

For this report we have also used tax reports of major berry dealing enterprises. During the study we have also communicated with States Revenue Service and other institutions in order to require secondary data about collected taxes, sold blueberry picking patents, etc.

- Policy document analysis

Analysis of changes in regulations allowed us to understand the development trends of local and global blueberry supply chains.

4.2. Selected indicators

As indicated beforehand, we have selected four main attributes and a list of indicators allowing measuring defined attributes for this study (See Table 4 and Table 5).

Table 5. Description of indicators

Name of the indicator	Definition*	Scale*	Bench-mark*	Quality score*		
				Chain A	Chain B	Chain C
Grievance procedures	Stakeholder access to fair grievance procedures.	Scale 1 to 4	3	0.2	0.2	1
Conflict Resolution	Resolved conflicts of interests between stakeholders	%	80	0.6	0.6	1
Legitimacy	Enterprise's compliance to the law	Scale 1 to 4	4	0.2	0.2	1
Civic Responsibility	This indicator illustrates the relations of most powerful actors of food chains with laws and civic schemes protecting rights of the weakest food chain actors.	Scale 1 to 3	2	1	1	1
Free, Prior and Informed Consent	Indicator addresses consent achieved between the big enterprises and the community.	Scale 1/2	2	0.2	0.2	1
Sustainability Management Plan	Measures does enterprise has a sustainability plan.	Scale 1 to 3	2	0.2	0.2	1
Platform for decision making	There is an interprofessional association or a platform for all actors of the chain to meet and to negotiate.	Scale 1 to 3	2	0.4	0.4	1.2
Right to Quality of Life	Primary producers, small-scale producers and employees in enterprises of all scales have the right to a quality of life that affords time to spend with family and for recreation, adequate rest from work, overtime that is voluntary, and educational opportunity for themselves and their immediate families.	Scale 1 to 3	3	0.4	0.4	0.4
Wage Level	Percentage of wage above minimum wage level	%	-	0.6	0.8	0.8
Employment Relations	Percentage of employees that have legally-binding transparent contracts with their employers.	%	100	0.4	0.6	0.6
Freedom of Association and Right to Bargaining	Evaluation of employees' possibilities to associate and bargain.		3	0.4	0.6	0.2
Health Coverage and Access to Medical care	Do employees have health coverage and access to medical care	Yes/No	-	0.4	0.6	0
Capacity Development	Do employees have access to capacity development	Yes/No	-	0	0.2	0
Value added	Added value created by the studied	%	-	0	0	0.6

calculation	enterprise.					
Price for the farmer / final price of the product	Share of price received by picker	%	-	0.4	0.4	0.6
Net Income	Net income for the considered enterprise as %	%	-	0.2	0.2	0
Regional workforce	Regional Workforce refers to the employees hired by the enterprise that come from the region where the enterprise operations are based. Shown as % of local employees.	%	-	0.6	0.6	0.6
Price for consumers	Price paid by the final consumer expressed in eur/kg of fresh or frozen berries per average salary in eur	Eur/kg/average salary	-	0	0	1

***Definition** – cell definition refers to explanation of our indicator interpretation.

Scale – measurement instrument used

Benchmark – “values or qualitative descriptions of activities, used as the basis by which the performance of an enterprise is evaluated within an indicator domain to facilitate a rating of sustainability performance.” (FAO 2013, 216). Sign “-“ identifies that we have not chosen to use benchmark for the specific indicator.

Quality score – data quality score calculated basing of pedigree matrix approach. Detailed data quality calculations available in Appendix 1.

Chain A, B, C – enterprise under study. More detailed explanation in chapter “Results”

The analysis is built as a comparison between local, global legal and global grey food chains. Both researched topic and the way how it is studied are innovative for Latvia’s academic field. Thus, there are few sources that could be used for constructing a comparison between food supply chain types. Therefore, the main body of benchmarks used in comparison originates from the expert interviews.

4.3. Participatory methods

Through the study we have repeatedly consulted with representatives involved in the wild blueberry industry. Firstly, we addressed informants involved in the wild blueberry industry when the main issues of the researched field were defined and the research questions were discussed. During the further study we have returned to the representatives of wild blueberry chains for three times. Each time we were collecting additional data and verifying the conclusions we have made before.

Cyclical recurrence to respondents has improved our relations with them allowing us to gather more sensitive information (which is important in order to obtain a broader view on the industry with a considerable amount of grey activities).

Furthermore, it has allowed us to fine-tune the major aspects of the studied food chains.

Additionally, we have presented the results of our study in global food exhibition thus promoting a discussion about the study (Riga Food 2014, occurring in Riga, Kipsala exhibition hall).

5. Results

5.1. Description of chains

For the comparative analysis of wild blueberry chains we have chosen three examples – global legal chain (illustrated with Pharmeko Lettland); intermediary case combining characteristics of global and local - grey chain (illustrated with enterprise B) and local chain (case C). Here we will describe in detail all selected cases.

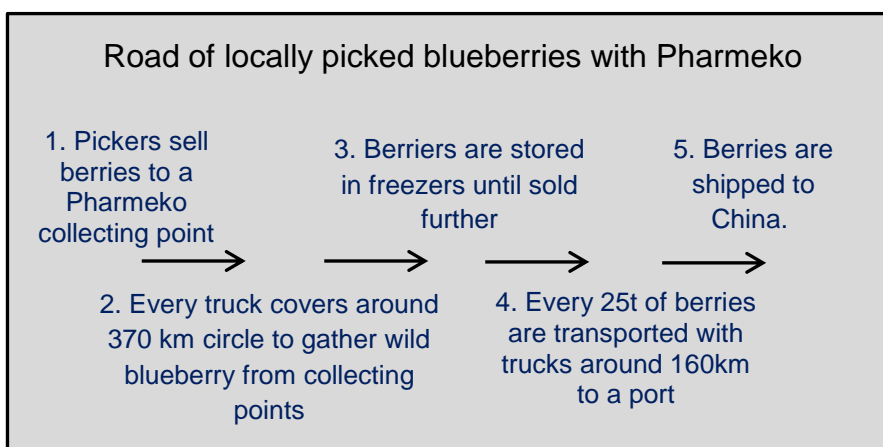
Information given by respondents in many cases might be considered sensitive and thus we keep the anonymity of the interviewed actors. This is particularly important when grey chain and grey activities are presented and explained.

We start this chapter by closer illustration of the analysed cases.

Global legal chain – Pharmeko

Pharmeko Lettland is one of the biggest wild blueberry processing enterprises in Latvia. The enterprise’s turnover has been almost 3 000 000 EUR in 2013 and it has sold around 600 t of berries in the same year. Enterprise’s estimates suggest that it holds around 15-20% of total wild blueberry market.

The enterprise is specialised in wild blueberry market – thus almost all of its’ turnover comes from deals with wild blueberries. Pharmeko Lettland holds its own



blueberry collecting network consisting of up to 100 points (amount of collecting points might change depending of blueberry harvests every year) through half of Latvia. Enterprise officially employs its collecting personnel - thus showing its

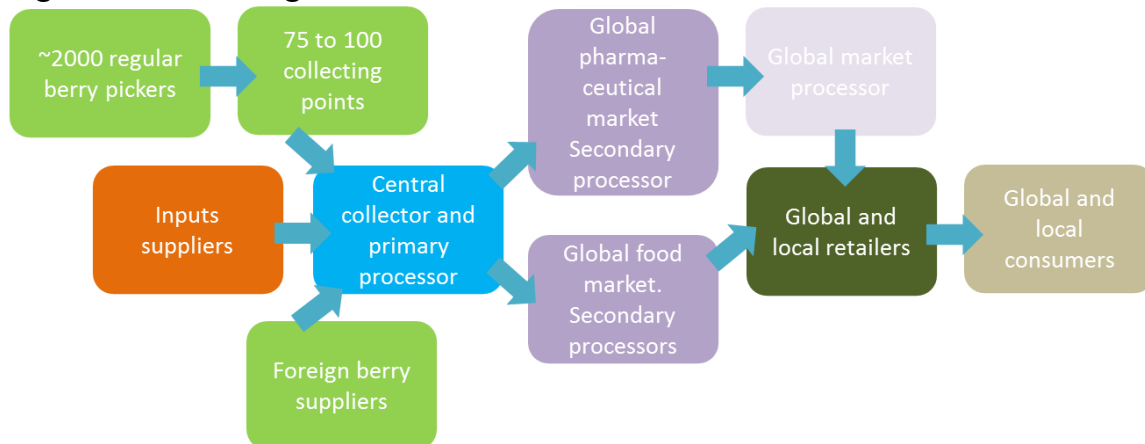


links and structure⁹ and with that giving local tax authority a greater possibilities for control and regulation (and informants suggest that because of their openness these enterprises are observed much more closely). Due to a transparent structure and documentation, all of the berries bought from pickers must be documented. Official regulated relations between supply chain levels have also contributed to development of more pronounced centrality of the enterprise (this can easily observed if we compare these with grey chains).

The enterprise has strong international ties and is both: exporting and importing blueberries. The main export market is China. Yet its produce is send to several European countries as well. And finally, unlike other (mostly grey companies), enterprise has established relations with final processors – in this case the pharmaceutical companies.

Pharmeko Lettland also holds its own freezing and blueberry sorting facilities and has invested massively in order to expand its activities (both in size as well as in implied technological solutions). Furthermore, it has invested in facilities allowing testing the quality of the products (testing the content structure of the product). Thus, it has significantly technologized its trade and by doing so managed to overcome the seasonality and other risks, which are common in the industry. Figure 3 presents the chain enterprise is involved in.

Figure 3. Global legal chain



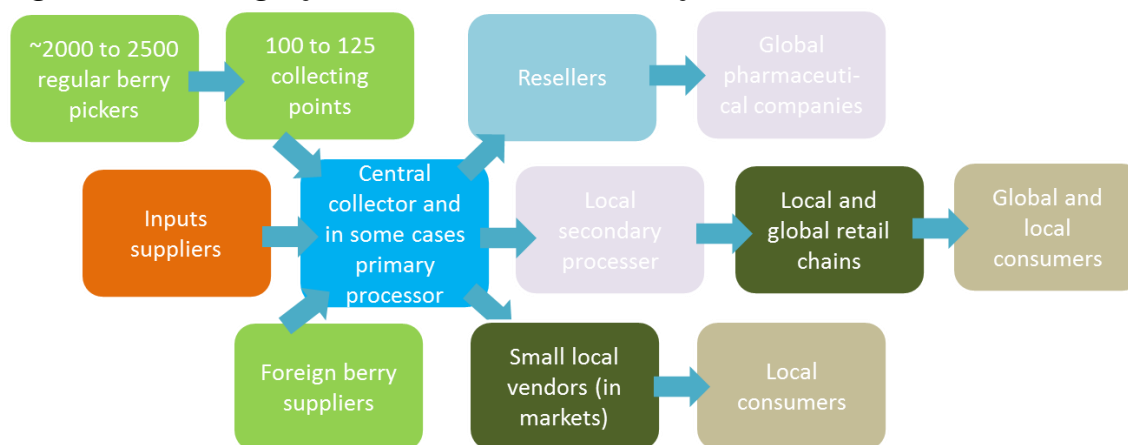
⁹ Most of other collecting points never register officially their activities. Thus, the collecting point may be actively buying berries, yet it may remain hidden from the control institutions.

Global grey chain – “Enterprise B”

“Enterprise B” is a significant enterprise operating in the wild blueberry market and it represents intermediary case between purely local and purely global food chains (it holds characteristics of both – global and local chains). The enterprise’s declared turnover in 2013 has been ~1 000 000 EUR and representatives estimates its share in Latvia’s blueberry market around 10 – 15%. Nevertheless part of the enterprises activities are not accounted for. The structure the enterprise B presents through this survey is illustrated in Figure 4.

The main field of interest for enterprise B is wild blueberry sector. However, it is involved in transactions with other NTFP as well (it operates with several other berry breeds and mushrooms). As in case of many other enterprises operating with NTFP in Latvia, this has been done in order to prolong the short wild blueberry season. For example, recently it has tried to work with snails as well. Because of the produce-broadening initiatives the enterprise has managed to prolong the season significantly, however, it still has to go out of business for the winter and spring months¹⁰. Furthermore, blueberries remain the most profitable product of the product stock (it is clear that the supply chains of all the other NTFPs are built around this product).

Figure 4. Global grey chain – the intermediary case



The enterprise B has more than 100 collecting points located through half of Latvia’s territory. However, these points are not officially employed (often

¹⁰ Because of this many of the enterprises (or actors behind the enterprises) combine their involvement in blueberry sector with other business interests.



collectors consider that this is their advantage (mainly due to the fear from the state and fear that pickers will not sell their berries to legal collecting points), yet, in other cases collectors does not even know that there could be other ways, how to structure relations with a dealer) – they might have an agreement that collecting point will sell berries to the enterprise B, however the collectors are not employees. The collectors are paid for each kg of berries they supply to the enterprise, in such a manner they make their profit from the margin and therefore –berry prices can differ between collecting points. Meanwhile each collecting point becomes entrepreneur on its own and is frequently selling some amount of berries to the side as well.

In most cases collectors buy berries from the pickers without ensuring proper documentation (and since they are not employed as collectors this might remain invisible to controlling institutions). These berries are legalized only later in the chain¹¹ yet meanwhile they can be either resold in Latvia or transported and sold in neighbor states.

The enterprise B does not have permanent infrastructure or long-term collaboration partners. Furthermore, the enterprise does not invest in its infrastructure. It is mainly oriented towards quick profits without a detailed future plan. However, in a lower level of the food chains we can observe examples of long term relations. Therefore it seems that characteristics of these chains are highly dependent on the values of actors involved in them.

Local chain – “Case C”

Case C is generalizations of actors involved in short food chains. Actors in these chains receive only minimal income and their actions are mainly culturally driven. Chains are uninstitutionalized. Furthermore, apart from some municipal regulations organizing local markets and street vendors, there are no laws that would regulate actions in these chains.

In these chains relations between actors are mainly personal. However, the forms of relations can differ – in some cases pickers are consumers or they can

¹¹ There are several ways how this can be done: the hardest way is to falsify the documentation when and where the berries have been bought. The easiest way is to sell these berries across the border and exploit the legislative differences between national markets.

pass the harvest within extended families. While in other cases pickers are vendors (or whole families can sell their produce either in markets or from on the roadside from their cars, etc.). Actors tend occupy several positions in local food supply chains. Figure 5 presents the structure of local chain.

Finally, local chains are strongly related to global chains. This is mainly due to the fact that local chains have only limited capacity to utilize the harvests. Selling in local chains may guarantee higher income per kg. However, if one has picked more blueberries, local chain's ability to consume the harvest will quickly run low. Therefore, global chains serve as an option to consume the surpluses of the local chains (this means pickers often are simultaneously operating both in local and global chains).

Figure 5. Local chain.



5.2. Description of chains

In the following pages of this case study we will assess the efficiency of the analysed chains. In further text we will use following designations: we will use 'chain A' to refer to the global legal chain, 'chain B' to refer to the intermediary case of global grey chain, and 'chain C' to signify the local chain.

Creation and distribution of added value

Wild blueberry sector holds a promise of high profit margins. This attracts many actors who are searching for a fast way to make profits. This is even more so

because participation in the blueberry chains does not require significant investments (as an interviewee suggested – to become an entrepreneur collecting berries you need a car, boxes and access to forest). Finally, the legal regulation of the sector is still weak (as most of the regulations related to NTFP) leaving chain with several unregulated or uncontrolled elements that can be used to make profits without declaring the production legally. These characteristics of the WBSC explain the huge share of the activities remaining in a grey part of the sector.

Meanwhile, there are blueberry dealers, who are trying to operate legally. Their efforts reduce their competitiveness and they might have a hard time to outcompete their grey competitors. This forces legal enterprise to invest in technological development and to offer more sophisticated products. Thus legal enterprises are modernizing while the grey enterprises' remains based in exploitation (and sometimes creation) of social networks. First chain brings in new technologies yet has pronounced vertical structure. Second chain strengthens social ties and has much more pronounced vertical integration.

Main aspect influencing the situation in the blueberry market is size of each annual yield. All recent years have been with poor harvests. This has imposed some changes to global food chains and forced local entrepreneurs to search for foreign blueberry suppliers and strengthening blueberry import. Yet import as an option can be used only by technologically advanced enterprises (legal enterprises are better prepared for such difficulties that may be related to import). Meanwhile, grey enterprises like Chain B have been forced to think about possible diversification of their actions (in interviews, informants representing grey or less evolved legal enterprises commonly suggest that introduction of infrastructure, possible secondary processing, and work with even other NTFP could be a way to improve their resilience to variations of harvests).

Small harvests have encouraged competition and forced actors involved in longer supply chains to ask questions about the sector's future. However, low harvests has not posed any difficulties for local chains – partly, because local chains require smaller amounts, yet partly, because people pick berries mainly for private use and only afterwards for supplying global food chains (furthermore, for small amounts of berries direct search of consumers might be more advantageous).

All three analysed chains function differently and are adapted for different business models. Chain A is oriented towards long-term possibilities of wild blueberry market - it benefits from global markets and ability to modernize its practices and by doing so the chain overcomes seasonality and raises the value of product. Transparency of the sector would increase chains competitiveness. For the Chain B unregulated or weakly regulated chain is beneficial. The organization of Chain B is oriented towards quick benefits without a long-term involvement plan. The chain benefits from networking and quick reaction to news (rumors). Along with legal transactions a lot of unregistered actions occur in these chains. Thus profits for chain organizers in this case might be much higher than for legal chain. Finally, for Chain C low scale operations are characteristic. All the profits from the chain go directly to pickers yet the price of sold berry kg can be up to 10 times higher than in case of berries sold to collector. However, because of Chain C low profile operations, at the end of the day in case of good yields Chain A and Chain B are more beneficial to picker. Furthermore, in case of Chain C picker is deeply involved in searching of final customer of the berries that in many cases might be complicated (internet as well as alternative food chains has been discovered as a channel for direct berry selling during the last years). In Chain C significant profits can be made only by those actors, who are strategically planning their activities.

Table 6. Indicators for attribute “Creation and distribution of added value”

Indicator	Chain			Bench- mark	Comments
	A	B	C		
Value added calculation	12	10	100	-	Indicator illustrates the share of final price that remains with the enterprise. Thus it is calculated as share of income the enterprise secures after selling the product. Calculations for enterprise A are based on tax reports. Estimations from enterprise B are based on data provided by enterprise. It is highly possible, that real income for the enterprise is much higher. It should also be considered, that chain A is investing and holds significant amount of payments to maintain infrastructure. Chain B does not have these restrictions.
Price for the picker / final price of the product	85	59	100	-	Indicator illustrates the share (%) of final product received by the picker. The indicator is calculated by dividing price received by picker with overall price of product leaving the enterprise.

Chains A and B can support higher profits for pickers – especially so in case of Chain A (mainly due to the higher final prices and smaller number of actors

involved in the chain). Meanwhile, the Chain B promises higher profits for collectors. Unfortunately, this goes hand in hand with less stability and no warranties.

For chain A it is hard to remain competitive and profitable. This can be illustrated by enterprises relatively low margin of profits (see table 7). Meanwhile the enterprise has one of the highest turnovers in the industry.

In national scale the weakness of the chain A, when it is faced by the enterprises operating in grey sector, is obvious: it is difficult to ensure that the berries are sold to Chains' A collectors. Pickers are afraid of all the legal procedures in general. Furthermore grey enterprises are more flexible with their resources and can allocate them much faster. Therefore, the main aim of legalization (to identify the berries, to improve traceability) becomes simultaneously its main barrier. However, for Chain A berry import is a solution – enterprise import the amount of berries it does not manage to collect locally. Yet this puts a pressure of global markets on the enterprise – the profits are often dependent on the moment, when berries are sold. Thus global price fluctuations have become an aspect that limits enterprises possibilities.

Contribution to economic development

Wild blueberry industry is strongly rooted in a local milieu – it cannot move away from the place where blueberries grow (characteristic to all NTFP). Therefore, actors buying forest products (no matter from global or local food chains) are forced to hold strong connections to local. For local inhabitants berry picking and selling is an option that secures additional income (and cultural recreational activity). In case of global food chains, enterprises conducting primary processing of the berries are usually located in the countryside (where local workforce is employed). However, the berry sector is seasonal and this aspect reduces significance and influence of the sector. Meanwhile, while sector is skimming significant share of labour, it is indirectly eroding the possibilities for other sectors to grow (for example – cultivated berries and other industries accuse blueberry chains for skewing the regional salaries and labour accessibility). Thus, the relations between the sector as an employer and local development are multi-facetted (while recognizing the challenges sector poses, we should not also forget the benefits sector offers).

Short NTFP chains bring little direct benefits to budgets of local governing bodies. The situation is different for global blueberry chains. Global NTFP has been in a circle of interest of tax regulating bodies for some years now. Most notably – state has searched for a way, how to tax personal income made from NTFP. Personal income tax is one of the few taxes that are directed to budget of municipalities (80% of the tax on personal income is directed to municipalities). The search for a tax income collection has become a source of tensions and an advantage for the grey berry chains. Namely, for the poorer municipalities where there are less employment options, berry picking will be more pronounced and municipality will try to collect taxes on berries in a more dedicated manner (most likely unsuccessfully). Meanwhile, even if municipality is not receiving taxes directly from the pickers (as due to the properties of current NTFP taxing policy it may be), just a proof of the additional income for poorer societal groups can serve as a reason to reduce municipality's social support to these groups. For that reason even in cases when municipality is not directly benefiting from the taxes, it may benefit from reduction of social services. This idea is well known and feared (no matter how often actually practiced) by berry pickers. Many of them fear that they will lose social support¹² and are interested to hide their income and sell berries without registering the transaction.

Meanwhile, legal enterprises (as one presented by the Chain A) are more exposed to legal bodies. Therefore, this part of the market is a subject to frequent inspections and has been forced to adapt all the best practices. If we interpret the sector from the perspective of state than the legal way of doing business is more sustainable than the one dominating in grey or partly grey part of the market (for grey chains official contracts and berry registration are optional or non-existent). However the main strength of greyness is its strong ties to local networks and its ability to bend the rules – these characteristics allows grey enterprises to gain extra flexibility (an advantage to add to their competitiveness) and attract pickers.

Finally, even the market, which is well controlled, may have some problems with tax documentation. In a wild berry case it has become an industry practice to turn

¹² Social support systems are ran by local municipalities in Latvia and mainly granted basing on household income level. Thus changes in household income may cause exclusion from welfare programmes. Official berry picking allows municipalities to monitor additional household income sources. Because of this involvement in berry picking (as well as documentation of income) may cause loss welfare support.

a blind eye to the question - who is the person claimed to be collecting income (who is the picker) from berry transactions. For example, in order to hide the real income huge amounts of berries can be officially presented as picked by just one person.

Still, despite the many accusations that can be made to regulatory side of the industry and to chains non-existent direct influence to local territories, we should also mention the indirect influence of the sector on the local situation. In many cases the money brought in by the global NTFP is the only source of real income (cash) that then can be used to acquire goods for everyday life. As a rural shop owner explains in the interview – you can always feel that the blueberry season has started from the rate of products people are buying.

Table 7. Indicators for attribute “Contribution to economic development”

Indicator	Chain			Bench- mark	Comments
	A	B	C		
Net Income	0.5	5.2		-	The indicator represents share of profits divided with enterprises turnover. For enterprise A calculations has been made for last 3 years. For Chain B calculations has been made for last 2 years. Net income differs significantly between various years.
Regional workforce	100	100	100	-	-

Chains hold significant differences in terms of contribution to economic development. For the Chain A collecting points represent local employees who are close to local community and close to place where berries are picked. Official contracts to employees as well as official deals with partners ensure that enterprise pays all taxes. Lower level of the supply chain is strongly rooted in local community and ensures that local governing body has the officially required information. Along the existing social connections enterprise draws new legal links enclosing power relations that condition legal character of relations.

However, the indirect influence of the enterprise is significant as well. Owners of the enterprise are foreigners and this at least partly distinguishes the enterprise from other actors operating in the sector. The differences of origins of various actors have been mentioned in several interviews, indicating on national borders as some sort of a demarcation line, where one or other group of actors is important.

Also, the A chain enterprise's decision to acquire modern technologies and invest in the development has been mentioned by actors representing other enterprises through their interviews. Therefore we could suggest that the enterprises involvement serves as an example, how the business can be operated and how the sector can be developed.

Similarly to Chain A, Chain B is strongly rooted in local milieu. Its owners are local activists well known persons to actors operating within the sector. For Chain B, employees working in collecting points are representatives of local communities. However, in this case, due to the fact of unaccounted transactions, strict localness gives less to local government. For this chain – local networks are just local networks that are not supplemented with additional legal links. Because of this we can suggest, that the chain is possible only as a manifestation of relations in local community.

In Chain C wild blueberries are often passed without any payment – as an object strengthening the ties among the members of extended families or other social circles. The vendors who are selling blueberries operate on a small scale either as street vendors or as market merchants. Municipal legislation regulating these actions in most cases states that street vendors have to register yet they either do not have to pay any fee at all or have to pay just a small annual fee. Therefore short blueberry chains bring just a small amount of money to budget of municipality and state. Furthermore, this sort of NTFP has never been interesting to state legislators and should be rather considered from the perspective of cultural heritage.

To conclude – it seems that governing actors do not perceive NTFP as of a great importance in Latvia's macroeconomics. Local municipalities (especially poorer municipalities) hold different views – to their mind NTFP ensures access to those benefits that municipality and state fails to deliver. Despite this opinion, municipalities do not receive significant economical inputs from the sector in their local budgets. The benefits they are appreciating are indirect.

Meanwhile, NTFP provides significant local source of income. The industry as an employer has some significant downsides – its greyness is just one of those aspects, the seasonality being one more. Finally, in order to profit from the wild blueberries one have to be close to forests. Yet, despite these shortcomings

sector secures important safety net both for persons and enterprises. It is a possibility to access quick cash that can be then used to get out of debts of communal payments, afford the inventory that was too expensive before or just to save some money for more difficult times. Therefore, it is safe to assume that the attribute mainly has an influence on social aspects. Moving the sectors global chains into legal framework improves the possibilities to control this market, yet it might reduce sectors characteristics that served to ensure social safety.

Governance

The attribute analyses governance structure of NTFP chains. However, it also refers to ways, how the analyzed chains interact with sector governing institutions. In this section we illustrate inner chain relations as well as its willingness to comply to outer control structures.

Table 8. Indicators for attribute “Governance”

Indicator	Chain			Bench- mark	Comments
	A	B	C		
Grievance procedures	4	2	3	3	Indicator is measured with scale where 4 - highly operational and practically implemented grievance procedures (significant share of actors have access and are satisfied with official or unofficial grievance procedures); 3 - rather operational grievance procedures (most of the actors have access and are satisfied with official or unofficial grievance procedures); 2 - rather un-operational grievance procedures (some of the actors does not have access or remains unsatisfied with the grievance procedures); 1 – un-operational grievance procedures (most of the actors does not have access or are unsatisfied with the grievance procedures).
Conflict Resolution	90	40		80	The indicator illustrates share of resolved conflicts of interests between stakeholders. The number represents % of successfully resolved conflicts. Yet the number is estimation based on in-depth interviews.
Legitimacy	4	1	4	4	Scale: 4 - actors of food chain complies to the law (and ensures that when new legal problems are indicated they are immediately solved) and monitors the legitimacy of their collaboration partners. Additional inner codes may be established; 3 - actors of food chain complies with the law, however, collaboration partners are not controlled. Compliance remains within each enterprise and overall inner food chain control is lacking; 2 - in general actors of food chain comply with the law. However, some actors may exploit the weaknesses of regulation system (either by exploiting production or distribution aspects laws have not defined or by benefiting from the lack of controlling structures); 1 - actors in food chains are openly breaching the law yet this does not influence their access to food chain.
Civic Responsibility	3	1		2	Scale: 3 - actors are responsible and promote the rights of weakest chain participants; 2 - big entities do not hinder nor promote rights of other actors; 2 - big entities try to hinder the rights of smaller actors.
Free, Prior and Informed Consent	2	1	1	2	Scale: 2 - relevant enterprises has had a discussion and consent with local community about its influence on surrounding space and/or realizes its created impact and is working to reduce it; 1 - relevant enterprise have not had a discussion and consent with local community and is not reducing its impact on local community. For chain C informal conflict resolution mechanisms are important.
Sustainability Management Plan	2	1	2	2	Scale: 3 - enterprise has a written sustainability plan that addresses all main sustainability dimensions; 2 - enterprises analyses sustainability of their decisions, however it does not have a written sustainability plan; 1 - enterprises do not consider

					how sustainable their decisions are.
Platform for decision making	2	1	1	2	Scale: There are several questions that should be taken into account to evaluate this indicator: (1) are there such an association/ platform; (2) does it have a real power; (3) does it have regular meetings; (4) is it representing all of the food chain; (5) do everybody holds a power to express themselves. IF all five questions can be answered with YES, than the mark for the indicator should be 3 - there is a platform for decision making; if (1) and (2) = YES, but (3) or (4) or (5) = NO, than the mark for the indicator should be 2 - there is a platform only partially; if either (1) or (2) = NO or (3) and (4) and (5) = NO, than mark the indicator with value 1 - there is not a platform for decision making.

The chain A is dedicated to operate only within the legal framework and to improve NTFP sector transparency since its foundation. Nevertheless it has faced some difficulties (competition with illegal collecting points or less ethical competitors can create expected and unexpected challenges) yet it has not changed the course enterprise has chosen.

From its beginning the enterprise has carefully chosen its partners and employees. Partly it is due to a regular surveillance of regulating bodies, which focuses on it as one of the fully legal (and therefore known) enterprises within the sector. According to chain A enterprise management – this collaboration with governing institutions has allowed them to identify all the legal issues early. Also its long term business vision underlines the importance of long term and tested partners. Despite of this enterprise has been open in its partner selection – new partners in all levels of food chains are found regularly. Partnership relations include the possibility to negotiate – chain is open for discussion and from this perspective it promotes the rights of all involved actors. This possibility is extended to enterprise employees as well. Meanwhile, the chain is intolerant against any kind of breach of their values. In this manner it wittingly pushes out all the actors, who might establish uncontrollable greyness within the chain.

Same openness is characteristic to overall communication culture. Enterprise prefers open discussion of possible problems and can identify sources of possible conflicts. Also, despite the pronounced centralization in the enterprise, the management is easy accessible to employees from lower levels (mainly this means berry collecting points can call management in case of any problems). The openness does not resolve all of the conflicts. Yet it ensures that it is a well-known and respected partner in the industry. Furthermore, enterprise is one of the few institutions in the sector that has been representing the wild-blueberry

sector in discussions with government about the possibilities and ways how NTFP should be regulated and assisted.

When people interviewed describe the chain B they often claim that line of actions the enterprise is involved in are located in grey part of the food chains. This partial affiliation with grey sector of the NTFP raises enterprises competitiveness. The representatives of the enterprise has been quite open by stating that in a hypothetical situation of legal problems with the enterprise the easiest way to overcome them would be liquidation and afterwards reopening under other name. This short term thinking results in low level investments and frequent changes of partners. We must also note that it seems that for enterprises operating in grey part of NTFP contacts that are needed to operate are not located around an enterprise but around a person – many of the partners (for example, many collectors does not know the name of the enterprise they are working with) do not consider that they are working with specific enterprise – they collaborate with the person, who either buys or sells berries and pays in cash. Therefore, even if the enterprise changes its name, the changes would go unnoticed for collectors. The chain is built around the people and as such – is deeply rooted in localness.

In chain B conflicts are more pronounced and more widespread: in interviews there are more stories of unresolved conflicts or of conflicts that have been solved in a manner, which leaves one of the actors losing part of his investments. It is typical that enterprise uses its power position to force specific conflict resolution. Also, intense competition may result in solutions that are criminally punishable – as burning the logistic cars, demolishing collecting points, blocking the access to ones stock of products until it goes rotten etc. The backside of local self-regulation (and we have to stress here, that some of the conflicts are result of unequal power, while some others represent widely accepted attempts to regulate the system (which again – may originate in unequal power and skewed interpretations of what is right)) materializes in stricter and clearly visible inner control system (for example – many cases when some actors has suffered from aggression has been described as just by almost all actors – so the collector who were willing to pay more for the berries had to be taught a lesson, as well as the collector who decided to use a truck to buy berries directly in the forest, or the picker who picked berries in spot claimed by somebody else. None of these cases had any legal rights. Yet they were based

on the industries self-perception of what belongs to whom). Interdependency seems to regulate the market in most of the cases. Furthermore, most of the actors involved are informed about the possible risks and have learned to bend the relations in a way that allows them to extract the highest profits.

Within the chain B communication between various levels of involved actors are pronounced. However, most of the actors relating to the enterprises are only weakly connected to the enterprise and does not hold official jobs. In this situation experience and ability to be informed is the main power that protects involved actors against the *employers*. Less experienced employees however, can face difficulties to negotiate their rights in the market (yet breaching of tacit rules might cause unexpectedly harsh consequences).

The chain C remains unregulated or is just unofficially regulated. Each actor may represent all food chain and most of the activities remain beyond the scope of legislators. The activity that requires some kind of a permit is street selling. This is intensively controlled yet the difficulty level to obtain these permits is usually quite low (yet there are differences from municipality to municipality).

We can conclude that global chains are more oriented towards governance than the local ones. In fact – local chains seems to be uncontrolled without a clear direction. However, as it is demonstrated with indicators – grey sector (chain B) holds significant differences from the legal chain A. Legal chains are more oriented towards future, self-regulation and rights of involved actors. For grey sector – primarily short term gains are perceived as most important. Also here actors are taking care *on their own*. Still – mutual dependency seem to regulate the relations in grey chains.

Labour relations

The attribute “Labour relations” is of great significant for both the WBSC and the NTFP chains in general. This is because enterprises operating whith NTFP sector have wide possibilities to choose which food chain levels enterprise will cover, i.e. – enterprise can choose to improvise with their employment policies. For example none of the WBSC enterprises in Latvia chooses to employ berry pickers – this means that lower level of food chain – berry pickers – remains free of any binding contracts and sells their produce to whomever is willing to pay

more. Because of this collectors are trying to build private relations to pickers. However, these relations do not replace legal contracts and in case of possible accidents pickers would be unprotected. Possibility to earn extra profits that some say may reach several thousand euros per season per person attracts pickers and causes anger in other industries that cannot compete with profits guaranteed by wild-blueberry picking (for example cultivated berry sector is struggling to attract seasonal pickers). Yet, the pickers remain unprotected and in some cases chain actors do not hesitate to use their weakness – they might pay less, cheat with berry amount, etc. Furthermore, for the pickers it means that they are fully excluded from all possible discussions that shape the industry. Often the same situation can be observed among collecting points and even higher in the food chain. However, none of the mentioned has really expressed an interest to legalize their berry picking. On the contrary – these actors enjoy the possibility to gain extra income without worrying about legal issues. Thus the simplicity of current system is one of its strengths.

Industry currently lives from the possibility to secure higher profits from picking than any other industry around. However, this option would be threatened if overall wage level would rise in Latvia. If this will happen, the chain A and B will struggle from lack of pickers which according to experts will either result in higher amounts of imported produce or stream of migrant workers. The latter option would significantly change the labour relations within the sector.

Additional group of employees that holds specific characteristics in the sector are berry collectors. These are typically local persons, who have access to some place (where berries can be bought and stored) and spend most of their time at home. These characteristics attract local unemployed elderly people (however, other groups are taking this post as well). It seems just natural that some of these berry collecting points transform themselves into small local social centres, where people get to know each other, exchange gossips and just take a short brake. In other cases collecting points may emerge close to already established institutions – in some rural territories berry collecting points can be located in local shops, in other – it might be a place where illegal alcohol is sold.

Table 9. Indicators for attribute “Labour relations”

Indicator	Chain			Bench- mark	Comments
	A	B	C		
Right to Quality	3	1	3	3	Scale: 3 - employment follows national and global labour regulations and does not

of Life					have any restrictions that would employees right to choose; 2 - employment has small deviations from national labour regulations or have insignificant restrictions; 1 - employment has significant deviations from national labour regulations or have significant restrictions for employees.
Wage Level	100	100	-	-	Seasonality in blueberry chains is more pronounced. Part time employment is common in the sector.
Employment Relations	100	10	-	100	Percentage of employees that have legally-binding transparent contracts with their employers. The indicator should be treated with caution. In case of chain A and B we have considered collecting points as employees of central enterprise. However, this assumption, as has been shown before, might be faulty.
Freedom of Association and Right to Bargaining	3	3	-	3	3 - addressed employees has freedom of association and understands this right; 2 - addressed employees theoretically has freedom of association, however, they either do not understand it or are afraid to practice it; 1 - addressed employees does not have freedom of association.
Health Coverage and Access to Medical care	No	No	No	-	-
Capacity Development	No	No	No	-	-

Enterprise that is in the basis of chain A has legal relations to its employees and all its employees have legal contracts. However, most of the employees are employed only part time – and the specifics of the work means that it is impossible to predict, when employee will have to work (this is typical for collecting points). All employees except the management – for example people ensuring berry collecting from the collecting points, people sorting the produce in the warehouse, work seasonally. However, the enterprise ensures salaries, which are higher than in most enterprises in the territory (when calculated for full working day).

Contrary to many other enterprises in the sector, the enterprise has chosen to legally employ personnel from collecting points. This means that the collecting points are hired and have legal employment contracts. This gives the collecting points' additional security and connectedness. Also this is the reason that forces the collecting points to follow chain's rules.

Although the employees of the enterprise in general are in better position than in several other enterprises, their prospects of mobility for the future are limited. The position does not offer any reasonable growth paths. Also the possibilities for professional development are limited. However, the legal status offers significant gains: for example, in case of threats they can call the police and know that enterprise will support them. Collectors that have not officially declared their actions cannot ask legal structures for help to protect them from other actors.

The chain B in many ways faces the same problems as the chain A. However, the chain B does not officially employ persons from the collecting points. In reality many of the representatives of collecting points interpret that they are in fact working for the central person (organizer of the chain). Therefore, they feel bound to this person, yet are not receiving any benefits or protection. Their position is even worse, if they do not have any legal status: in this case they are afraid that state could fine them and they are exposed to all possible threats the specific sector poses. For example, competing collector can arrive in the collecting point and damage the production, while the victim will not have the instruments to prosecute the perpetrator. Meanwhile, the situation also offers other - beneficial possibilities. Some employees have learned, how to use absence of binding contracts to their benefits and use them to bargain or blackmail enterprise into offering a higher price for the blueberry produce. Also, longer time spent in the industry may result in stronger integration into networks underlying blueberry chains, which may be a way to receive more possibilities, to gain extra safety (being a recognized part of the industry seems to serve as one of the ways how actors can protect them-selves). Furthermore, conformity to common rules is a value within these chains. Bad name could reduce persons access to resources (nobody will sell their berries to a cheating collector, while collectors will not collaborate to dealers, who completely ignores their interests). Integration in blueberry chains allows actors to be informed about the news of the market (gossip becomes an important source of information). However, chain also seems to acknowledge values as finesse (within some borders) and cunningness. Finally, lack of stability seems to be raising mobility.

Returning to the downside aspects of greyness - lack of legally binding contracts might be a reason, why some of the collectors are forced to conduct extra labour. For example one respondent explained how she spent extra hours organizing and sorting produce she has accepted from pickers. This was done to ensure that enterprise pay's the sum she was expecting. In the chain A a contract between a picker and the enterprise forced the enterprise to organize sorting procedures centralized.

Despite the lack of officially bounding contracts there are pronounced communication all through supply chain. In some cases, an opportunity to communicate might be a source of empowering.

In chain C berry picking often remains recreational activity. Even in cases, when it is a practice that secures some income, people involved do not have any official status. Also, chain C is the only one which actually takes in consideration people who are picking the berries. For other cases pickers might be a problem that is clearly expressed, yet never perceived as one that should be solved.

To conclude, the GFSC can flourish mainly due to the lack of alternative possibilities of employment and uncompetitive salaries in rural territories. Wild blueberry industry stands out in this context as an option offering possibility to gain quick income. These prospects attract representatives of various groups, yet especially the groups, which could be considered vulnerable. Promise of high unregistered extra income allows the enterprises to secure the amount of pickers without really putting an effort or ensuring pickers protection. This current strength of WBSC might turn out to be a serious limitation in the future.

The enterprises employ local people. Mainly it is necessity – renting the space or covering transport costs might be just too expensive for the sector. Still, some of the pickers are quite mobile and follow the information about the best yields and best prices. They might move during the harvest season closer to forest and leave all their everyday life behind. They might occupy abandoned houses, live in a tent and have very little protection. However, this is an exceptional extreme and we have to take into account that mainly pickers are people from the local communities enjoying the possibility to obtain an extra wage.

6. Discussion

In this report we have analysed and compared global and local wild blueberry chains in Latvia posing the following research questions: What are the main differences in organization between the local and global chains? How are governance and control enforced? How the chains influence national and regional economies? Are costs and benefits distributed in a fair way among actors in the chain? What aspects describe labour market and common employment practices? We have answered these questions by focusing on four key attributes (creation and distribution of added value, contribution to economic development, governance, labour relations) and measurement and comparison of 18 corresponding indicators. The detailed comparison of global and local chain performance and their effects on economy, social wellbeing, the environment, ethics and health was done on the basis of comparing three specific enterprises (or micro-cases) that epitomize three different variations (types) of chains: global legal chain, the intermediary case of global grey chain, and local chain.

Three compared chains have significant differences and can be interpreted either as three development stages of NTFP or as mutually complementary systems. Our gathered data suggests that each of the chains correspond to specific social situation and both allows solving specific problems as well as raise some other ones. Below we summarise the main findings from the chain analysis and comparison.

Economic performance

Local chains are more efficient, if there is no need for emergency safety net that would solve economic problems. Furthermore, these chains offer higher share of income to pickers. However, the chains are able to absorb only limited amount of produce and pose significantly more difficulties to exchange berries for money. Chain globalization has solved these problems offering pickers simple option to gain extra profits. Global legal chain has fully locked the cultural tradition into global market and is raising its profits by modernizing its production and searching for new markets. This chain has also managed to introduce in the industry practices that may be beneficial to local economies. Different economic performance can be observed in case of intermediary case – it strengthens its economic performance on social ties and ability to avoid official payments.

Ecological performance

Local chains presumably harvest smaller share of yields and raise less questions about the ecological consequences of overharvesting. However, there is only limited understanding on what could be possible consequences of overharvesting. Despite that there are some convincing arguments that overharvesting may reduce the population of wild blueberry in the future and could force some animals to search for alternative food source. Although both global chains are contributing to overharvesting, it seems that grey chains are more to blame – not because it would harvest more, but because it reduces the possibility to control the real amount of harvested berries.

Social performance

Global and local chains promote social inclusiveness in diametrically opposite ways. As has been stressed in this report – local chain strengthens already existing ties (strengthening the ties of extended families, colleagues, friends, rural-urban, etc.). Global chains encourage integration within one specific community – for example berry pickers during the berry season circulate around the collecting point exchanging news and meeting other pickers. This type of inclusion is specific and may have only limited applicability in other contexts. However, no doubt that such kind of socialization might be important to pickers. Global legal enterprise secures more jobs and as an employer gives more possibilities to employees. It is involved in policy making and introduces new control systems. It is also ensuring that its employees are protected from possible threats the industry poses. Meanwhile the chain offers fewer opportunities for mobility. Thus the legal chain is more efficient when it comes to developing institutions and is working to ensure generally accepted way on how business models should collaborate with society.

Intermediary grey chain, on the other hand, is much more challenging – it just partly correspond a typical business. Yet its other part is originating in local communities where social ties and mutual tacit agreements regulate the chain. In some cases it may cause difficulties (when specific groups take over the chains). However, in other cases it is an enabling strategy for community – an opportunity, how rural community can obtain cash, can structure their own networks and use their own resources.



Health performance

Blueberries historically have served as a product improving health. Local chain, where all of the products picked passed for consumption in households, is an instrument providing healthy product circulation in society. In the most cases – the product is for free. This aspect differ local chain from both global chains that are oriented towards higher income.

Additional aspect to consider is labour relations. Employees across the chains does not have access to health insurance, nor any other centralized way how actors involved health could be protected. The picking process as well as work in the forest might be a cause of health problems.

Ethical performance:

Two principles should be contrasted here – local chain is an option to secure ones culture and as such should be protected. Global chains should be estimated from the perspective of social as well as business ethics. Global legal chain – from the common business perspective could be considered highly ethical. Furthermore, the compliance and involvement as well as ethical principles imposed on other chain members clearly underlines the position chain presents. These principles are noteworthy even in the context of all local market. However, most likely these specific characteristics are linked to pronounced overall greyness of the sector: legal enterprises accept extreme collaboration with government because it is the only way to prove its full compliance to the regulations. Situation is much more difficult with intermediary case – many of the practices common to these chains are unethical (as for example – cases of violence and cheating) and pose questions about the chains efficiency. However, chain also represents different set of logic – it is local, originating from local communities and it enables local inhabitants. Thus it is a bottom up initiative resisting values originating in global markets. From this perspective intermediary chain incorporates elements that originate in local system of ethics and positions the chain in opposition to states and industries interpretation of ethical business models.

Chain transparency and governance issues: We should not belittle value of intermediary case – the grey chains – it seems that these might be more efficient as a quick short term solution: they are more flexible, include more possibilities for every involved actor, and grants quick access to resources. These chains emerge from local communities. If we do consider the grey chains negative side

effects, there are some other chain's characteristics that we should consider. Namely, in a long term these chains may cause unofficial power structures and focusing on simple market solutions not requiring investments, they seem to centralize income in some parts of the chains. Grey chains also eradicate possibilities to trace the product and finally – they remove control over the magnitude of the process. The problem of grey chain is lack of control in blueberry market. This means that the state will not have the full ability to understand, what consequences the chains might have on local milieu. Still, since state is paying only limited attention to what is happening in the wild blueberry market, most likely even, if the grey enterprises would comply with documentation procedures, it would not be interested in estimating full consequences of extensive berry picking.

Global legal chain illustrate that NTFP can become a significant business. It also illustrates that investments can raise the competitiveness and creates internationally competitive enterprise offering employment possibilities (to collectors). Legal global chain can turn out to be much more beneficial for local governing institutions insuring that local territories have more employment options and receive more tax payments. Thus as a long term solution global legal chains would be more efficient.

7. Conclusions

This report has compared three wild blueberry chains and assessed the efficiency of these chains. The comparative perspective has been helpful to construct a better understanding of each separate chain: the comparison, on the one hand, provides with an opportunity to identify the possible relevant aspects; on the other hand, it gives an additional material for explanations on what does observed aspects mean and how data obtained should be interpreted. Partly, the same function (we articulate to comparative studies) could have been attributed to close study of literature. However, such studies always leave the question how far the comparison can go – as it has been observed during this study, the context holds significant influence that may make the comparison with cases from literature impossible.

The study has primarily been concerned with food chain and we have observed food chain as a social system incorporating all practices and institutions, which are needed to create the final product. We have limited the scope of chain and have analysed the flow of berries up to secondary processing in case of global chains (or industrialized chains) and up to consumer in case of local chains. In 5th chapter we have represented graphically the compared chains. Our representation illustrates that structure of these chains is complex and branched. Comparative perspective gives a clear instruments on how to structure the complexity – by comparing these structures and underlining the similarities we gain better understanding of differences.

Furthermore, our case illustrate that although we can give theoretical distinction of chains, it may be hard to do that in practice. Compared chains are strongly interlinked and actors, practices and products tend to flow between the chains or in some cases – be a part of several chains simultaneously. The interconnectedness of the chains suggests that analysis of separate chain would promote an artificial split and may cause losing links indicating on the interdependency of the chains.

Many of the issues raised by complexity of research object have been solved with participatory methods. Participatory methodology is approach particularly handy when complex issues are studied: communication with involved actors allows overcoming the issue of complexity in a structured and involved manner. Despite this obvious value of participatory approach, there are some limitations that reduce the applicability of the method in some specific cases. The main aspect is actors' inability to step out of the information field they are using daily. This is one of the strengths of the method – it

grants the variety of interpretations – participants comment the processes within the chain judging from their experience and information currently considered as important. However, this poses limitations to identify aspects outside the common knowledge field – so the method automatically presupposes that sector includes bricks for the best performance. However, whenever this is not the case – best solutions might be missed.

The study illustrates that NTFP products can be short-term solution in economic stress situation as well as a significant business that should not be overlooked by states regulatory institutions. The interpretation that the sector is of low importance allows some actors to benefit from common resources and the rural poverty. This, as was shown in the analysis, raises questions about the relations between actors involved in the chains, about the benefits each actor receives at the end, about the influence the NTFP sector holds on the overall market and about the environmental consequences these activities may bring, etc. These arguments illustrate that the governing actors should not overlook the sector and promote product traceability and market transparency.

The study also illustrates that analysed food chains cannot be changed without a support from actors representing the lowest level in the food chain – the pickers. Furthermore, all the legal instruments that would ensure legal transactions are already there (present in the market) – they are just not applied in practice yet (are used by legal enterprises only). Mainly this is a trust issue – the pickers do not believe the state, yet the state is not putting significant effort in order to convince pickers about its trustworthy intentions. States reaction is perfectly understandable – why it should bother with an industry that from the dominating perspective is seen as a backward (in general – significant markets are those promising development, technologized, with shiny innovations, etc.). However, the result of such inertia is exploitation of common goods, new power hierarchies, possible links with illegal structures, etc. The dialogue with pickers could be a simple solution to these threats. The state so far has not introduced communication with the pickers. This role has been taken by the enterprises each of whom promotes his own small goals (depending on which type of chain it represents).

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Appendix 1

Results of Pedigree Matrix for data quality assessment

	Chain	Reliability of source			Completeness			Temporal correlation			Geographical correlation			Further technological correlation			Score			Quality classes		
		a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	A	B	C	A	B	C
Governance	Grievance procedures	0.0	0.0	0.4	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	1.0	1	1	2
	Conflict Resolution	0.0	0.0	0.4	0.6	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.6	1.0	1	1	2
	Legitimacy	0.0	0.0	0.4	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	1.0	1	1	2
	Civic Responsibility	0.0	0.0	0.4	0.6	0.6	0.4	0.0	0.0	0.0	0.2	0.2	0.0	0.2	0.2	0.2	1.0	1.0	1.0	2	2	2
	Free, Prior and Informed Consent	0.0	0.0	0.4	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	1.0	1	1	2
	Sustainability Management Plan	0.0	0.0	0.4	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	1.0	1	1	2
	Platform for decision making	0.0	0.0	0.4	0.2	0.2	0.4	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.2	0.4	0.4	1.2	1	1	2
Labour relations	Right to Quality of Life	0.0	0.0	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	1	1	1
	Wage Level	0.0	0.0	0.4	0.6	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.6	0.8	0.8	1	1	1
	Employment Relations	0.0	0.0	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.4	0.6	0.6	1	1	1
	Freedom of Association and Right to Bargaining	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.4	0.6	0.2	1	1	1
	Health Coverage and Access to Medical care	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.6	0.0	1	1	1
	Capacity Development	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	1	1	1
Creation and distribution of added value	Value added calculation	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1	1	1
	Price for the farmer / final price of the product	0.0	0.0	0.0	0.4	0.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.6	1	1	1
Contribution to economic development	Net Income	0.2	0.2		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.2	0.2	0.0	1	1	1
	Regional workforce	0.2	0.2	0.2	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	1	1	1
	Price for consumers				0.2		0.4			0.2			0.0		0.2		0.0	0.0	1.0	1	1	2